

CANADIAN

TELEVISION in the

# DIGITAL ERA

THE REPORT OF THE TASK FORCE ON THE IMPLEMENTATION OF DIGITAL TELEVISION



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# TASK FORCE ON THE IMPLEMENTATION OF DIGITAL TELEVISION

## GROUPE DE TRAVAIL SUR LA MISE EN ŒUVRE DE LA TÉLÉVISION NUMÉRIQUE

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October, 1997

The Honourable Sheila Copps  
Minister of Canadian Heritage  
15 Eddy Street  
Hull, Quebec K1A 0M5

Dear Minister,

I am pleased to present to you the report of the Task Force on the Implementation of Digital Television. Members of the Task Force reflect a broad range of the industry, including the broadcasters, distribution undertakings, the production community, and manufacturers.

They have worked diligently in preparing recommendations that will ensure an orderly transition to Digital Services and maintain the competitiveness, quality and quantity of Canadian programming in a digital world. I am also pleased to report a full consensus from the members on the recommendations.

A key element of the report is the recommendation to create a vehicle (DTV Inc.) by which the transition can be managed. The issues, costs and timelines of the transition will need constant monitoring by both the industry and government to ensure appropriate implementation strategies.

Finally, I would like to acknowledge the work of Canadian Heritage staff who went the extra mile in making this report possible, including Ted Ledingham and Pat Procter. I am very grateful for their support.

Yours sincerely,

Michael McEwen  
Chair of the  
Task Force on the Implementation of Digital Television

c.c. The Hon. John Manley



# Seizing the moment...

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We Canadians started watching television in the early 1950s. The first signals we saw came across the border from the States. Later, our own television stations added Canadian programming and extended the reach of the signals to virtually every part of the country. In the mid-'60s we colourized and, in the 1970s, cable tv became the delivery vehicle of choice for the vast majority of Canadian households. In the process, our viewing choices grew exponentially; we developed what is arguably the world's most sophisticated distribution system; and the Canadian broadcasting industry grew to become a vital national resource and a major exporter of Canadian programs with their Canadian talent and Canadian values to a global audience.

Despite all that growth, however, the basic quality of the television pictures we see in our homes hasn't really improved all that much. Certainly, colour tv is more appealing than black and white and cable has brought most of us not just more, but better, pictures. But it's all relative to what we started with a tv picture that looks all right in a small format. Unfortunately, the meagre 525 lines of horizontal resolution can't stand up to today's larger screen sizes; and the boxy screen shape is artificial when compared to movie screens and, indeed, to the range of vision of the human eye.

The fact that the technology behind today's television pictures was developed in the 1940s and is still in use is something of a marvel—but it can't last forever. It is about to give way to the next generation. The agent of this change is digitization.

The purpose of this report is to provide the Canadian broadcasting industry and Canadian television audiences with the arms and ammunition they need to join the digital revolution.

The first thing to know about digitization is that it is not a technology in search of a use. This is not a case of succumbing to the wiles of technological determinism. Rather, the world is going digital because digital technology is head and shoulders better than the analogue systems it's replacing.

The second key concept is that the use of the term "digital revolution" is not an overstatement. The fact is that digitization permits literally revolutionary quality improvements in the production, distribution and exhibition of television pictures and sound—and it allows those signals to be moved about in a fraction of the electronic spectrum now used by analogue signals. These benefits are a significant boom to a marketplace in which consumers continue to demand higher technical quality standards and to a communications environment marked by the seemingly endless growth of new ways to keep in touch.

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Furthermore, digitization is not something *projected* to happen sometime in the future. Around the world, broadcasters are gearing up to introduce fully digital television. They already use some digital equipment in their production operations and, for some time, have been using digital video compression techniques to economize on distribution spectrum space.

Even so, all those digits still have to be turned into an analogue signal before they can be transmitted over the air and watched on our analogue television sets.

This report is about going the last mile—using digital, over the air transmitters and digital delivery systems to carry digital pictures to digital television sets.

As this report was being written, digital stations in the top ten American markets are barely a year from being launched. By the millennium, it is projected that more than half the viewers in the States will be able to receive digital television services.

The Europeans are also hot on the digital trail. Transition planning is well advanced in most countries. The United Kingdom, to pick one example, is building experimental facilities now, with a view to beginning the transition within a year. And, everywhere, television set manufacturers are gearing up to introduce the first digital receivers in stores by the fall of 1998.

In short, digitization is an active, global initiative. It's happening now.



# The price of progress....

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The evolution from analogue to digital television systems is a major change—one that will radically transform the capabilities of television and one that, patently, will not be accomplished for nothing. It is a considerably more dramatic adjustment than was the move to colour from monochrome. As might be expected, the economic challenges of the conversion have occasioned considerable debate among members of the Task Force.

Our primary concern has been to assure the continuing financial health of the Canadian television broadcasting system, particularly as that well being affects our ability to maintain and build upon both the quality and quantity of Canadian programming we offer to our audiences. As mentioned above, digital production equipment is already making its way into the system, replacing aging analogue gear. But that penetration is still far from complete and, in any case, primarily affects only the systems used to produce and process television signals. Transmission of those signals to the home has not yet felt the full impact of digitization—either over the air, by cable or by other distribution mechanisms. And, of course, consumers in Canada have not yet been offered digital television receivers.

It is obvious, then, that careful management of the economic impact of the digital transition will be crucial to its success. At this point in the evolutionary process, however, we cannot accurately project the full dimensions of that impact—but we do know the conversion will affect different players in different ways.

Consumers, for example, can likely expect to pay a premium of from \$1,000 to \$1,500 for the first of the new generation of wide screen, HDTV receivers. But our experience of past new product introductions—and, particularly experience to date with digital tv production equipment—has been that initial prices decline rapidly as market penetration increases.

Distribution systems, such as our extensive cable television infrastructure, will face significant cost in making additional digital capacity available. While the Task Force did not undertake specific research on the economics of digitizing distribution undertakings, the Canadian Cable Television Association (CCTA) has estimated its cost to make available 30 channels for wide screen, high definition digital programming will range between \$930 million and \$1.4 billion (current dollars), depending on the digital compression ratios that service quality considerations will demand and that technological progress will permit. The impact on newer distribution systems such as Direct-to-Home (DTH) satellite and Multi-point Distribution Systems (MDS) would also be significant.

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Conversion costs for over-the-air broadcasters will be affected by the extent to which they have already digitized their studios, the ability of existing transmission towers to accommodate new sites and the pace at which DTV duplication of analogue coverage advances. On the first point, many broadcasters are already converting to digital studio facilities as part of the normal replacement cycle. As it happens, much of the digital equipment now being bought is actually less expensive than its analogue predecessors—and, of course, much of the analogue equipment has been extensively (or fully) depreciated. These factors will also affect the equipment needs of pay and specialty service operators. As for digital transmitters, a preliminary estimate by the Canadian Association of Broadcasters indicates it will cost somewhere between \$90 and \$500 million to convert existing analogue transmission facilities over the next ten years. And, finally, broadcasters will face additional costs in operating duplicate analogue and digital transmitters during the transition period.

Clearly, there is significant risk involved in the process of converting to digital and, given the nature of the change, there is little near-term prospect of generating new revenues to offset the expenses. On the other hand, the potential cost of not proceeding in concert with the US would be measured in lost competitiveness for Canadian productions and reduced audiences and revenues for the Canadian broadcasting system. Therefore, the recommendations in this report anticipate the need for appropriate mechanisms to monitor the transition and to assure that both the industry and consumers are able to benefit from entering the cost curve at the most propitious moments.

# Responding to the challenge....

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Canadian television broadcasters have recognized the potential of digital television. The Advanced Broadcasting Systems of Canada (ABSOC) group began tackling the technical issues early in the 1990s. The 1995 report of the Working Group on Canadian Programming and Private Television noted that “the entire TV production and distribution system is converting to digital technology.” The report went on to identify the host of new service opportunities made possible by digitization<sup>1</sup> and called on the Federal Government to set up a Digital Television Broadcasting Task Force “to examine policy requirements and develop a master plan to facilitate the transition from analogue to digital TV broadcasting.” ABSOC made a similar suggestion in 1994.

That conclusion inherently recognizes that the Canadian broadcasting system is not composed of an array of unrelated elements but, rather, is a system that depends for its success on a high degree of integration. From the production of a program to its scheduling and transmission, to intermediate delivery systems such as cable television, and to the makers and sellers of television sets, the integrity of the entire system is a necessary prerequisite to meeting national economic and cultural objectives. And the Committee correctly foresaw that the integrity would have to be maintained throughout the transition to digital broadcasting.

The Government acted on the Consultative Committee’s recommendation and, in October 1995, established this Task Force. Our members have served voluntarily and the work of the Task Force has been largely funded by its membership. Our overall mandate has been to “provide advice to the Minister of Canadian Heritage on the policy framework required for the transition to digital television, and coordinate the implementation of Digital Television in Canada.” In response to that charge, this report delivers our considered and collective views on the best blueprint for transition and presents a plan for a collaborative partnership among all sectors of the industry and government<sup>2</sup>.

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<sup>1</sup> *The Future of Canadian Programming and the Role of Private Television: Keeping Canada on the Information Highway*; March, 1995; pp 23-24.

<sup>2</sup> The full mandate and terms of reference of the Task Force are included as Appendix I to this report. Appendix II lists the members of the Task Force and its Working Groups.

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The Task Force itself has met extensively over the past 21 months, as have the four working groups formed to examine specific aspects of the transition plan. Those groups looked at:

- Policy and regulatory issues
- Technical issues
- Consumer and manufacturing issues
- Production issues

The recommendations in this report are the result of the consultations, research and analysis carried out and commissioned by the working groups and subsequent deliberations of all the members of the Task Force.

# LEARNING FROM EXPERIENCE....

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As we approached our task, we were mindful that Canada has traditionally taken pro-active measures to build and maintain a strong, vibrant domestic broadcasting system; one that can hold its own in direct competition with its neighbour to the south and ensure Canadians of a continuing flow of programming that tells *our* stories, celebrates *our* victories and shares *our* concerns.

We instituted national public radio in the 1930s, repatriating private radio stations from American networks and giving Canadians their own voice on the national airwaves. We continued in the same vein with television in the 1950s and '60s, assuring a strong Canadian presence in programming and viable Canadian businesses. In the 1970s, new cable television regulations guaranteed the delivery and priority of Canadian services and, later, domestic pay and specialty services were licensed to strengthen the presence of Canadian productions and Canadian industry in that sector of the broadcasting spectrum.

We have consciously taken steps to make up for the disadvantages of operating in a small market — or, rather, *two* small English and French markets — next to a giant one. When we did that, the results have consistently been to our cultural and competitive advantage.

When we have not taken such initiatives, however, the results have been the opposite. We lagged behind the Americans in the introduction of colour television in the 1960s and Canadian broadcasters had to play catch up to lure back the viewers lost to US border stations. More recently, our failure to act quickly in the face of competition from new, American DTH satellite services has fostered the growth of a grey market and placed our fledgling, domestic DTH operators squarely behind the eight ball.

In both these instances, when technology made service improvements possible and we did not have a timely plan to integrate that technology into the Canadian broadcasting system, Canadians disconnected from the system. But when we *did* implement a coordinated plan to introduce change, Canadians have embraced the new domestic services and Canadian businesses have benefited—by maintaining their audiences and by offering improved programming with improved technical quality. The same imperative applies to digital television.

Television is an important part of Canada's social and economic fabric. From the consumer's perspective, it's our largest leisure-time activity—Canadians, on average, spend over 23 hours a week watching tv—and it's by far our dominant source of information and entertainment. Television is also our most effective cultural vehicle,

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allowing us to share our experiences from coast to coast to coast, 24 hours a day, 365 days a year.

And, even in a media world characterized by rapid technological convergence, television remains a key part of the multimedia revolution. While the Internet has given new meaning to the concept of being “plugged in”, the computer industry has begun to move in the direction of integrating its services with television, rather than competing with it. As this melding continues, television’s move to become digital can only strengthen its central position.

In economic terms, the television broadcasting industry, in all its manifestations, generates some \$5.5 billion a year; and the output of Canada’s studios and production houses carries the Canadian flag abroad and generates a further \$129 million in export sales every year.

All of this to say that this is not an industry we can afford to put at risk. As we've noted above, making the transition to digital television is not risk free—and the broadcasting industry's economic and cultural contributions to Canada are too important to jeopardize by dashing headlong into the future without a clear sense of direction. So let’s look at how we might go about responsibly introducing digital television in Canada.

# Planning the attack....

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We should first say that we looked carefully at what might happen if we simply let the Americans take the lead—and we rejected that as an option. If we have learned anything from our industry's past it is that we will prosper in direct proportion to our own initiative. Thus, the members of the Task Force are firm in their conviction that a coordinated, made in Canada approach to the introduction of digital television will enhance Canadian production and broadcasting competitiveness and best serve Canadian audiences.

A clear and practical regulatory and licensing framework, designed for Canadian businesses and Canadian consumers, can be built and established well before we fire up our first, full time digital television transmitters. Broadcasters and producers will be able plan with more certainty; distributors will know that Canadian as well as foreign services will be available, and approximately when; and manufacturers of industrial and consumer digital equipment will be better positioned to develop their production and marketing strategies. Simply put, if we take charge of our own affairs, and move with appropriate care and caution, the conversion to digital will proceed on an established timetable, with all players knowing the time lines, the expectations and the planning process.

Further, the timely introduction of DTV will ensure that Canadian technology and programming will be in place to attract and hold audiences in competition with new digital services coming across the border. And an early entry by Canadian producers in the making of digital television programming would maintain—perhaps enhance—our competitive position in the (increasingly digital) international programming market.

On the other hand, waiting too long could mean that the Canadian market would become simply an adjunct to the digital rollout in the States. The current American plan is to introduce digital television in the top ten markets beginning in the final months of 1998, with smaller centres to follow in fairly short order. Thus, because of their proximity to major US cities, Vancouver, Toronto and Windsor will certainly be able to receive US digital television early in the game. Some 80% of Canadians live in an area where at least one US over-the-air analogue signal is receivable and the vast majority of them would shortly have the option of receiving an American DTV signal.

Without a Canadian alternative, a digital grey market might well develop, with Canadians dropping out of the Canadian broadcasting system because the picture quality wouldn't measure up. And, with a reduction in audiences and subscriber revenues, there would be less likelihood of creating Canadian programming. However, moving too quickly could result in a more costly conversion which could also impact on Canadian programming.

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Without a domestic plan of attack, Canadian over-the-air stations would find it necessary to introduce digital services on a case-by-case basis. The downside to that is that, until a sufficiently large number of Canadian digital signals emerged, there would be no incentive to produce Canadian programming in digital formats. That would disadvantage Canadians both culturally (the lack of programs) and economically (the lack of export potential).

The Task Force has concluded that Canada's interests will best be served by seizing the initiative; developing a comprehensive, coordinated digital transition plan to ensure that our broadcasting system remains strong and vibrant, providing a full range of competitive services designed to meet Canadian needs, yet flexible enough to meet the uncertainties for predicting the future. Now, we need to move forward with a unified vision and purpose to establish the technical and cultural framework for Canadian broadcasting in the new century.

## Our recommendations....

Our recommendations are designed, first, to provide the *strategic framework* needed to ensure that Canadians receive high quality digital television services in a competitive marketplace; and, second, to specify the *implementation* steps that will guarantee a successful transition.



# 1 • A Strategic Framework

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*The first recommendation is the most essential—the foundation for all that follows. The Task Force unanimously believes that a common North American standard for terrestrial Advanced Television Services will benefit Canadian consumers and the Canadian broadcasting system. Therefore....*

## Recommendation ONE

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*Canada should formally adopt the ATSC Digital Television Standard for terrestrial transmission as defined in document A/53 of the Advanced Television Standards Committee of the United States of America and as modified by the FCC in document MM Docket No. 87-268.*

This standard provides a broad technical definition for an advanced television system. The parameters defined by the standard embrace a host of digital activities, ranging from the distribution of television signals comparable to those we watch today, through to the new, film-like format of High Definition TV, multiple channels of CD-quality sound, as well as miscellaneous unrelated data. The basic purpose of the A/53 standard is to provide a common technological environment within which the various digital tv formats and additional data services can coexist.

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By adopting the same standard for terrestrial digital television transmission as the United States (and, it is anticipated, Mexico), Canada would be assured of North American compatibility in program transmission and production and of the availability of common consumer digital television receivers. This should result in the lowest cost for receivers and program production and offer export potential for both broadcasters and independent producers.

This seminal recommendation has already been conveyed to the Government—in February of this year—and Industry Canada has acted on it by publishing the standard in the *Canada Gazette* issue of June 21, 1997. Following public comment, it is expected the A/53 standard will become the digital television terrestrial transmission standard for Canada.

The next most important consideration in the strategic framework is the matter of timing—determining when we should begin the conversion, what its phases should be and how long it should take. Clearly, events in the US market will have a determining effect in Canada and, as we noted earlier, the American plan calls for the first, major market launches of digital television broadcasting in 1998. We have no doubt that, as digital tv rolls out in the United States, it will create consumer demand here—and our strategy is to be in a position to respond, in a timely fashion, to that demand. So we are proposing a time line that lags projected events in the US by 12 to 18 months; far enough behind to benefit from the momentum but not so far as to be swamped by it.

We have, of course, monitored recent developments in the United States. We are aware that competitive forces in that large, lightly regulated market are already challenging some of the assumptions in the Federal Communications Commission's plan for the conversion to digital television. Given the implications of replacing such a widespread technology as a television system—even over a long time—we can reasonably expect bumps and detours along the way. Whether North American producers, broadcasters and distributors, while making the digital transition, move to true, high definition, wide screen television (HDTV) in line with today's projected timing remains to be seen.

However, there is no doubt about the overall digital trend—and globally, not just in North America. Therefore, the plan set out in this report recognizes the driving power of the US market. But it also reflects the significant structural and regulatory differences between the US and Canadian broadcasting environments. It is, therefore, responsive to US events but tailored to Canada's needs.

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It is also a flexible plan. It identifies start and stop points for the various elements of the transition from analogue to digital television—because we need to keep a focus on the process of change—but a subsequent recommendation provides a mechanism to monitor, review and adjust the implementation. Simply put, the plan is designed to facilitate the transition, not drive it.

Finally, for reference, we define the “transition period” referred to in this report as beginning with the first transmission of digital broadcasting and ending with the termination of analogue transmission.

# Recommendation TWO

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*The Government of Canada and the Canadian Radio-television and Telecommunications Commission (CRTC) should adopt the following conditions and time lines for the introduction of digital television in Canada:*

- *All over-the-air, licenced broadcasters should be granted a digital license.*

This compulsory license would allow broadcasters to simulcast their analogue services in one or more of the new digital formats and, concurrently, to explore the full potential of those formats.

- *Over-the-air broadcasters should be compelled to implement the digital license by the end of 2004.*

Over-the-air broadcasters are at the heart of the successful transition to digital television. Their leadership in providing enhanced quality, high-definition digital television programming early in the transition will accelerate production, distribution and consumer demand.

Therefore, the Task Force feels broadcasting transmitters serving the largest markets (e.g., Montreal, Toronto, and Vancouver) should begin digital transmission by the end of 1999; followed as soon as is practical by stations in the next largest markets (e.g., Edmonton, Calgary and Ottawa) with the objective of being digital, over the air in all markets by the end of 2004. Broadcasters not implementing the compulsory licence by that time should then have to compete for a digital license.

- *Specialty/Pay programming services should implement as distribution capacity becomes available. In any case, this should take place no later than the end of 2004, the time by which all Broadcast Distribution Undertakings<sup>3</sup> are to be digital.*

Because specialty and pay programming services rely on both satellites and terrestrial broadcast distribution undertakings to deliver their programs, their transition to digital must be in phase with that of their distributors. The Task Force observed, with

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<sup>3</sup> The term *Broadcast Distribution Undertaking*, or *BDU*, refers to television distribution by cable systems, terrestrial microwave, direct-to-home satellite, telephone lines, wireless cable, etc., all of which carry signals originated by over-the-air broadcasters or pay and specialty service providers.

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some concern, that these services may be placed at a disadvantage in the transition because of capacity problems experienced by BDUs. However, we also noted that pay and specialty program services occupy a very important place in the Canadian television broadcasting system, currently accounting for some 25.4% of all English language and 17% of French language TV viewing<sup>4</sup>. Further, because the program formats of some of the services—sports and movies, for example—are particularly enhanced by digital, wide screen presentation, these services could significantly drive consumer uptake of the new technology. It is anticipated that some pay and specialty services will be early adopters of digital and will want to join the first wave of over-the-air broadcasters in late 1999. Thus, while we acknowledge the challenge of distribution capacity, we would anticipate that market demand for these services will encourage increases in digital distribution capacity within the time frame suggested above.

- *Broadcasting Distribution Undertakings should be fully digital-capable by the end of 2004.*

As we have previously noted, broadcast distribution undertakings will face some capacity constraints as the transition to digital is implemented. Therefore, we have not proposed interim implementation time frames as we did for over-the-air broadcasters. However, the Task Force believes broadcast distribution undertakings should make every effort to accommodate, in the full digital format, the over-the-air and pay/specialty signals made available in their community when they first arrive—and, in any case, not later than 2004.

- *All analogue over-the-air transmission should cease at the end of 2007. Beginning in 2004, the date for the end of analogue transmission in Canada would be assessed annually.*

The eventual elimination of the NTSC analogue television system is inherent in the transition strategy for digital television. We believe the proposed ten-year time period—to the end of 2007—should provide all parties, including consumers, with a reasonable opportunity for transition planning and implementation.

However, none of the dates in our proposed timetable is immutable—and our next recommendation provides a mechanism that will allow for consistent monitoring and appropriate adjustment of the transition's progress.

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<sup>4</sup> Source: A.C. Nielsen / CBC Research — 1997 season-to-date. Includes viewing of all specialty, pay and pay-per-view services.

# Recommendation THREE

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*To ensure an orderly migration to advanced digital television services, a not-for-profit corporation should be established to direct research and testing, identify and advise on policy issues and implement the digital television transition plan.*

While the work of the Task Force, *per se*, should end with the submission of this report, many of the issues raised here will persist throughout the digital transition period. The successful resolution of those issues will be greatly enhanced by creating a small organization to facilitate problem solving, oversee the various steps that need to be taken during the implementation process and, generally, provide an ongoing forum for all those affected by the process to come together to mutual advantage.

In contemplating the makeup and function of such an organization, we have had reference to similar bodies in Europe and the United States and, closer to home, to the precedent established here with the creation of Digital Radio Research, Inc. (DRRI). While the specific issues dealt with by these bodies may differ, the underlying principle is constant—namely, the need to coordinate a complex process which, experience suggests, would almost certainly fail if left to its own devices. In making this proposal, then, we have tried to adhere to the principle, while tailoring the details to Canada's individual circumstances.

The company, which might be called “**DTV Inc.**”, would be a partnership of public and private over-the-air broadcasters, pay and speciality program services, broadcasting distribution undertakings, telecommunication entities operating as BDUs, consumer and professional electronic products manufacturers/marketers and the television production community. It would be capitalized by a fee for membership and an appropriate contribution from government. It would also include appropriate consumer representation, on a non-fee-paying basis.

The entity would be managed by the industry with government and regulatory participation. It would not be large. We see it headed by a steering committee of key representatives, its day to day operations undertaken by a very small staff—perhaps only three or four permanent employees—who would contract with outside organizations to conduct

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whatever research and development activities were needed. In its role as the central coordinator for industry and government initiatives associated with the ongoing processes of policy and technology development and the implementation of the new digital medium, DTV Inc. could:

- monitor and, as necessary, adapt the transition timetable and other elements of the implementation plan;
- commission, conduct and oversee related technical research, such as operating a test transmitter facility; directing scientific and industrial activities needed to develop universal decoding technology, promoting the development of “user friendly” channel navigators (program listings) and related encryption and conditional access systems;
- conduct or commission economic analyses, such as assessing the cost implications and potential benefits of digitization for consumers and various industry sectors; and ensure Canadian social issues are addressed;
- promote and coordinate Canadian representation in North American and international groups involved in the development of digital television, both in terms of technology and production applications;
- develop and conduct programs to provide industrial and public education, including the promulgation of a “DTV-Ready” sticker program to assist consumers in purchasing new, digital equipment;
- develop and support industry training programs by defining needs, skill requirements and the materials required for successful implementation;
- provide an ongoing forum for consultation among representatives of the industry, of government and of consumers as part of the transition policy, focusing on regulatory and economic issues;
- facilitate the industry’s development of and support for the operating features to be included in new ATSC digital television receivers

# Recommendation FOUR

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*Digital television services must be clearly superior to existing analogue transmission. At a minimum, all digital pictures transmitted should be in the 16:9 aspect ratio<sup>5</sup> (wide screen) in a resolution at least equivalent to the existing analogue, 525-line standard.*

The implementation of digital television will require a major commitment of all parties: producers of programming, television stations and networks, distribution companies, and television set manufacturers and marketers. The digital television technology recommended for implementation in Canada can provide vastly superior picture and sound quality. The new digital standard also possesses great flexibility. For example, at the low end, the standard would permit a digital duplication of the quality, resolution and screen size of our present analogue television system. However, to settle for this lesser type of digital service would, in the long term, put the Canadian broadcasting system at a competitive disadvantage.

From the all-important perspective of the consumer, this recommendation is designed to meld the ideal with the practical. The Canadian goal should be to move to the *highest possible quality* from the outset; to set a minimum expectation that will take as much advantage as possible of the new technology's capability while full scale High Definition Television programming develops over time. This expectation means that the first digital tv viewers will benefit from the wide screen format and the improved picture quality digitization will bring to even an "analogue equivalent" signal. (It should be noted that wide screen feature film material is readily convertible as a means of getting the ball rolling.)

Other recommendations in this report are intended to accelerate the process of creating original programming in digital formats by a combination of support incentives, training and response to growing consumer demand.

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<sup>5</sup> The *Aspect Ratio* is the ratio of the width to the height of a television screen. Today's screens have a 4:3 aspect ratio. The proposed new standard allows for a ratio of 16:9, effectively the "Cinemascope" of television.



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Just as the superior quality of Compact Disc sound recordings made vinyl LPs pale in comparison, the immediate and striking difference between conventional analogue and the new digital services should create demand and stimulate the development of new, higher-quality television productions as well as a wide range of television receivers in the 16:9 aspect ratio.

There is a compelling external stimulus for Canadian producers to move quickly into the *world* of digital production; namely, the fact that it is a *world* event. Given that the United States and Europe are further down the digital track than we are, that reality will create a growth in demand for appropriately formatted television programming.

Canadian producers have made great strides in the last decade, establishing our domestic production industry as a major exporter of programming. Maintaining that enviable and hard won position in the years ahead will certainly require our industry to keep up with the world market—to the ultimate benefit of Canadian viewers.

# Recommendation FIVE

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*When an over-the-air broadcaster or other programming service provider makes available a digital television signal within the new standard, the superior quality and the format of that signal should be passed through to the consumer by all Broadcast Distribution Undertakings.*

Canadian television audiences deserve the most attractive services our developing technologies can sustain. We are all well aware that our current television standard (analogue NTSC<sup>6</sup>) was created for black and white transmissions. It was later modified to accommodate colour broadcasts without making millions of black and white sets useless—but at the expense of the much higher quality that a stand alone colour system could have offered. The new ATSC digital standard is the product of a further fifty years of technological evolution and, unlike NTSC, it has the capacity to evolve as newer techniques become available.

This advanced digital standard, together with the inherently superior picture and sound quality achievable with digital technology, means the television services of the very near future will be startlingly better than today's analogue services.

The digital television receiver, operating on the A/53 standard, will be capable of offering a range of different picture formats—all the way from the digital equivalent of today's 525-line, 4:3 analogue to true HDTV with its crystalline resolution, wide screen and multi-channel, CD-quality sound. And we know Canadian consumers will expect to receive the highest possible quality of television available.

This knowledge of the Canadian consumer is based on the recent experience of other new technology introductions (e.g., the takeup rates of CD audio, computer hardware, Internet service, etc.). Canadians are early adopters of entertainment technology. They spend a high percentage of their disposable income on technology and services. This fact was a key element in determining our approach to implementing digital television.

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<sup>6</sup> NTSC - The National Television Standards Committee - forerunner of the ATSC that set the technical standard for the black and white television system used in North America and elsewhere and the subsequent modifications when colour television was introduced.

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A second key element is the willingness of our industry to work together to realize the digital goal. This is a *sine qua non* of its attainment. We cannot stress that point strongly enough. Some distribution undertakings, notably cable television systems, will initially have some capacity limitations that will temporarily affect their ability to accommodate new digital services alongside the existing analogue channels. As we noted earlier, there will also be considerable capital expenditures to be faced. But the recommendations contained in this report make a constructive contribution to building the confidence to invest in solutions.

Aside from whatever policy catalysts may be developed, we anticipate that pressure from the consumer marketplace will be a convincingly powerful incentive for change in all sectors of the broadcasting industry, from production through to equipment manufacturing and distribution.

# Recommendation SIX

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*Digital consumer interface technology must comply with universal standards which are capable of conveying all of the digital television formats provided for in the delivery mechanisms of the Canadian broadcasting system, including the terrestrial broadcasting A/53 standard.*

The most common piece of high tech jargon in everyday use is “user friendly” and with good cause. Today’s electronic devices can be made to do so many tricks that their intended users can easily be defeated by them—viz. the flashing clock on the VCR. Sensibly, the hallmark of a well designed device has become the ease with which it can be made to perform its wizardry.

Our basic television sets have long met that criterion. Because we’ve been thoughtful in developing our broadcasting system, we’ve been able to build in a fair degree of commonality; at least to the degree that our current television sets, with a simple antenna or a built in or external cable converter, can be plugged in anywhere in Canada and receive pictures over the air or by cable.

But, when we grew beyond the basic 12 over the air channels, we entered the era of the “set top box”. We now use these devices for a variety of purposes—for gaining access to additional channels, for unscrambling pay tv signals, for receiving satellite and wireless cable services and for operating the “V-Chip” program screening system. Some of these boxes are owned by the consumer—some are rented from the service provider. Some can be used anywhere—others are unique to one place or one distribution medium.

As we move into the digital era, we have an opportunity to eliminate most, perhaps all, of that clutter, to combine the various functions of the present boxes under one technological roof. We also have a chance to give consumers a durable, affordable piece of technology that will work anywhere, anytime for any medium. In short, we can greatly improve the user friendliness of the system.

The purpose of this recommendation is to set up a process that will define a set of technical parameters with which new digital decoding devices must comply. These compliances should be normative, rather than prescriptive, and should allow any manu-

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facturer to produce products that would meet the “anywhere, anytime” criteria. The third requirement, affordability tied to long service life, would be achieved to the greatest possible degree by relying more on software than hardware in the design of the interface. In this way, system updates could simply be downloaded to the consumer, in the same way that we replace aging computer programs with newer versions.

We recommend this approach because the Canadian market is simply not large enough to support competing, proprietary interfaces. To take best advantage of economies of scale, the potential applications for a consumer interface should be maximized — a process that would be frustrated by proprietary competition. We are aware that arguments to eliminate competition are unconventional in a market economy. However, we are convinced that the benefits of contributing to the solution of capacity problems, accelerating the digital rollout and helping to level a patently uneven playing field significantly outweigh the possible advantages of competition in this case.

Broadcasters, program service providers and distributors should resolve to work closely together to harmonize those aspects of their respective services that can be made common as new technical solutions become available. We have in mind such things as scrambling systems, the format elements of program guides and so on. We should be striving for an approach analogous to that taken by the computer industry, from major things like common operating platforms to relatively minor, but helpful, touches such as always finding the “file” menu in the upper left corner of the computer screen.

Certainly, a common consumer interface can be made to resolve any number of discrepancies but, simply put, the more we ask it to do, the more complex and costly it will become. It will, therefore, be important to specify the common interface and required core elements for the family of complementary products. Consumer needs must be paramount in Canada’s transition to digital television. The more harmonization we can agree upon prior to the point at which the signals meet the interface, the greater will be our economies of design and manufacturing expense. Keeping the ultimate cost to the consumer affordable will assure a smooth transition for both the consumer and the service provider.

The proposed transition span is long enough and the new medium attractive enough to encourage people to buy new digital television sets—and we are confident the takeup rate will be brisk. However, we also recognize that consumers will not wish to abandon all of their analogue receivers immediately. Therefore, consideration will have to be given to including in the digital decoding technology a dimension that would

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permit the display of digital signals on analogue receivers. It is, after all, important to this transition strategy that it approach consumers with an invitation, not an ultimatum.

The various aspects of this recommendation would best be realized through a process in which representatives of various industry sectors and government work together to specify the parameters of the silicon chip that would be the brains of the device—and then seek competitive bids to produce the interfaces. And, as the following recommendation indicates, we believe there is a role for government in this development process.

# Recommendation SEVEN

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*The Government of Canada should foster the industry's development of a universal interface technology.*

In the previous recommendation, we argued for an approach that would maximize the user friendliness of digital television and, at the same time, serve the broadcasting system by profiting from economies of scale and eliminating unproductive competition. The end user, the Canadian consumer, will benefit directly from all of these.

The consumer will also benefit—albeit less directly—if the Canadian broadcasting industry can play a meaningful role in developing new digital technologies, particularly if made-in-Canada solutions can be exported to the global market. Developing techniques to ensure compatibility in the digital tv world is an opportunity we should not pass by.

A recent paper circulated to the members of the European Broadcasting Union makes the point:

“ . . . any delivery medium can be used to carry audio-visual information in digital form. However, if the current paradigm of incompatible systems were to transfer to the digital domain . . . the user would end up with a multiplicity of sources of information. Systems incompatibility—in addition to being irrational because of the underlying common nature of digital audio and video—would run counter to the interests of different players, in particular the end users.”<sup>7</sup>

We believe it is appropriate for government to become involved in assuring optimum advantage for consumers and we have no doubt that the interest of the consumer will best be served by developing a universal interface. We would also wish to make the case for creating new or extending existing public support programs to that end. Specifically, it would be appropriate for the process to be assisted by two existing government programs—the Industrial Research Assistance Program and the Technology Partnerships Canada program.

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<sup>7</sup> L. Chiariglione: *Digital Audio-Video Council - Rationale and Goals*; EBU Technical Review, Winter 1995

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The present lack of a universal interface presents an opportunity for Canadian expertise and leadership to ensure that Canadian broadcasting signals reach their intended audiences without distortion or compromise in quality. It has the additional advantage of being a “made-in-Canada” solution, meeting Canadian market needs and offering potential for export.



# Recommendation EIGHT

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*By the end of 2007, two thirds of each broadcaster's schedule and two thirds of new Canadian content productions should be available in the HDTV format.*

The ongoing competition between Canadian and US services for viewers in Canada will be heightened as US digital broadcast services are launched. Currently, as much as 80% of the drama programming shown on US prime time television is shot on 35mm film, providing US broadcasters with a large and ready source of wide screen, high definition programming with which to launch their services.

Therefore, Canada must strive to move to the highest possible quality of digital television service (HDTV) in a timely manner. In making this recommendation, however, we have taken into consideration the fact that different digital standards can be appropriate for different kinds of programming. For example, films and sporting events will be greatly enhanced by full strength HDTV—whereas local news programs could maintain their appeal and relevance produced in a lesser digital format. So we must be cautious not to restrict programmers' flexibility but, rather, to balance that flexibility with the need to offer audiences the best possible product.

In summary, then, the objective of this recommendation is to set a target that will serve a number of related purposes:

- to seek economies in new equipment investments;
- to fully exploit the spectrum made available for digital telecasting;
- to ensure long shelf-life for Canadian DTV productions
- to provide the highest-quality programming to Canadian viewers;
- to be competitive with anything the world can produce; and
- to provide early export opportunities for Canadian productions.

And, of course, this target, like all the timing proposals in this report, will be subject to consensual review and adjustment by DTV Inc.

# Recommendation NINE

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**a)** *The current sources of funding for the Canada Television and Cable Production Fund (CTCPF) should be made permanent to maintain a minimum level of \$200 million annually<sup>8</sup>.*

The CTCPF is a key resource in the creation and exhibition of high-quality Canadian programming. Both producers and broadcasters responded positively in September, 1996, to increase the quantity and quality of Canadian programs when the CTCPF was introduced at the \$200 million/year level. Canadians now have a minimum critical mass of quality Canadian programs which ensures our images and voices are present in an increasing world of choice.

Maintaining the minimum funding level is an absolute necessity if this industry is to consolidate the growth and progress it has made over the past decade in the creation of high quality Canadian programming. However, the “small market” argument that makes public investment a necessity in Canada remains valid—and the continued investment of the CTCPF and other, related mechanisms remains critical to maintaining the production foundation upon which to build the new, digital capacity.

**b)** *The federal government should provide an additional \$50 million annually (beginning in 1998 and ending in 2007) to assist in the development of wide-screen, advanced digital programming.*

At the present time, the amount of programming available for digital transmission is minimal. The most susceptible programming is material shot on 35mm film that can be converted to digital formats—but even the CBC’s extensive archives contain no more than 10% of such inventory.

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<sup>8</sup> Composed of \$100 million from the Government of Canada, \$50 million from Telefilm Canada and \$50 million from Broadcast Distribution Undertakings.

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We believe a measure of additional, government support is needed to spur the production of original, digital material and to ensure that Canadian digital product is as competitive as its present analogue counterpart. It costs as much as 20% more to make these programs, principally because the higher resolution, wide screen pictures demand more realism in sets and costumes and because multi-channel sound production is more involved than simple monophonic or stereo sound work.

Failure to move with speed and precision in this critical area will jeopardize the whole transition process, with concomitant negative effects on the broadcasting system and our domestic and international cultural and economic objectives.

# 11 • IMPLEMENTING THE STRATEGY

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*To this point, our recommendations have been aimed at creating the strategic framework needed to support an orderly and timely transition from analogue to digital television in Canada. The rest detail the principal steps and elements in implementing that strategy.*

# Recommendation TEN

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*Canada should create a digital television channel allotment plan that:*

- *is compatible with existing NTSC analogue services;*
- *provides a new digital television channel for each existing regular and low power NTSC analogue transmitter;*
- *achieves service area duplication with the existing coverage areas of NTSC analogue to the greatest extent possible (in cases where there is insufficient spectrum to implement both a digital television and a NTSC analogue signal, the NTSC analogue open allotments should be deleted);*
- *is coordinated with US digital television requirements in border areas*
- *is compatible with the tuning capabilities of North American digital television receivers.*

The early creation of a detailed allotment plan will permit over-the-air broadcasters to begin the detailed planning and to put in place digital television transmission facilities. It is a vital implementation planning document which provides the certainty needed to arrange financing, to make detailed engineering plans and to construct and operate digital television transmitters.

# Recommendation ELEVEN

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*Licensing of NTSC analogue services should continue, at the discretion of the Canadian Radio-television and Telecommunications Commission (CRTC), during the period of transition to Digital Television.*

We see no reason not to licence new television services during the transition period. With the timetable for the shutdown of analogue services already identified, individual applicants should be able to decide whether it is economically worthwhile to establish a new NTSC service for a relatively short life span and, depending on circumstances, to do so alongside a requirement to inaugurate a new digital service.

# Recommendation TWELVE

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*During the transition period, each digital television licensee should be allowed to determine whether to broadcast in High Definition television mode or in a lesser digital television format which employs, at a minimum, the 16:9 aspect ratio. When a licensee's decision frees transmission capability for other uses, the following conditions should apply:*

- When the use of auxiliary capacity is for broadcasting purposes, the necessary authorization should be obtained from the CRTC under the terms of the Broadcasting Act.*
- Where the use is for telecommunications purposes not related to the programming content of the licensed undertaking, provisions of the Telecommunications Act and the Radiocommunications Act would apply.*

Spectrum allocated to licensed television broadcasters should continue to be used predominantly for the origination of broadcast programming to the public as foreseen in the *Broadcasting Act*. The idea behind allocating additional spectrum is to encourage appropriate digital format experimentation and to provide sufficient bandwidth to accommodate HDTV—not to encourage competition in the unrelated data services field.

When the television broadcaster is providing auxiliary data, the Task Force believes the appropriate model is the one already accepted by the Government of Canada for the introduction of Digital Radio<sup>9</sup>.

Briefly stated, revenue from the provision of auxiliary data which are enhancements and extensions of the broadcast program should be reported (net of the cost of sales) as part of the broadcasting licence fee calculation. On the other hand, revenues derived from auxiliary data services not related to programming should be treated in the same manner as other similar services (e.g., if the television broadcaster provides a paging service, it should pay licence or usage fees on the same basis as other paging services—the principle being to play and pay by the same rules).

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<sup>9</sup> *Canada Gazette—September 27, 1997*

# Recommendation THIRTEEN

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*The primary program content provided by a licensed digital television station should be identical to the broadcast NTSC analogue program content, except for up to 14 hours a week during the transition period, to permit experimentation in advanced digital television formats.*

Again, the strategy is to transform our television services from analogue to digital as smoothly and productively as possible. Therefore, the licensed digital and analogue services should be identical. However, digital television presents new programming opportunities and may require experimentation in how best to produce and exploit the full potential of high definition digital television. Therefore, during the transition period, up to 14 hours a week may be different programming produced in advanced digital television formats.



# Recommendation FOURTEEN

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*Basic broadcast television services that are freely and universally available over the air are central to achieving the objectives of the Canadian broadcasting system. This must continue in future digital terrestrial distribution packages.*

Freely available broadcast television services are the foundation of the Canadian broadcasting system. This universality of access must be preserved in the emerging digital system.

# Recommendation FIFTEEN

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*The principles of priority carriage, program substitution and service access, as currently applied to distribution undertakings, are acknowledged. These regulations should be extended in the digital environment, unless the CRTC determines that it is technically or economically impracticable to do so.*

The regulations that require BDUs to give pride of place to Canadian television channels, to govern access by new services and to protect program rights purchased for the Canadian market make a very valuable contribution to the cultural prominence and financial health of the Canadian broadcasting system. These benefits will remain critical as we introduce new digital Services. Similarly, such existing, value-added services as closed captioning and V-Chip programming must be preserved and, if feasible, enhanced in the digital environment. We have, however, recognized that there may be technical and practical issues to be dealt with during the transition period and have reflected this in describing the functions of DTV Inc.

# Recommendation SIXTEEN

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*Regulations requiring TV stations to own their own over-the-air transmission facilities should be rescinded to encourage investment in technical facilities and to allow for alternative arrangements for the provision of over-the-air digital television service.*

There is no longer any reason to require broadcasters to own their transmission facilities, provided that the programming content is controlled by the broadcaster and safeguards are in place for the assured delivery of the programming unaltered. In fact, pay and specialty services now do not own their distribution infrastructure (satellites, cable, etc.). Cable television too can lease most, if not all of its delivery infrastructure. Over-the-air broadcasters should be accorded the same opportunity should they decide it is their economic and operational interest to lease rather than own.

# Recommendation SEVENTEEN

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*The Government of Canada should support programs to assist the independent production community, broadcasters and other service providers to meet training needs as they face the new challenges of advanced digital production.*

The need for industrial education was made quite clear by the results of a survey commissioned by the Task Force. That work revealed that general awareness of the implications of digitization was low in the television production community and that, for example, only 3 percent of producers were likely to undertake digital production in the coming year. Clearly, however, the production industry needs to be at the forefront in order to have product which will be in demand and highly desired in the coming digital television universe. The results of that survey are summarized in Appendix III.

The Cultural Human Resources Council (CHRC) exists to develop strategic approaches to deal with workforce adjustment issues in the cultural sector. The CHRC's strategy has already identified digital television as a development that will affect the workforce. CHRC works with the industry parties to develop a project proposal for submission to Human Resources Development Canada. That would include requesting funding support on a shared basis to develop whatever training programs might be required. DTV Inc. should work with CHRC to this end.

# In Closing....

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We have strived for brevity in this report because we want it to be read and understood. The technological phenomenon that prompts it is too critical to our television audiences and to the industry that serves them to risk otherwise—even under the common rubric of impressing with volume. But succinctness should not be taken to indicate a lack of thoroughness. The members of the Task Force, its formal working groups and a very extensive network of technologists, marketers, program makers, social scientists and others have been rigorously examining—indeed, actively contributing to—the development and the potential of digital communications technologies, in Canada and internationally, for the past several years. The recommendations contained in this report are the direct result of that involvement.

As we said at the beginning of this document, we have constructed our proposals with an eye on our collective experience in the introduction of new technologies in Canada. As we did so, we were particularly mindful that new inventions have a way of changing our world and that purely linear projections of existing realities can be fatally unreliable. Who can forget the expert opinion that colour television would never become economically viable and should not be introduced in Canada?

Thus, we would call upon the policy makers, the creative artists, the engineers, the business people and the viewing public — all the constituent parts of the Canadian broadcasting system to consider these proposals carefully and to approach them in the same spirit of initiative and imagination we hope we have shown in our formative task. None of this can happen unaided. But we are firmly convinced that a concerted effort by everyone involved can, and will, have the salutary result of making Canadian television broadcasting in the new millennium even more vigorous and relevant than it is today.

# List of Appendices

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Appendix I

Task Force Mandate/Terms of Reference

Appendix II

Members of the Task Force and Working Groups

Appendix III

Results of the Survey of the Production Industry

The Task Force on the Implementation of Digital Television will provide advice to the Minister of Canadian Heritage on the policy framework required for the transition to digital television, and coordinate the implementation of digital television in Canada.

## Scope

The mandate includes, but is not limited to, the assessment and advice on matters related to programming, production, distribution, policies, regulations, technical considerations, strategic timing matters, transition mechanisms and impact on and adjustment required by the television industry as well as related industries.

Digital television should:

- (i) be introduced in a non-disruptive, evolutionary manner;
- (ii) provide a level of technical quality and signal reliability that is strikingly superior to current NTSC analogue television system;
- (iii) achieve the maximum possible spectrum efficiency consistent with the stated technical and reliability objectives;
- (iv) serve as an eventual direct replacement for existing NTSC television broadcasting services;
- (v) be implemented in the current VHF and UHF to achieve an optimal system.

## Objectives

The Task Force should:

- (i) recommend a policy and regulatory framework for both the transition period and the period after, including implications for both programming undertakings, distribution undertakings, and related industries and institutions;
- (ii) advise on the technical architecture of a new system, including transmission and receiver standards, allotment planning and spectrum utilization; and propose solutions to the issues identified;
- (iii) identify the economic implications of the transition to digital television for all television broadcasters, provide assessments of the capital requirements, determine the optimum timing for the commencement and completion of the transition, and make recommendations as required;
- (iv) advise on the promotion and demonstration of digital television in Canada;
- (v) advise on issues unique to certain licensees and related industries; and
- (vi) be a resource for all broadcasters and the general public.

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### Vice-Chair of the Task Force

**Charles Bélanger** Former President and COO, Broadcasting Group, CFCF Inc. (until Spring, 1997)

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## Observers

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### Secretariat to the Task Force

**Ted Ledingham**  
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**Sharon Dunn**

The following is excerpted from the June 4, 1997 report to the Task Force's Production Working Group. It summarizes the results of a survey undertaken to assess the awareness of the independent production community of the new digital technologies and their likely effect on the creative processes in the production field. The survey focused on the members of the Canadian Film and Television Production Association (CFTPA), l'Association des Producteurs de Films et de Télévision du Québec (APFTQ) and the Canadian Independent Film Caucus (CIFC). Twenty three per cent of potential respondents completed the questionnaire.

The study revealed that members of the production community in Canada are extremely uninformed about the advent of ATV/DTV (Advanced Television/Digital Television) and its implications for production in this country. The research noted that respondents consider the implementation of a Digital Broadcast system to be several years away. Six percent of respondents indicated their organization has not made any financial investment in ATV production. Many key questions were answered with "don't know" responses.

The survey indicated that there is a need for greater awareness in DTV within the production sector in Canada, as represented by members of the CFTPA, APFTQ and CIFC. Only a small minority of respondents indicated that their organization had made any financial investment in ATV production to date; only a third indicated that their company intended to invest in ATV production within the next 3 years, while an additional 2 in 10 "don't know". In fact, half of the respondents say their organization has no plans for investing in ATV production within the next 3 years.

In terms of training and support, the production community considers training to be vital to their involvement in ATV production. Four in ten say training is "very much required" for creative and technical staff. However, the respondents generally feel their companies will not be willing to allocate much in the way of resources to staff training within the next 3 years.

Respondents indicated strongly that the Digital TV Task Force, Production Working Group, can meet the needs of the production community by providing education, training and information about ATV/DTV. They also indicated that mailed or faxed newsletters, in-person forums and a web site would be useful tools for meeting their training needs.

A strong majority feel that the government should be involved in providing funding for both production and training in order to facilitate the production community's successful evolution to ATV program development.

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In the face of these survey results, the Production Working Group presented the Task Force with a number of suggestions designed to raise awareness of the new digital technologies and, as well, to train producers in their application. Because those proposals specifically address the issues raised by the survey, they, too, are excerpted here.

With respect to improving *awareness*...

Domestic awareness mechanisms within the awareness program would be targeted to Canada's production community and may include the following:

- print media
- in-person forums
- road shows at festivals and institutions
- industry events (meetings of the CCTA, CAB or CFPTA, for example)
- awards of excellence in Digital programming
- seminars
- World Wide Web site
- toll-free phone assistance
- a governing body comprised of information officers, resources and a network for disseminating information

Awareness mechanisms must also take into account the importance of international competitiveness. Television production is an extremely important export industry for Canada which is demonstrating growth year over year. It is a given that the international production community is moving towards the implementation of digital technology. There must be mechanisms in place which advertise Canada's status as a leader in terms of the supply of content. Canada's production community must develop programming which is "digital friendly" and which is marketed as such. Awareness outside of Canada may be created through the...development of a standard marketing logo, in the vein of such marketing phrases as "This product is ready for Windows 95" or - "100% Recycled materials". The logo might read "Digital Friendly" or - "This production is DTV Ready" superimposed on a Canadian flag.

Incentives should be established for digital-friendly production which encourage international investment by focusing on extended shelf-life and long-term distribution possibilities.

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With respect to *training*...

There are some limited training initiatives already in place under the auspices of institutional and corporate organizations in North America. For example, the CBC Broadcast Centre in Toronto provides in-house training to CBC production staff in new digital technologies as they relate to both radio and television; The Rogers Communication Centre has invested in a Digital Radio Program for students in the program at Ryerson Polytechnic University. In this case, there has been interest expressed by the Centre to develop corresponding training programs in Digital Television. Sony has developed a high-definition lab in Los Angeles which provides apprenticeship programs for students. Various other concepts need to be explored, including the following:

- seminars or more extensive institutional or industry association-managed programs in both the areas of creative and technical process and technique in ATV production;
- guest lecture opportunities which would expose the Canadian production community to experts in the above areas as well as in market-oriented areas;
- materials which could be produced constituting a form of curriculum and which may be generated in print or interactive data formats;
- community college programs which may incorporate DTV training into their existing programs or develop new programs in partnership with other partners in the industry, such as the Rogers Communications Centre and its focus in the Digital Radio industry;
- training to take the form of apprenticeship programs in cooperation with broadcasters, manufacturers and producers, the latter of whom may be given incentives to accommodate such a program;
- the possibility of providing training scholarships for special graduates of Canadian college Radio and Television Arts program to attend training programs at Sony's labs in Los Angeles or other specialized digital television training programs in Canada or the U.S.;
- the underwriting by manufacturers as sponsors for training costs.

Funding options for these and similar initiatives are addressed in the main body of the Report of the Task Force.