Report on Interactive Television Services

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1. Introduction

In Fact finding inquiry on interactivity Public Notice CRTC 2001-113, 2 November 2002 (Public Notice 2001-113), the Commission undertook a fact-finding inquiry into the development of interactive television (ITV) services in Canada. This inquiry stemmed, in part, from a request by
Pelmorex Communications Inc. (Pelmorex), on the occasion of its last licence renewal, to amend its licence by adding ITV components to the definition of its nature of service. Pelmorex intended to provide weather-related information on-demand, to enhance the service and permit it to be more competitive with new media sources of weather information.

In *The Weather Network / Météomédia* Decision CRTC 2001-668, the Commission renewed the licence issued to Pelmorex for The Weather Network/Météomédia. In this decision, the Commission recognized the value of interactivity in enhancing The Weather Network/Météomédia’s service, but nevertheless denied the proposed amendment. The Commission indicated that it was premature to allow such an amendment given the embryonic state of the technology and the numerous uncertainties pertaining to digital distribution and the implementation of interactivity.

Noting that distributors and programmers were beginning to offer interactive features, the Commission issued, Public Notice 2001-113, which launched a fact-finding inquiry into the development of interactive television services. The Commission considered that the time was appropriate to initiate a process to gather facts on broadcasters', producers' and distributors' current and planned interactivity. This information would facilitate industry collaboration and assist the industry and the Commission to address issues as they arise.

**Defining interactivity**

In Public Notice 2001-113, the Commission noted that it is difficult to define interactivity because the term can be used to describe aspects of many rapidly evolving products and services. Therefore, rather than attempting to define interactivity precisely, the Commission proposed that the following characteristics could apply to interactive services:

a) involves some form of two-way communication between viewer and content provider (or distributor), and which allows the viewer to provide some form of response including interaction with the set-top box.

b) provides information or viewing options (including alternative video or audio signals) in relation to the offer of programming services.

**Information requested**

Interested parties were asked to submit information on the following to the Commission:

a) any other characteristics in addition to those set out that apply to existing or planned interactive services;

b) the types of activities currently underway that they consider to be interactive, and the licensed services that they are related to or may have an impact on;

c) a detailed description of these interactive services, their content and how they work;

d) a description of the equipment needed by the viewer, producer, broadcaster or distributor, and data concerning the availability and affordability of this equipment;
e) a description of the business models and current and potential demand for interactive services;

f) descriptions of partnerships with producers, broadcasters and distributors relating to the provision of interactive services;

g) which of these interactive activities they consider to be broadcasting, and why;

h) which of these interactive activities they consider to fall under the new media exemption order (Public Notice CRTC 1999-197, and why;

i) planned developments related to interactivity in the coming year (or to be launched soon);

j) planned developments in the long term;

k) other information that parties consider would be of interest to this fact-finding inquiry.

**Comments received**

The Commission received a total of 18 submissions from parties that included industry associations, broadcasting distribution undertakings, programming services, interactive content producers, Internet service providers and members of the visually-impaired community.

The Commission notes that while some parties provided only facts related to their ITV activities and responses to the questions posed by the Commission, other parties included their views concerning some of the considerations affecting the development of ITV services, including matters that these parties felt should be addressed through a regulatory framework. In the Commission’s view, such views fall outside the scope of the information requested in Public Notice 2001-113. A summary of these considerations has been included, for information purposes, in Section 6 of this document.

**2. What are interactive services?**

**2.1 Characteristics and categories of ITV services**

ITV services are difficult to describe in a generic way since they provide an extremely wide range of functions, may be developed by various parties and may be delivered or accessed in several different ways. As is implied by their name, the only unifying characteristic that defines these services is their ‘interactivity’.

As noted above, in Public Notice 2001-113, the Commission acknowledged the difficulty of defining these services and suggested two possible characteristics that may be attributed to ITV services. For ease of reference, these characteristics of interactivity are once again set out as follows:

a) A process that involves some form of two-way communication between viewer
and content provider (or distributor), and which allows the viewer to provide some form of response including interaction with the set-top box.

b) A process that provides information or viewing options (including alternative video or audio signals) in relation to the offer of programming services.

Most parties that responded to Public Notice 2001-113 generally agreed that the characteristics proposed by the Commission accurately describe interactivity. The Canadian Film and Television Production Association (CFTPA), Sailor Jones Media and BeyondZ Interactive Media (SJ/BZ), the Association québécoise de l’industrie du disque, du spectacle et de la vidéo (ADISQ), and the Canadian Broadcasting Corporation (CBC), indicated that they constitute a reasonable definition of interactivity. The CBC, however, also suggested the inclusion of the description of ITV developed by the U.S. Federal Communications Commission (FCC), namely that an interactive service "supports subscriber-initiated choices or actions that are related to one or more video programming streams".

Other parties applied the characteristics to the types of ITV services currently in use. In the estimation of the Bell Canada Enterprises (BCE) companies, for instance, characteristic (a) covers the basic operations of the digital set-top box (STB), Electronic or Interactive Programming Guides (IPGs), pay-per-view (PPV) purchasing and controlling an attached game device. It suggested that many of these activities do not warrant the Commission attention at this point.

BCE also considered that characteristic (b) captures interactive features related to programming services, but might also include STB features like selecting a language. It further suggested that the phrase "the offer of" is confusing and should be deleted.

The Canadian Association of Broadcasters (CAB) observed that interactivity is distinguishable from other broadcasting, from a viewer’s perspective, due to the availability of a ‘return path’. It suggested that viewer ‘requests’ that use a different (i.e. non-broadcasting) media for a return path (e.g. a telephone call or email) should not be considered "interactivity" within the scope of this proceeding.

Rogers Cable Inc. (Rogers) supplied an alternative definition of interactive television services, developed by the Yankee Group, that it considered would be applicable in this proceeding:

In its most basic form, [ITV] refers to the ability to interact with the TV set, and, consequently, the ability to access a range of services. Applications that use the cable system to provide services to the TV set are considered interactive TV services. Those services that enhance content by allowing viewers access to additional content – data or video – are classified as enhanced TV services.

The CFTPA suggested that it is also necessary to define the term New Media within the context of this proceeding and proposed that it be defined as media that combine one or more traditional media in a digital form.

With respect to New Media, AOL Canada Inc. (AOL) suggested that the characteristics proposed by the Commission be amended to indicate that determinations in this proceeding do not impact the scope of the New Media Report. AOL, therefore, proposed that characteristic (a) read:
a) A process that involves some form of two-way communications between a viewer and a licensed programming undertaking and or licensed broadcasting distribution undertaking and which allows the viewer to provide some form of response including interaction with the set-top box.

### Interactive service categories

Several interveners suggested that, although ITV encompasses a wide spectrum of services and functions, these services and functions may be placed into broad categories.

As a starting point, the CBC described four ‘streams’ of applications that, in its view, currently constitute ITV:

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enhanced broadcasting</td>
<td>Applications that are added onto or included in the broadcasting signal to provide additional features. The enhanced features are normally developed by the broadcaster or a third party interactive content provider but must be compatible with the facilities and customer equipment in use by a Broadcasting Distribution Undertaking (BDU). The programming that has enhanced broadcasting features usually includes an icon in the corner of the television screen. This icon can be selected with the television remote control in order to activate the interactive features.</td>
</tr>
<tr>
<td>Content control</td>
<td>Applications and services that assist in the viewing of programming, e.g. Video-on-Demand (VOD), Personal Video Recorders (PVRs) and IPGs.</td>
</tr>
<tr>
<td>TV-based web access</td>
<td>Access to Internet functions through the television such as web browsing, email, chat rooms, etc. The STB does not, however, have the processing power or functionality of a computer, which leads to technical limitations and consumer misunderstanding. The consumer adoption of this service has been much lower than expected.</td>
</tr>
<tr>
<td>TV portals</td>
<td>Virtual channels, sometimes referred to as &quot;walled gardens&quot; are portals provided almost exclusively by the BDU and provide access to a sort of website that contains proprietary content related to television programming. These portals are not accessible by non-customers through the Internet and do not provide viewers access to the Internet.</td>
</tr>
</tbody>
</table>

Pelmorex established similar categories but narrowed most of the services described in the CBC categories of "content control" and "TV portals" into a single category it called "access restricted" services that includes portals and virtual channels. It described access restricted services as those that are independent of a specific programming service. These services are also called virtual channels as they are often designed to appear to be television channels. Currently, these services or channels contain text or still images but in the future, Pelmorex argued, video streaming will make them more similar to programming services. Pelmorex suggested that IPGs belong to this type of service.
BCE agreed that a useful distinction can be made between enhanced programming services, virtual channels (walled gardens or portals) and TV-based Internet access. As another alternative, it also proposed distinguishing between program-related interactive services (e.g. enhancements to programming and advertising, Television-commerce (T-commerce), addressable advertising and personalized video) and stand-alone features (e.g. IPGs, customer account information).

The Canadian Cable Television Association (CCTA) suggested several possible ways of categorizing interactive services. They could, for instance, be separated into those services that enhance viewing experience (IPGs, PVRs and VoD); those that enhance programming (provide more information); and those that are devoted to retail purposes (T-Commerce, interactive advertising). Alternatively, ITV could be divided into those functions that personalize (enhanced viewing experience) and those that converge (enhanced programming and retail).

Taking into consideration the various types of categories proposed, there appears to be a general consensus amongst parties that interactive services can, at least, be placed in three broad categories, which the Commission identifies as follows:

1. Enhanced programming services
2. Non-traditional stand-alone services; and
3. Internet-over-TV services.

These categories focus on the services provided through interactivity rather than the underlying technology used to develop and deliver them. In this sense, technologically neutral. They also have the important benefit of some association with existing regulatory categories.

In the following sections, the Commission will examine these three categories of service in more detail.

**Enhanced Programming Services**

As noted by the CAB, interactive programming enhancements could include:

- Text, graphics and still images intended to provide additional program-related information;
- Web content activated by triggers;
- Additional audio/video;
- Customized viewing such as varying camera angles or program endings; and
- Addressable programming.

The CAB argued that these types of enhancements are not only related to programming, but should be considered integral to the program.

Decode Entertainment Inc. (Decode) added the distinction that this type of programming must be accessed through a television program and work in real-time to correspond with the programming. This refinement would exclude items such as web-sites or CD-ROMs.

Pelmorex further extended this premise to argue that in order to be considered enhanced interactive television programming, user interaction must take place with a programming service via the STB while watching that programming service.
As a final characteristic, the CAB observed that, unlike many other interactive services, enhanced programming services do not necessarily require a return path. Some can be offered by "providing incremental content in an ancillary data stream, which is then stored on the STB for retrieval by the viewer if desired". In this case, although the interaction takes place between the viewer and the STB, it is the content provider that has provided the interactive service.

Taking into consideration the various characteristics described above, enhanced programming services can be defined as a category as services that:

- Relate to traditional programming;
- Are accessed through a television program;
- Work in real-time to correspond with programming (i.e. the interactive feature is used and is available only while the program it is associated with is being broadcast);
- Provide interactive functions via an STB; and
- May require a return path.

Broadcasters generally argued that services of this type should be passed on by the BDU to the end-user without alteration or deletion of the interactive elements.

BDUs proposed that there should be restrictions on the type and extent of interactive elements that are passed through due to the amount of bandwidth these services may use and the limitations of the BDU’s network and customer equipment.

**Non-traditional stand-alone services**

The non-traditional stand-alone service category includes services that have not previously been accessible through a television set and are offered independently of programming services offered by programming undertakings. Services of this type include TV portals and virtual channels. Portals are often similar to collections of Internet content although TV portals may only be accessed through a particular ITV service provider rather than through a generic Internet connection.

A virtual channel is a service that is distributed, accessed and/or displayed in a manner similar to program services delivered on other television channels. It differs from a programming service primarily in the format of the content it provides. Many of these services currently offer text information, still images or graphics, and limited video and audio but may potentially develop to a point at which they provide video and audio that are indistinguishable from programming services. A future issue of concern with these services may be at what point a virtual channel should be viewed as a programming service.

The IPG is also a type of virtual channel and would also fit into the non-traditional stand-alone services category. The role of the IPG as the user’s guide to scheduled television programming makes it an important service. Although VoD has been licensed as a programming service, it could also generally be considered a type of virtual channel since it can be accessed in a way similar to a programming service (i.e. by selecting and viewing the "channel" on which the requested video is being displayed).

Another important type of non-traditional stand-alone service is interactive games. There are three types of interactive games that fall into this category:
1. Simple games resident in the STB;
2. Games provided through virtual channels; and
3. Multi-player games using the STB to connect with other users.

The broadcasters that filed evidence in this proceeding viewed several types of interactive non-traditional stand-alone services as being direct competitors with programming services. Pelmorex argued, for instance, that an interactive weather service provided by a BDU would be in direct competition with The Weather Network programming service.

The IPG is a second area of concern for broadcasters within this category of service. They argued that the interactive enhancements to advertising or program listings that are part of the IPG, could be used to give an undue preference to certain programming or non-traditional stand-alone services.

The BDUs viewed these services as an area that would allow them to develop and distribute new and interactive services.

**Internet over TV**

The Internet-over-TV is provided through a television and STB rather than through a personal computer (PC) system. The television set and STB, however are, in some respects, limited in their ability to mimic a PC. For example, since STBs typically have less memory and processing power than computers, many functions must either take place server-side (i.e. on the BDU’s own computer servers) or be streamlined to meet the requirements of the STB. Similarly, a television set is different from a computer monitor in several ways, including screen size, resolution and the way the picture is created on the screen. These differences, although they may eventually be overcome, create several difficulties in displaying and navigating Internet content on TV.

The primary concern with this category of ITV services is to differentiate Internet content from Internet-like content. All interveners that provided input on this area considered that ITV portals or walled gardens differ from the Internet in general. While portal content appears to be, in many respects, identical in appearance to a website, the portal content is only accessible through a particular service provider and not through the Internet at large. The quality that differentiates the two is not, therefore, the content itself, but the means by which the content is accessed.

Services provided in the Internet-over-TV category generally include services that could also be provided by any Internet Service Provider (ISP) and are not specific or proprietary to a particular service provider or to ITV service providers in general. In effect, the television is used as a computer screen for viewing Internet services.

**The Commission’s findings**

The Commission finds that ITV services can be divided into three general categories: enhanced programming, non-traditional stand-alone and Internet-over-TV services. These categories may be useful in establishing a framework in which to position future policy considerations.

**2.2 How do ITV services work?**

This section provides background information based on the information provided by interveners
An interactive service, in its simplest form, provides the user with an opportunity to make choices with respect to the content he/she receives, over and above basic functions, such as choosing a channel. Choices are made by "interacting" with the service provider that supplies the ITV content (the ITV content provider), which may be a broadcaster, BDU, or other third party. Interactions generally take the form of ‘requests’ for additional or different content. In some cases the STB may receive and process the request and display the desired content without the direct participation of the content provider. In other cases, processing the request may require reciprocal communication with the content provider.

Traditional broadcasting and broadcast distribution are based on the one-way transmission of content from the provider to the viewer. In order to make a viewer of broadcasting into a user of interactive content, a means of transmitting the user’s requests (a return path) back to the content provider must be established. This two-way transmission of information requires several changes to the way in which content is produced and distributed and also alters the way in which users receive content.

As can be seen in fig. 1 above, this two-way transmission of data can become a complex exchange of information between several parties who each have a stake or interest in the ITV content and the consumer response to this content. Despite these complicating factors, however, as shown in fig. 2 below, the overall provision of interactive services can be broken down into three basic activities:
1. Creating the interactive content (production);
2. Transmitting the interactive content (distribution); and
3. Responding to requests (using the Return-path).

All three of these activities are interdependent. Creators of interactive content for instance, must consider whether their content will be compatible with the distribution network and how the customer’s equipment (generally a STB) will interpret and display the content. A distributor, in turn, must also consider the availability of content in selecting technologies to implement in their distribution systems. The following sections deal with these three activities in greater detail.

**Creating Interactive Content (Production)**

Interactive content may take the form of simple text, pictures, web addresses, or entire applications (software, similar to computer programs). This content is incorporated into data signals which are downloaded and activated or displayed by the STB. Interactive content is either

a) associated with traditional broadcast programs; or
b) provided on a stand-alone basis.

**Content associated with traditional broadcast programs**

Interactive content associated with a traditional broadcast program is generally developed in concert with the program itself to ensure that interactive features merge seamlessly. For this reason, interactive content associated with a program is frequently developed by the broadcaster or producer of the program, or by a third party developer acting in conjunction with the broadcaster or producer. Currently, this content may either be embedded in the Vertical Blanking Interval (VBI) of an analogue signal or inserted into a digital data-stream in MPEG or other digital format.

Since only limited amounts of data can be carried in the VBI, data of this type often contains web addresses as well. If the STB has Internet access it can download additional information from the web address contained in the VBI to display on the screen.
MPEG and other digital formats are not subject to the same fixed limitations that the VBI sets on analogue signals. The amount of digital data sent is limited only by the amount of content developed, the bandwidth available for distribution and the capabilities of the STB.

Content related to programming in this way is generally enabled using either the ‘trigger’ or ‘carousel’ method. ‘Triggers’ are elements embedded in the programming that can be clicked to access additional services/features (e.g. an icon that appears on the television screen). In the carousel model, multiple streams of data are distributed as part of a single programming service, the viewer may select or alternate between any of these streams. The trigger method requires a return-path connection to allow the user to indicate his interest in receiving the interactive content by clicking on the trigger (making a ‘request’). By contrast, a return path is typically not necessary when using the carousel method since all the available interactive content is already being sent to the STB. The user just indicates to the STB which stream of data she is interested in viewing. Due to this distinction, the carousel method generally requires much more bandwidth than the trigger method.

Content provided on a stand-alone basis

Since stand-alone ITV services are not necessarily related to specific programming, they may also be developed by BDUs or independent ITV content developers not associated with a programming service.

Stand-alone ITV services most often occupy ‘virtual channels’. In the same way, they also require ‘bandwidth’ or space in the signal that is sent to the user. Depending on the nature of the service it is possible that a stand-alone service could occupy less, as much or even more bandwidth than a programming service.

As an illustration, a stand-alone ITV service might be intended to provide access to several interactive games. When the channel is selected, the user would see an ‘interface’ or control screen with clickable ‘links’ to several available games. From this screen a user might also be able to view a short video and audio preview of the game before participating. Clicking on a link would allow the user to play the game in real-time, perhaps even playing together with other users.

Platforms or middleware

Whether ITV content is produced as a stand-alone service or one that is associated with traditional broadcasting, the producer must take into consideration the means by which the content will be distributed to the user. ITV services are created to be delivered and accessed through specific software and hardware called ‘platforms’ or ‘middleware’ that influence the types of content that can be developed and distributed. These platforms are used by the distribution network and the STB to transmit and display ITV content to the user and to transmit the user’s ‘requests’ back to the content provider in a recognizable form. STBs and platforms are both addressed in more detail in the following section on ‘Distribution of ITV content’.

There are several different platforms with different limitations and capabilities that are used by distributors. Similarly, there are also a variety of different STBs deployed by distributors and even a variety of models provided by the same distributor. A single combination of STB and platform can be referred to as an ITV programming environment or simply an environment. In
this context, it is possible that a single distributor may have deployed multiple ITV environments.

Due to the variety of ITV environments, content producers must choose either a single environment and accept the associated narrowing of its potential audience or undertake the costs of modifying or re-developing content for each additional environment.

Development is further complicated by the fact that existing platforms and STBs are based on proprietary software that necessitates on-going support and dependence on the platform or STB provider. For example, a broadcaster developing an ITV service for the "Wink" platform would need to use "Wink Studio" and/or "Wink Server Studio" software. The broadcaster would also need to locate the Wink Broadcast Server (hardware) in its uplink facility to incorporate the interactive features into the VBI of the broadcast signal. Pelmorex indicates that developing an ITV service for the Wink platform also involves training from Wink staff, and certification of the application by WINK. The testing done by Wink not only ensures that the application works, but also that it will not create conflicts with the STB or other applications that the distributor may be operating. A certified application then receives a unique code so that Wink can track its activity on the ‘Wink Response Network’ (the backend server/software that fulfills customer requests/purchases).

A final factor in the development of ITV services is that ‘programming’ in the ITV context is more akin to programming in the computer software sense than it is to traditional broadcast programming. As a result, ITV producers must employ information technology professionals that have specialized skill sets. Given that different environments involve different programming demands, producers must also assume the costs of either maintaining multiple sets of programmers with environment specific skill-sets, or undertake the time and cost involved with training and upgrading the skillsets of programmers to operate in multiple environments.

In sum, although the theoretical possibilities of interactive content development are, in many ways, endless, there are pragmatic limitations that must be considered in the development of ITV services. Despite (or perhaps because of) the early stage of ITV content development, producers are already feeling the effects of these limitations. In its submission to this proceeding, the CBC, for example, provided some examples of these limits in the form of ‘lessons learned’ from its experiences with ITV programming development:

- Developing high quality interactive content is expensive and time-consuming and requires close co-ordination with producers;
- ITV content must be produced to be compatible with a STB and middleware standards that will provide access to a critical mass of subscribers; and
- Operational, ownership and technical control of access to end-users gives BDUs considerable control over the development of ITV services.

Transmitting Interactive Content (Distribution)

Based on the above description of ITV content production, it may seem that distribution of interactive services is relatively straight-forward given that the producer generally develops content with a particular distribution environment (STB and Platform combination) in mind. In fact, distribution of these services generally requires extensive initial investment in the distribution network and related hardware and software, followed by on-going maintenance, upgrading and testing.
In its comments, Rogers describes some of the changes it has made to its network that permit it to provide ITV services:

- Installation of two-way cable plant to provide a return-path for ITV and other services;
- A broadcast carousel that contains various software applications used by the STB to provide interactive services. When a subscriber activates an interactive service that uses software not already in the STB, the software is downloaded from the carousel;
- An "E-mail Storer" for saving messages until they are downloaded by the customer;
- An E-mail client server which allows the customer to create or manipulate email;
- High capacity file server clusters to support VoD; and
- T-commerce processing facilities to receive, process, debit the customer and forward orders to be filled by the appropriate parties;

These investments illustrate that the distribution of ITV content involves considerably more than simply passing it through to the user in the same way as traditional programming services. The Commission notes, however, that many of these investments are also used for other applications, such as provision of digital broadcasting services, Internet, VoD, etc… Aside from this initial investment, however, distribution of ITV services involves two on-going concerns:

1. Bandwidth Scarcity; and
2. Compatibility with the distribution network and terminal equipment.

**Bandwidth Scarcity**

Bandwidth scarcity is an issue common to distribution of any type of new service. Bandwidth is essentially the space available on the distribution network for transmitting digital data and/or analogue signals. New services necessarily require additional bandwidth and, in situations where bandwidth is scarce, this creates significant challenges for distributors. The total available bandwidth must always be managed to ensure that services provided to users are of the highest quality possible.

The amount of bandwidth required for an ITV service varies widely depending on the amount of content sent to the user and the amount of data sent to the ITV content provider from the user. In general, to the extent that an ITV service requires little bandwidth, it is easier to manage in relation to other services and, therefore, easier to distribute. Conversely, where more bandwidth is required, more difficulties arise. Given its scarcity, bandwidth has significant value. Bandwidth used to provide an interactive service, for example, could also be used to provide another traditional broadcasting service, another PPV channel, etc. The question with respect to ITV services then becomes, how is the distributor to be compensated for this use of scarce bandwidth?

Bandwidth issues are treated in more detail in section 6.1.

**Compatibility**

While this issue has been described to a certain extent in the section above on ITV content
production, the following section describes what is necessary from a distribution point of view to ensure that an ITV service is compatible with a particular distribution environment.

In its comments in this proceeding, BCE pointed out that ITV applications do not "flow-through" like other types of traditional supplementary broadcast content (e.g. closed-captioning). It argued that the BDU holds the *de facto* responsibility for the end-to-end functionality of any ITV applications that it distributes. The BDU is also responsible for ensuring applications do not affect other programming services. To meet these responsibilities, each application must be designed and tested to ensure that it will work with the particular platform/STB combinations used by the BDU.

Platforms are composed of

- Software which provides an interface with the user through the STB; and
- A layer of network architecture (i.e. both software and hardware) that ensures compatibility between the basic network and ITV services.

The software user interface functions in much the same way as an operating system does on a personal computer. It ‘resides’ (is saved in) in the STB and is used to enable interactive functions. ITV services are developed to work with the platform, which, in turn, instructs the STB how to provide the user with access to these services. This software also allocates the processing and memory resources of the STB between multiple applications that are running simultaneously. Platform software can be downloaded and updated by compatible STBs in order to upgrade STB functions or enable new services.

Rogers argued, however, that platforms in general, have been found to be expensive and to sometimes work improperly on different kinds of STBs. For this reason, ITV content development must take into consideration not just the platform but also the STB(s) used by distributors.

A few of the currently available platforms described by interveners are set out below:

**OpenTV**

A platform that supports more sophisticated types of display such as a semi-transparent overlay. Typical applications include TV-banking, games, program enhancements such as a selection of camera angles. This platform is widely used in countries outside of North America.
PowerTV This platform was developed in affiliation with Scientific Atlanta (SA) and can, therefore, be used to easily develop applications that are compatible with the Scientific Atlanta Resident Applications (SARA) that are resident in SA set-top boxes. This platform uses little of the STB’s memory; and is capable of reading and displaying HTML documents thereby providing content developers with the flexibility and benefits of working with the existing HTML standard. PowerTV also includes the "SofaSUITE" set of applications for TV-based internet email, chat and web-surfing.

Wink A hybrid analogue-digital service platform which uses data embedded in the VBI of the analogue signal. The data may contain text and some graphics which can be super-imposed over the video signal on various parts of the screen. Typical applications include news headlines, weather information and interactive advertising where the viewer uses the remote control to choose to buy or obtain information on a product. In its comments, BCE suggests that Wink is less a platform than an application.

As discussed above, interactive content developed for a certain platform can only be distributed by BDUs that have deployed that platform. Table 1 below indicates the platforms selected by various Canadian BDUs and the deployment status of the platform in their network.

### Table 1 Platforms used by Canadian BDUs

<table>
<thead>
<tr>
<th>BDU</th>
<th>Platform / Middleware</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bell ExpressVu</td>
<td>OpenTV</td>
<td>Planned</td>
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<tr>
<td></td>
<td>Wink</td>
<td>Planned</td>
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<tr>
<td>Vidéotron</td>
<td>PowerTV</td>
<td>Deployed</td>
</tr>
</tbody>
</table>

**Source:** Based on CBC Comments, 15 February 2002, p. 23. Supplemented by various other comments to Public Notice CRTC 2001-113.

The majority of parties that provided information on ITV platforms focussed on the Wink
platform. For this reason, the Wink platform is generally used throughout this report when providing examples of how an interactive service works.

**The Digital Set Top Box**

As the name implies a digital set-top box is a device that is connected to the television set in order to provide access to a range of digital services. By early 2002, STB penetration in Canada was estimated at 26% of the total number of subscribers to BDU services or approximately three million households. DTH services accounted for 63% of these STBs, leaving cable and MDS licensees with 35% and 2% of the market, respectively.

An STB functions as the interface between the user and the distribution network. To this purpose, there is frequent interaction between components of the distribution network and the STB in the provision of ITV services. For example, many of the operations needed to provide ITV services take place "server-side" (i.e. on the distributor's network) so as to minimize the capacity requirements of the boxes themselves. Interactive services offered via an STB often require constant monitoring of activities (receiving and processing information sent upstream from the customer). In addition, ITV services often require specific software or programs which tell the STB how to handle various interactive activities. This software must be downloaded to the STB from the network.

STBs are heavily subsidized by BDUs. In its comments, BCE estimates a loss of $600 per subscriber, in large part due to the STB subsidy. It further indicates that additional subsidies of $60 per unit will be necessary to enable a full range of interactive applications.

The STB itself is, in many ways, a scaled-down personal computer. Much like a computer, the primary limitations to the STB’s ability to provide services are the capacity of its internal ‘memory’ and the upper limits of its ‘processing power’.

STB memory and processing power, among other functions, differ between the various STB makes and models. The most common STBs deployed in Canadian cable systems are the Motorola DCT 2000 and the Scientific Atlanta Explorer 2000. Each can support only one IPG, and only one or two additional ITV services due to the limited amount of memory and processing power in these boxes. High-end STBs are capable of supporting more services but cost far more than the more common STBs. Table 2 below summarizes the features of current STBs and describes what measures may be available in next generation boxes as described by various parties in this proceeding.

In its comments, the CCTA cited the absence of a critical mass of advanced STBs as one of the major problems associated with the deployment of ITV services. Rogers anticipated that next generation STBs will be widely deployed in mid 2003-2004. These next generation boxes are expected to include a type of high-speed cable modem called a DOCSIS (Data Over Cable System Interface Specification) modem. The DOCSIS modem, as well as other expected enhancements, will permit the next generation boxes to provide the additional services described in the chart below.

**Table 2 General features of STBs**
<table>
<thead>
<tr>
<th></th>
<th>1st Generation</th>
<th>Next generation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Availability</td>
<td>Commonly deployed</td>
<td>Not yet available</td>
</tr>
<tr>
<td>Television tuners</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Digital compression</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Digital quality Video/Audio</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>HDTV</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Internet Services</td>
<td>Web-browsing</td>
<td>Improved web-browsing</td>
</tr>
<tr>
<td></td>
<td>E-mail</td>
<td>E-mail</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chatrooms</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Newsgroups</td>
</tr>
<tr>
<td>EPG</td>
<td>Supports one</td>
<td>Supports multiple</td>
</tr>
<tr>
<td>Impulse PPV</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Video-on-Demand</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Access to ITV program enhancements</td>
<td>Limited</td>
<td>Yes. Dependent on platform.</td>
</tr>
<tr>
<td>On-line video games</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>File transfer between users</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Voice over IP</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Video telephony</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Digital VCR functions (PVR)</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Home network functions</td>
<td>No</td>
<td>Yes. May connect to computer, digital camera, camcorder, etc.</td>
</tr>
</tbody>
</table>
Media Experts indicated that "Side-car" devices are also available. These devices are connected to the STB in order to provide additional features.

An example of a sidecar device is the Replay 4000 by SONICBlue which acts as a PVR but also offers Internet networking ability. This means that owners of the Replay 4000 can also download and store video from the Internet as well as relay any video it has stored to other Replay 4000 owners.

**Alternative Distribution of Interactive services**

Up to this point, this section has focussed on the distribution of interactive content through the network of a BDU. Since ITV content often resembles Internet or other multimedia content, however, ITV distributors compete, in several ways, with providers of other types of content distribution. Since the penetration of high speed Internet access far exceeds the penetration rate of STBs, interactive services could be delivered on non-BDU networks. Digital Subscriber Line (DSL) services, for instance, already provide a viable alternative platform for interactive digital television. When a DSL service is bundled with DTH satellite service, it is able to provide all of the same services as a two-way cable network.

Computers equipped with the appropriate software and hardware (e.g. a TV tuner) may be used as STBs. In fact, since computers have a much higher penetration rate than STBs, computers may provide an important alternative to STBs. Sophisticated game devices (e.g. PlayStation and Xbox) may become network devices and be able to provide ITV services, particularly since these devices already have more processing power than STBs.

Other alternative distribution networks for interactive services include the Internet and Over-The-Air (OTA) digital broadcasting. Since OTA digital broadcasting does not provide a specific return-path, however, it is more suitable to providing supplementary information that can not be carried with the main signal due to bandwidth limitations.

The various alternatives for ITV distribution are detailed in Table 3 below, along with their respective advantages and disadvantages.

**Table 3 Alternative Distribution Media for ITV**

<table>
<thead>
<tr>
<th>Key Services</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital Cable</td>
<td>-IPG</td>
<td>-Regional footprint</td>
</tr>
<tr>
<td></td>
<td>-VoD</td>
<td>-Requires local system upgrades</td>
</tr>
<tr>
<td></td>
<td>-Web Access, Email</td>
<td>-Limited capabilities in current set-tops</td>
</tr>
<tr>
<td></td>
<td>-T-Commerce</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-PVR</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-Incumbent multi-channel provider</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-Full 2-way architecture</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DTH</td>
<td>DSL</td>
</tr>
<tr>
<td>--------------</td>
<td>------------------------------------------</td>
<td>------------------------------------------</td>
</tr>
<tr>
<td>-IPG</td>
<td>-Enhanced TV</td>
<td>-IPG</td>
</tr>
<tr>
<td>-T-Commerce</td>
<td>-Web Access, Email</td>
<td>-VoD</td>
</tr>
<tr>
<td>-Mail</td>
<td>-PVR</td>
<td>-Web Access, Email</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Brands and</td>
<td></td>
<td>-Full 2-way architecture</td>
</tr>
<tr>
<td>marketing</td>
<td></td>
<td>-No legacy equipment</td>
</tr>
<tr>
<td>-All digital</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-National footprint</td>
<td></td>
<td>-Newcomer to broadcasting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Cannot achieve ubiquitous coverage in serving territory due to technical limitations</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Source:** CCTA Comments to Public Notice CRTC 2001-113, 15 February 2002, p. 38.

**Responding to Requests (Using the Return Path)**

The return path is the means by which information (i.e. requests) are passed from the user back to the ITV service provider. A return path that uses broadcasting facilities always connects the user to the BDU. Where the provider of a particular ITV service is a broadcaster or independent third party, however, the return path may also connect the BDU to that ITV service provider.

Cable modems incorporated into the STB are currently used to provide a return-path for digital cable subscribers. Return-path bandwidth is currently limited to about the speed of a dial-up internet connection. Future cable STBs are expected to include DOCSIS modems that increase the bandwidth of the return-path. DTH return paths are provided through a ‘dial-up’ telephone connection. Future satellites are expected to be equipped with "spot beams” which would allow efficient use of spectrum for two-way communications.

A user request could be for more information, or to participate in a game or even purchase a...
product. Whenever a user makes a request, that request is sent to either the ITV content provider or another designated party. The end receiver of the user’s request is responsible for relaying the available content back to the user. The content sent back in response to the users request could take the form of text, video or audio or simply a confirmation of the purchase of a product. In some cases the receiver may be the distributor, a broadcaster or an independent content developer.

Putting it all together

Figure 3 below depicts an example of how content production, distribution and the return path work together to provide an interactive service. In the example below, a user is viewing an advertisement that contains an interactive feature that is accessible using the Wink platform.

Commission Findings

The Commission finds that:

- Provision of an ITV service potentially involves several parties that each contribute an element of the total service. Consequently, Development of ITV services requires a greater level of on-going collaboration between producers, broadcasters and distributors than is the case with traditional broadcasting.
- The production and distribution of ITV services present several technical hurdles, including limitations to available bandwidth and compatibility of hardware/software used by producers and distributors.
3. Interactive Services Currently Underway

All parties in this proceeding emphasized that interactive services are currently in their infancy. Certain interactive services, however, are already being developed and deployed in Canada and other countries such as the United Kingdom and the United States.

Aside from the more apparent benefit of creating additional revenue streams for broadcasters and distributors, these services are anticipated to have other, less tangible, benefits that justify their development and deployment even at this early stage. SJ/BZ and Media Experts, for instance, point to the potential of interactive services to ‘build community’ by developing relationships between content providers and viewers. Community is further developed through building brands and personalizing the television experience. The net effect of these benefits is, theoretically, reduced consumer churn.

The potential to build relationships with viewers is particularly attractive to broadcasters who often perceive that distributors enjoy a certain control over broadcasters since distributors are the most direct link with end-users.

All service providers anticipate that interactive services will increase viewer satisfaction and boost audience levels and subscriptions.
The next three sections provide a summary of some of the interactive services that are currently being offered in Canada and other countries.

**Enhanced Programming**

Interveners provided an extensive list of interactive programming that is being provided throughout the world. Several examples of this type of interactive service are

- The UK Royal Air Force has launched an interactive television ad campaign for recruitment;
- ESPN "Scores-on-Demand" service, developed by Wink (2 million visits in one month during Summer 2001);
- USA Networks is developing an e-commerce travel sales application to be offered as an interactive feature of its Travel Channel;
- Game shows such as "Jeopardy", and "Wheel of Fortune" have interactive features which allow viewers to play along with contestants and against each other;
- SportsNet and CFMT intend to implement Wink-based features in 2002;
- CNN, CNN Headline News and CNBC all have interactive features related to their programming available 24 hours/day using Wink technology;
- TBS, NBC, CBS and FOX all carry some programming carried by Canadian BDUs that has Wink-based interactive features;
- CTV uses the Blue Zone platform to publish content for the Internet, cellular phones, PDAs as well as ITV; and
- Interactive features are included in US productions of the television show "Big Brother".

A more complete list of the enhanced interactive programs described by interveners is included in Appendix B, entitled "Interactive Programming". A survey of the enhanced programming services set out in this chart suggests that several general observations can be made enhanced programming services:

- The largest portion of foreign interactive programming has been developed in the UK, followed by the US;
- Most services are related to either interactive games, polling or the provision of additional information;
- The majority of current interactive services are provided through the Wink platform; and
- Little customer demand information is available, in large part, because most services have yet to be launched.

**ITV services offered by BDUs**

Table 4 below details the interactive services currently provided by Canadian BDUs. It is worth noting that current non-traditional stand-alone services are offered almost exclusively by BDUs. The table describes not only these services but also VoD, PVRs, as well as the Internet-over-TV services discussed in the next section. The majority of the information in this table comes from the CCTA contribution but has been supplemented by information provided by other parties.

**Table 4 Interactive services provided by Canadian BDUs**
<table>
<thead>
<tr>
<th>Service Provider</th>
<th>EPG/IPG</th>
<th>VOD</th>
<th>PVR</th>
<th>Internet-over-TV</th>
<th>TV Portal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bell ExpressVu</strong></td>
<td>Proprietary</td>
<td>In 5100 series launched Fall 2001. Additional functions in ComboBox.</td>
<td>In ComboBox product expected launch in first half of 2002 (delayed)</td>
<td>ComboBox product with ExtendMedia expected launch in first half of 2002 (delayed).</td>
<td></td>
</tr>
<tr>
<td><strong>Cogeco</strong></td>
<td>10-year agreement for Gemstar IPG</td>
<td>Licensed in Ontario and Quebec</td>
<td>Agreement with WorldGate. E-mail, web surfing, and search capabilities.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| **Rogers**       | Proprietary IPG  | Licensed. Agreement with SeaChange. on dedicated virtual channel. Allows PVR functions. | "Triple-play" home networking product includes PVR functions in the STB. | · Provides Web surfing, e-mail, online banking and shopping. Viewing of photos on TV.  
  · “Triple-play” includes HS internet service. |
| **Shaw Cable**   | Agreement with Gemstar | National license through Corus. Trials in Calgary. | Planned TV-based web access, e-mail and chat, |                                                                        |
| **Star Choice**  | Proprietary. To deploy Gist EPG in Q4 2002 | Letter of intent with TiVO |                                                                        |                                                                        |
### Source: CBC comments, 15 February 2002, p. 47-8. Supplemented by various comments to Public Notice CRTC 2001-113

Every BDU that offers digital service provides an IPG. The specific functions of these IPGs vary by BDU and IPG developer, but all include the basic program listings and information that is the basis of the IPG. Most also provide search functions which allow the user to find programs in particular genres or other criteria.

### Internet-over-TV

As discussed in section 2.1, Internet-over-TV services are largely the same as those that are provided through other Internet Service Providers, including the BDUs that provide high speed Internet access through cable or wireless facilities.

As an example, Rogers described their Internet-over-TV service as including e-mail, web surfing, access to ‘cached customer content’ as well as the ability to create web-sites and access to on-line banking and shopping. The effective transmission speed is said to range from 44-56 Kbps, which is comparable to a computer connected to the Internet through a dial-up telephone modem. It anticipates that other standard Internet services, such as Internet chat, games and instant messaging features will be available in the future.

### Commission Findings

The Commission finds that:

ITV services provide important opportunities for enhancing and enriching the range and quality of broadcasting services available to all Canadians. These services, however, are at a very early stage in their development, and, as such, their potential is yet unrealized. ITV services currently available to Canadians are limited.

### 4. Potential ITV Business Models

Interveners generally agreed that there are four basic potential business models for ITV services characterized by the following methods of generating revenue:

1. Advertising;
2. Pay per use;
3. Subscription; and
4. T-commerce.

These models are discussed in more detail in the following sections.
Advertising

Several interveners describe the significance of advertising placed within interactive programming guides (IPGs), which is a technique already in use in the United States. The CBC, in particular, foresees that IPGs may act as an important driver of T-commerce, another business model discussed below.

Another method of integrating advertising into ITV services is the placement of an ad on a portion of the screen during interactive video sessions. The consumer would then "click" on a part of the screen to request more information on products or services. The Wink service\textsuperscript{9}, which uses this method, has recently released some information on the success of its interactive advertising in the first half of 2002. It indicates that it has enabled commercials for 41 separate brands from 27 national advertisers, 16 of which are using Wink for the first time. By the end of July, Wink ads had been aired throughout the US 11,300 times. In comparison, Wink ads were aired only 10,600 times throughout all of 2001. Their data further indicates that 70% of Wink-enabled households used the service an average of 10 times a month.\textsuperscript{10}

The greatest potential advantage of the advertising model is the perceived opportunity for greater flexibility in the types of advertising offered to sponsors. Advertisers may be able to more finely target potential customers thus maximizing the value of advertising dollars.

The CAB indicated that a disadvantage for broadcasters could arise if BDUs develop direct relationships with advertisers. This could result in BDUs superimposing ads over the broadcast signal, and thus potentially circumventing the broadcasters traditional relationship with advertisers.

Pay Per Use

An example of a pay per use model would be Video-on-Demand (VoD) where the consumer pays a fee for each use of the service. Common examples of this model include pay per view movies and pay-per-play video games. The CCTA contends that STB resident games provide the best business model since they require little or no bandwidth for use as a return path.

Subscription

A user subscription model would require the establishment of an account, most likely with a BDU. While the subscribers’ primary relationship would most likely be with the BDU via the subscription fee, however, secondary billing relationships for services could arise between subscribers and other links in the business chain such as advertisers and content developers.

T-Commerce

In this business model, advertisers pay the providers of ITV services a fee every time a consumer requests more information on an advertised product. In addition, a commission is paid to the interactive service provider for every sale that follows the original request for information. An existing example of this type of model is the "Wink" service available to some 5 million North American consumers.

Risks to Success
A number of down-side risks associated with interactivity were discussed in intervener submissions. The more common risks include:

1. **Uncertain Consumer Demand**

The SJ/BZ submission refers to an Ipsos-Reid survey which indicates that consumers were most interested in video on demand (VoD), personal video recorders (PVRs), and local information, in that order. In a survey conducted on behalf of CTAM in 2001, 46% of respondents indicated an interest in buying a PVR. It is not known whether demand in these surveys was measured at various price points.

Uptake of existing interactive services, however, is low. For example, despite Wink’s large market share in North America, its projected 2001 revenues are less than $8 million US.

Service provider in the U.K. as well appear to have experienced low buy rates and high costs associated with the roll-out of T-Commerce based portals.

2. **Penetration and cost of STBs**

The penetration of STBs among consumers, and the cost associated with acquiring Interactive capability, continue to be significant factors limiting the expansion of interactive services. The CCTA estimates STB penetration in Canada at approximately 24% or 2.7 million BDU subscribers. Cable companies are estimated to account for approximately 1 million of these subs.

The cost of the hardware required to receive digital interactive services, combined with the monthly cost of accessing these services, have the potential to exclude a significant portion of the population that would otherwise be potential customers. Some examples are:

- **Rogers** $11.95 STB month rental.
- **Videotron** $249 for STB and key-board.
- **AOL** $200US for equipment

The CCTA also suggests that sunk costs associated with the current generation of STBs are a problem as will be the cost of rolling out newer models with the expanded capacity to accommodate interactive services.

3. **Lack of Software Standards**

The lack of a software standard available across various platforms is another factor limiting the growth of Interactivity. The fear is that an insufficient critical mass of subscribers, using the same interactive software, will make it difficult for a newly launched interactive service to take hold.

4. **Lack of 3rd Party Access**

Some interveners express concern about the gate-keeping potential of BDUs and the potential for undue preference to be given to interactive services in which the BDUs have a vested interest. The potential for BDUs to control the access of 3rd party service providers is expected to negatively impact innovation and development of new interactive services. The CBC suggests
that this will lead to enhanced broadcasting services becoming the most likely vehicle for the delivery of interactive services.

5. Current Lack of Venture Capital

In its submission Rogers indicated that one problem it saw as significant was a lack of venture capital ready to invest in unproven interactive service proposals. Consumers continue to sit on the sidelines waiting for some positive news about the anticipated rebound of tech companies before looking again towards the stock market as an investing vehicle.

Conclusion – Business Models

A common theme among submissions is that the business of providing interactive services to consumers is in the initial stages of development. The limited digital subscriber penetration among Canadian consumers, combined with uncertainty surrounding the demand for interactive services, makes it unclear when a viable interactive services industry will emerge.

5. Regulatory Classification of ITV Services

In Public Notice CRTC 2001-113, the Commission asked parties to provide comment as to which interactive activities they would consider to be broadcasting and which interactive activities might also be considered to fall under the new media exemption order.

Parties that provided comments in this proceeding offered a wide variety of positions as to whether ITV services can be considered broadcasting. While some parties argued that ITV services are definitively broadcasting, others argued that no ITV service fits into this category. The majority of parties, however, occupied various middle-ground positions and argued that some ITV services are broadcasting while others are not.

SJ/BZ and ADISQ argued that ITV services should be considered broadcasting under the Act. ADISQ further argued that, since the Act speaks to the regulation of broadcasting enterprises, not activities, its intent is to encompass all of the activities of these enterprises that might have a bearing on broadcasting.

Occupying the opposite extreme, AOL argued that ITV services should not be considered broadcasting at all. In its estimation, interactive features permit the viewer to exercise some control over their viewing experience. Further, AOL observed that interactive content is "pulled" by viewers rather than "pushed" by broadcasters. For these reasons, AOL argued that ITV services should not be considered to be transmissions to the public and are therefore not broadcasting.

Parties such as Decode entertainment Inc., Torstar Corp., the CBC, the CCTA, Rogers and Vidéotron considered that ITV services often blur the lines between broadcasting, telecommunications and Internet services. To illustrate this point, the CCTA described three hypothetical ways of using Internet technology to deliver interactive programming services, which, it argued, would be difficult to place in clear regulatory categories:

Example One – Backhaul: A cable operator could establish a central headend to receive over-the-air and satellite-delivered signals and transmit the signals, in a
secure encrypted format, over the Internet to regional headends where the signals would be decrypted and distributed to subscribers over the cable system. At no point would the signals be accessible over the Web or otherwise distributed to anyone other than the cable operator’s subscribers. From the standpoint of subscribers there would be no difference between the delivery of signals in this manner, and the existing means of cable transmission.

**Example Two – Server-based Headends:** A headend could be established that relied on servers to manage video signal delivery to subscribers. In such a system, subscribers with advanced digital set-top boxes would select the channel they wish to watch, the set-top box would relay the request to the server at the headend and the server would deliver the appropriate video stream to the subscriber’s IP address. This server-based technology would enable the delivery of advanced services such as streaming VOD.

**Example Three – Peer-to-Peer Transfer:** The growth in broadband Internet access services means that an individual can now establish his or her computer as a server for other individuals looking for particular audio or video content stored on that computer. It is arguable that in making this content available to others by means of a peer-to-peer file transfer, these individuals are “transmitting” programs for reception by the public, thereby acting as virtual broadcasters.

The CBC, AOL Canada and Rogers, among others, observed that certain ITV services could be considered predominately alphanumeric and therefore would not constitute 'programs' under the Act. Even this distinction is somewhat blurred, however, as in the case of IPGs. Rogers, for instance, cited IPGs as an example of an ITV service that could be considered alphanumeric. While Rogers conceded that IPGs include some elements that could be considered broadcasting, most elements are strictly alphanumeric. It argued, however, that since the customer’s purpose in using the IPG is generally to obtain alphanumeric program information, the IPG should be characterized as primarily alphanumeric. Other parties disagreed. The CAB, for instance, argued that the IPG’s significance as the viewer’s primary mechanism for selecting and accessing programming services makes it necessary to regulate IPGs as broadcasting.

In addition, the CBC observed that certain ITV services which may not constitute programs at this point may evolve into programs in the future. It also used IPGs as an example and suggested that IPGs may become virtual programming services as more video and sound is incorporated to support advertising.

BCE submitted that there are actually two scenarios under which an ITV service could be regulated as broadcasting under the Act. It argued that regulation of interactive services would require that an ITV service qualify as either broadcasting in and of itself under the Act or as integral to a programming service and therefore regulated through that programming service.

BCE also added that, in its opinion, where a service is not integral to a programming service but is, itself, a broadcasting service, it should be exempted. Other ITV services that are not integral and do not themselves constitute a broadcasting service are, in BCE’s estimation, outside the Commission’s jurisdiction under the Act.

Other parties, such as the CBC and Pelmorex supported the principle of distinguishing ITV services that are integral to programming services. In addition to supporting this principle, the
CAB provided some potential criteria for distinguishing ITV services that are integral to programming from those that are not. It argued that ITV services transmitted with the main programming signal should be considered an integral part of the program rather than as a distinct service. It also suggested that the ability to ‘click’ from a television program to a companion website via TV-based web access (i.e. the function itself) should be considered an integral component of the programming service, but the website itself should not.

Although some parties have taken divergent positions with respect to which ITV services should be considered broadcasting, as the Commission observed in section 2.1, there are three categories of ITV services that parties do generally agree upon:

1. Enhanced Programming ITV services;
2. Non-Traditional Stand-alone ITV services; and
3. Internet over TV services.

These three types of ITV services are each distinguished by certain characteristics that may assist in determining their relationship to broadcasting as defined in the Broadcasting Act.

1. Enhanced Programming ITV Services

Enhanced programming ITV services are those that are associated with ‘programs’ offered by licensed programming undertakings. Some parties have argued that services that are related to and/or integral to the main broadcast program should be considered to be "broadcasting" even if the service, were it examined as a stand alone entity, would not be considered "broadcasting" because it consisted predominantly of alphanumeric text. This position is clearly not without its problems – the definition of "program-related" and/or "integral" being the biggest one.

The Commission will have to make a choice between considering these services, which are specifically created to enhance particular broadcast programs, as related to or even integral to the main television signal, as it does, for example, with closed captioning, or considering them as separate services, i.e. as distinct from the main television signals they enhance.

This first possible approach is to consider Enhanced Programming ITV services to be "program-related" or "integral". If this approach is taken then the entire service, including the enhanced programming - even where that subsidiary service consists wholly of alphanumeric text - and the main television signal, may no longer "consist predominantly of alphanumeric text" as per the definition of "program" in the Broadcasting Act. As a result, the program service would therefore be captured within the definition of "broadcasting". The argument would be that the most compelling element of the service was the main television channel, i.e. it predominated. Determining which element of a service predominates can be a difficult task, depending, as it must, on a qualitative perception; reasonable individuals can come to different conclusions.

Although no intervener raised this issue, it is important to note that exempted broadcasting services might also contain interactive elements that, if considered integral to the service, would also need to be assessed in light of its conditions of exemption.

A second possible approach is to view Enhanced Programming services as distinct from the main programming service. If this approach is taken, each enhanced service would have to be examined
individually. There may, for instance, be several attached to a single television channel and each would have to be assessed. If one were found to be broadcasting, it would have to be licensed or exempted.

This, maybe yes, maybe no, approach may cause practical difficulties both for licensees and the Commission in attempting to decide which is which and would probably not add certainty to any regulatory scheme. Comments received in this proceeding, are not sufficient to establish a clear definition of "program-related" interactive services. In the Public Notice that accompanies this report, the Commission has initiated a proceeding to examine what constitutes a program related Interactive service.

2. Non-Traditional Stand-alone Services

As the name implies, non-traditional stand-alone ITV services are those that are not associated with ‘programs’ offered by programming undertakings and are selected independently by viewers (e.g. these services may be offered on their own channel. Because these are stand-alone undertakings, in order to determine whether any of these services are "broadcasting", the Commission would have to examine each one individually to determine if the service is a "program", i.e. that it does not consist predominantly of alphanumeric text.

If the service is found to be predominantly non-alphanumeric, there is a second test it must pass and that is that its transmission of programs must be to the public. In its PN 1999-84 ("New Media"), the Commission stated at paragraphs 45 and 46:

45. The Commission considers, however, that some Internet services involve a high degree of "customizable" content. This allows end-users to have an individual one-on-one experience through the creation of their own uniquely tailored content. In the Commission's view, this content, created by the end-user, would not be transmitted for reception by the public. The Commission therefore considers that content that is "customizable" to a significant degree does not properly fall within the definition of "broadcasting" set out in the Broadcasting Act.

46. By contrast, the ability to select, for example, camera angles or background lighting would not by itself remove programs transmitted by means of the Internet from the definition of "broadcasting". The Commission notes that digital television can be expected to allow this more limited degree of customization. In these circumstances, where the experience of end-users with the program in question would be similar, if not the same, there is nonetheless a transmission of the program for reception by the public, and, therefore, such content would be "broadcasting". These types of programs would include, for example, those that consist of digital audio and video services.

The Commission has not yet had to make any decisions on the scope of "customizable".

3. Internet over TV

Internet over TV services are essentially Internet services that use the television set and set-top box to mimic some of the basic functions of a personal computer. Since these are presumably stand-alone services, each service must be individually assessed against the tests set out above, under 2.
Since a TV set is the display vehicle, one would assume that the content providers will shape their content with this in mind and would not use predominantly alphanumeric text. To date, however, most Internet over TV services have been used to provide a simplified version of the content already available over the Internet.

**Are ITV services New Media?**

If certain ITV services can be considered broadcasting, which of these services, if any, should also be considered New Media Broadcast Undertakings (NMBUs) and thereby subject to the New Media exemption order (Public Notice CRTC 1999-197)?

Parties that considered at least some ITV services to be broadcasting were often split as to whether these services should also be considered NMBUs. Decode Entertainment Inc., for instance argued that none of these services should be considered part of the exempt NMBU class.

SJ/BZ argued that all ITV services should be considered new media services and therefore exempt from regulation under the Act. Vidéotron also argued that ITV services offered by programming undertakings should be exempted from regulation.

Other parties, such as Media Experts and the CCTA once again suggested that it is difficult to determine whether ITV services should be considered new media or not.

Rogers took enhanced programming services as an example. In its estimation, these services provide a sufficient level of "customizability" that they cannot be considered to be "transmitted to the public".

The CBC considered the specific case of TV-based Web Access and TV Portals. It argued that these are Internet services but to the extent that they constitute programming services, they should be exempt as NMBUs. In a similar vein, the CAB argued that programming-related websites should be considered exempt NMBUs regardless of whether they are accessed on a computer or a television.

Pelmorex differed from the CBC and CAB positions on TV portals and instead suggested two possible scenarios. Namely, where walled gardens or virtual channels are non-traditional stand-alone services, Pelmorex argued that they should be considered telecommunications. Where they are related to programming services, it argued that they should be considered broadcasting but should not be exempted as new media since they are not "open access".

ADISQ suggested that the distinction between the regulated broadcasting activities and the exempt new media activities of licensed broadcasters and BDUs is artificial since the two types of activities are often integrated and indistinguishable from each other. ADISQ expressed concern that this artificial distinction can be used to circumvent regulation and legal obligation and, as such, encouraged the Commission to re-evaluate its decision to exempt new media broadcasting undertakings.

In contrast, some parties argued that ITV services are completely unrelated to NMBUs. AOL, in particular, emphasized that, in their estimation, this proceeding has no bearing on the new media report or exemption order and should not change the Commission’s conclusions in that
Given the potential for overlap between New Media and ITV, it is important to note that the purpose of this fact-finding proceeding was not to review the New Media Exemption order. Subject to the results of Public Notice CRTC 2002-38 Call for comments concerning Internet Retransmission (Order in Council P.C. 2002-1043), the Commission intends to follow its normal procedure in reviewing the Exemption Order (i.e. conduct a review 5-7 years after the implementation of the Order).

Commission Findings

The Commission finds that:

- A number of existing regulatory tools may be useful in the context of ITV services, where these services are considered broadcasting or program-related. Undue preference, for example, could be of use in dealing with complaints of gatekeeping.
- A policy grey area exists with respect to ITV services that are program-related. The Public Notice that accompanies this report initiates a proceeding to examine the question of what constitutes a program-related Interactive service.

6. Other Considerations

As the Commission noted in the Introduction to this document, some parties provided comment on certain considerations affecting the development of ITV television services, including matters that they felt should be addressed through a regulatory framework. While, in the Commission’s view, the latter went beyond the scope of the information requested in Public Notice CRTC 2001-113, a summary of these considerations has been included in this section for information purposes.

6.1 Gate-keeping

Broadcasters have expressed concerns about the potential gate-keeping role that could be played by BDUs. Many of these interveners recommend that the Commission adopt a regulatory framework that would ensure programmers are able to provide interactive features to viewers.

The CAB, for example, argues that a regulatory framework is urgently required to promote the development of Canadian interactive programming, which might otherwise be fettered by anti-competitive gate-keeping practices. Its position is supported by interventions from CHUM and Pelmorex. Similarly, one of the CBC’s two key conclusions is that an over-riding policy framework to resolve problems associated with undue preference and access to bottleneck services and essential facilities is critical to the development of interactive services.

The key issues identified by these interveners are as follows:

1. Priority access

- programmers argue that interactive content related to licensed programming services should have priority access to BDUs.
- Pelmorex states that licensed Canadian services should have a head-start, and that they
require reasonable access to bandwidth for related interactivity.

- Pelmorex also argues that if interactivity meets a service’s conditions of licence, it should be entitled to distribution along with the signal.
- Pelmorex suggests that this is the best way to ensure that Canadian choices are available.

2. Accessibility

- programmers state that viewers should have fair, equitable and unrestricted access to all interactive content, rather than, for example, permitting the development of distributor-controlled walled gardens.

3. No alter or curtail

- programmers emphasize that their interactive content should be distributed without alteration, and that, where the interactive elements are related to the programming service, they should fall under the existing provisions of the BDU regulations (namely section 7). CBC argued that the Commission had confirmed this in Public Notice CRTC 2001-62, Call for Comments on a Proposed Policy to Oversee the Transition from Analog to Digital Over-the-air Television Broadcasting in its comments on section 7 of the current Broadcasting Distribution Regulations. The Commission notes that it has since issued Public Notice CRTC 2002-32 Call for Comments on a proposed policy framework for the distribution of digital television services and that the question of whether interactive material is related to the service being distributed is raised. Therefore, it is premature to say that the Commission has already pronounced on the issue. The question of what constitutes a "program-related" ITV service is also a central concern of this report as well as an issue that will be explored in greater depth in the Public Notice that accompanies this report.
- the CBC suggests that, in many cases, the addition of interactive features to a programming service are simply an enhancement and that these features must be seen as new features of an existing service.
- the CAB suggests that interactive services that have minimal signal requirements should be passed through without alteration.
- CHUM argues that when interactive elements are part of the programming, are content-specific and part of the main signal, they should be considered integral and should be passed through, provided they fall with existing bandwidth (i.e. within the VBI limits for analog services, or in future, HDTV data streams).
- the CBC suggests that BDUs should devote sufficient bandwidth to interactive services and should be flexible rather than setting a specific requirement.

4. Undue preference

- programmers argue that the system needs guidelines to prohibit potentially anti-competitive behaviour with respect to the distribution of interactive services and the use of IPGs/EPGs to promote programming services.
- programmers suggest that the development of business models for interactivity is impeded by the lack of a clear policy framework that would ensure BDU carriage, on appropriate terms and that would prevent BDUs from acting as gatekeepers and potentially conferring an undue preference or disadvantage.
- CBC argues that a case-by-case approach to resolving undue preference and bottleneck issues would be less effective, more costly and more time consuming than a policy
framework that clearly established public policy goals and objectives.

The CAB states that programming services are already facing gatekeeping issues, for example:

During carriage negotiations for the new digital specialty services, proposed terms and conditions of carriage in some instances required programmers to waive the right to include any incremental program-related data, restricted the interactive platforms that they use to encode interactive enhancements, or required programmers to split their interactive revenues with the BDU in question.

Pelmorex states that bandwidth is scarce, and that due to this scarcity, regulation is required to ensure priority access for licensed Canadian services with interactive enhancements to their programming. The CAB further argues that programmers need access to reasonable amounts of bandwidth to test and deploy new interactive services.

For its part, BCE suggests that the Commission should not take regulatory action, but should encourage and support interactive television initiatives. However, BCE has proposed some principles that it believes should apply, for example:

**access**

- distributors would deliver all data-streams directly associated with programming, without alteration (assuming that the interactive application is compatible with the BDU’s system) – this would require a determination on what is integral to the programming signal and what is not
- "must carry" obligations with respect to programming services, including interactive elements, must be limited to fixed amounts of bandwidth

**bandwidth**

- a predetermined amount of bandwidth, arrived at through industry consensus, would be made available to program-related applications – applications operating within this bandwidth that did not generate incremental revenue would be distributed without additional cost - additional bandwidth would be negotiated

**alter or curtail**

- BDUs should be permitted to alter or delete an interactive data stream where the applications are incompatible with the distributors’ platform

BCE emphasizes that distributors, broadcasters and producers must work together to ensure the successful implementation of interactive television in Canada.

Several distributors (CCTA, Vidéotron and Rogers) argue that it is too soon to establish a policy framework. The CCTA states that while there are a variety of commercial rollouts of interactive services underway, the markets are still at a developmental or experimental stage. The distributors recommend that the Commission continue to monitor developments. The CCTA states that several issues need to be resolved before any ITV market can be deemed a success, including questions about what consumers really want, technical standards, rights issues, and agreements on...
revenue/cost sharing.

On a related front, some parties have also raised concern about third party access to BDU facilities. Specifically, Torstar has argued that the Commission must focus on the need for assured access to both the broadcast distribution system and the set-top box, and the need for open standards. Torstar states that the digital set-top box is becoming a critical new gateway or access point for companies wishing to offer interactive services. Torstar is of the opinion that third parties are in a weak bargaining position with respect to accessing that box, since it is controlled by BDUs. Torstar argues that this permits BDUs to materially influence the development of interactive services – the absence of assured access, on reasonable terms, will discourage Canadian companies from taking the risks associated with developing new services.

Torstar states that it is critical that the Commission provides a framework for negotiation to ensure the establishment of reasonable terms and conditions for access – regardless of whether the activity is deemed to be telecommunications or broadcasting. Torstar recommends that the Commission adopt an approach similar to the approaches adopted under the *Telecommunications Act*, specifically Section 27 relating to terms of access and access rates.

6.2 Cost of interactive services and who will pay for them

Some parties provided estimates of what it will cost the different industry sectors to implement interactive services. The diagram below (Figure 4), entitled "Who Pays Who in the Interactive World?" illustrates the various players in the interactive world, the type of costs that will be incurred by each of these players, and who will be collecting this revenue. It is important to bear in mind that these roles are not rigidly defined, as they are still unfolding with respect to the development of ITV services.

**Costs for BDUs**

The main costs for distributors with respect to interactivity will include the costs of supplying more bandwidth for ITV applications, upgrading their own infrastructure and as illustrated in Figure 4, providing the set top boxes and middleware needed to enable interactive functions (whether through sale or lease to subscribers). To the extent that BDUs may also choose to provide their own interactive programming, they would incur expenses for either producing this programming themselves or purchasing it from producers.

BCE estimates that, by 2006, ExpressVu will have invested a minimum of $4.5 million in infrastructure costs relating to interactivity. Some of these costs breakdown as follows:

- Costs to upgrade the EPG to accept OpenTV applications, test the ITV middleware and purchase application development tools: over $1,000,000.
- Annual costs to maintain the middleware including the OpenTV annual licence: $600,000.
- Cost of uplink centre’s hardware and software required to run the applications: $500,000.
- Costs for testing and integrating applications.

BCE also notes that this figure could increase in accordance with the complexity of future ITV applications.

As noted previously, while ExpressVu already subsidises the cost of its digital decoder by more than $600 per household, it estimates that an additional $60 per box will be required to enable
ITV applications. ExpressVu estimates that by the end of 2002, it will have invested $23 million to make its set-top boxes ITV capable. And this cost is also likely to rise as the demand for higher end boxes increases. The CCTA notes that high-end STBs cost over $200 more than those currently used. Rogers estimates that it will invest well in excess of $100 million in order to implement ITV services.

Costs for Broadcasters and Producers

As indicated in the diagram, broadcasters and independent producers will be required to licence the software and middleware needed to develop and test ITV content and will likely incur increased production and acquisition costs for programming. The latter may include investments in new production technology and tools, increased costs for talent and expertise in ITV content development and incremental programming rights costs for ITV content.

The CAB argued that the costs to programmers as they make the transition to an interactive environment would be substantial. The CFTPA also anticipates incremental costs for producers related to ITV content. It noted, "In terms of cost control, interactive content generally implies new or alternative story lines, new settings, and new scenes. This means more work for Canadian writers, performers, directors, and technicians. It also implies higher costs."

BCE noted that while production costs for ITV content are difficult to estimate, based on grants awarded through the Bell Broadcast and New Media Fund, an average cost of $250,000 to
$500,000 per ITV project "would not be out of line". BCE also noted, "Obviously, greater complexity would add to these costs, as would the objective of ensuring that such an application would work across multiple platforms".

The CAB also pointed out in its submission that the lack of a common technical standard can increase cost further for programmers: "Programmers wishing to incorporate interactive elements in their programs must either create for one platform and ignore viewers on other platforms, or incur additional equipment and licensing fees to re-create their interactive content anew for each proprietary software standard in use." BCE suggested that these costs could be defrayed by developing the application in one platform and then providing BDUs using different platforms with generic data for the application. Those BDUs and broadcasters might then share in both the costs and revenues from that application.

**Costs for Advertisers**

Advertisers are depicted on the diagram as paying fees to BDUs, broadcasters, independent producers and middleware providers like Wink. Revenue from the sale of advertising time to sponsors will remain a key business model for ITV services. In fact, many regard ITV services as providing advertisers with greater opportunities to reach customers by allowing them to conduct more precise audience measures and to target ads to specific households. Advertisers will also benefit from impulse purchases that will be possible through t-commerce. They can sell their products directly to consumers watching television. There may also be opportunities for advertisers to purchase time or space on IPGs.

According to the CBC, advertisers are also willing to pay for "leads" (a customer request for more information on a product or service) as well as commissions if a product or service is purchased. The CBC provided statistics that indicated that 1.5% of the five million North American users with access to interactive services through the Wink platform request information on products or services through the enhanced broadcasting icon. Advertisers pay Wink $0.25 per request and $1.60 per actual purchase of the product (40% of the users that made the request for further information ended up buying the product).\(^{12}\) Statistics by Forrester indicate that Wink retains 80% of the commissions, with BDUs and broadcasters splitting the remaining 20%.

Statistics from Forrester provided in the submission by SJ/BZ, predict over $3.7 billion in advertising expenditures in the U.S. ITV market by 2006 ($95 million was the 2001 forecast). Based on these U.S. numbers, SJ/BZ estimates that the Canadian ITV advertising market may be worth over $4 million by 2004.

It is noted that some of these enhanced advertising opportunities discussed above raise privacy issues, which are considered below.

**Costs for Subscribers**

The subscriber’s financial relationship with other parties depends entirely on the service developed. A subscriber that buys something, for instance, may be charged by the BDU, advertiser, broadcaster, independent content developer, middleware/platform provider and even possibly the STB manufacturer, depending on how the service is developed. The subscriber’s primary relationship, however, is always through the BDU subscription fee.

It is likely that ITV television services will result in higher entertainment costs for consumers.
Consumers, however, may see these costs as worthwhile in exchange for, among other things, the
greater choice, convenience and personalised service offered by ITV services. The economic
success of ITV services rests ultimately on the consumer demand for those services. This subject
will be discussed below.

6.2.1 How will the costs for ITV services be recouped?

Most parties expressed concern as to how the various players would recoup the significant
investments in ITV services. Two major uncertainties that will have an impact on cost recovery
are the growth of consumer demand for ITV services and the negotiation over revenue splits.

Consumer demand

The continued growth of consumer demand for interactive services remains an uncertainty and a
cause for concern. Currently, the penetration of ITV services is not sufficient to allow investors in
these services to recoup their costs. As BCE noted in its submission, ITV services "have generally
been met, at least initially, with consumer indifference". However, this is not atypical of new
technologies. As the CCTA noted in its submission:

The early adopters (of ITV services) typically account for 15% to 20% of the
market, whereas the critical stage for a new service comes from attracting the
middle majority of consumers. The middle majority typically waits until a new
technology has been well proven as having significant benefits in terms of
convenience and value for a reasonable price.

Rogers provided some broad predictions for the uptake of ITV services in its submission.
Specifically, the Gartner Group predicts that there will be 14 million households in North and
South America that will use ITV services by 2002, rising to 30 million by 2004.

The CCTA also noted that ITV services should not be considered to be just one service or market,
but many services (i.e., VOD, enhanced TV, PVRs, Web-TV, etc.) with distinct markets, some
experiencing greater consumer demand than others. The CCTA cited market research by CTAM
that demonstrates a higher level of consumer interest in "personalising the traditional content-
viewing experience" rather than introducing "new convergent activities associated with the
television screen". The latter requires consumers to adopt new television viewing habits, which
can be a more difficult and time-consuming undertaking.

Based on this research, the CCTA points to VoD, PVRs and IPGs as the technologies and markets
that are likely to experience the greatest success, while enhanced television services and Web-TV
will entail more risk for investors. The chart also indicates that the provision of local information
like local weather-on-demand or local news will be attractive to consumers. T-commerce, which
requires consumers to change their buying behaviour and adapt to purchasing products through
their television set, is likely to require more time for consumer acceptance.

Building a consumer base for individual services might also depend upon a number of factors that
are specific to individual technologies, such as, for example:

- the availability of new release theatrical features in the case of VoD
- the integration of PVRs into STBs
- faster processing speeds for Web TV
consumer confidence in the security of the t-commerce transaction.

**Revenue splits**

Many parties also expressed concern about the way revenues from ITV services would be divided up amongst players. With respect to cost sharing, the CCTA has indicated that this is one of the more complex business issues of interactive television. Distributors have made considerable investments in the deployment of technologies that permit interactivity to take place and, as a result, in their view, there should be both cost and revenue sharing models. The CCTA has not elaborated on what those models would be, noting that this remains a critical issue and that multiple models are possible.

One of the key concerns is that there will be too many parties each expecting a piece of a relatively small pie. As the CCTA noted in its submission:

> In Smarter Television, Forrester released a report on the complexity of developing ITV relationships, using the now infamous example of Jennifer Aniston’s sweater. In its study, Forrester looked at the number of parties in a T-commerce transaction all looking for a piece of the transaction on the sale of the sweater: Jennifer Aniston, for contributing her talent and modelling the sweater, Bright/Kauffman/Crane, the producers that own Friends, NBC, for network rights, the local affiliate, for broadcasting, the cable company, for technology and billing and Wink, for enablement. Compounding problems on the value chain are the low margins on many retail items, competition from other channels and the cost to wholesalers/retailers of purchasing a new sales channel with minimal scale.

Programmers emphasised the importance of ensuring that they are able to access the revenues derived from their interactive content, in order to cover their expenditures. For instance, the CAB stated that, in the case of interactivity that is related to the main service, all revenues should flow directly to the programmer. It argued that BDUs could rely on their own revenue-generating activities, and/or their ability to pass infrastructure costs on to subscribers.

Pelmorex also argued that BDUs should not claim a share of interactive advertising revenue, just as they do not share in advertising revenue generated by programming now. CBC and Pelmorex argued rather that distributors should recover their costs from subscribers.

**Commission Findings**

The Commission finds that:

The current economic models of interactive services are unclear due to limited digital subscriber penetration, uncertainty in the demand for interactive services and the large number of parties between which revenue may be split.

**6.3 Standards**

All parties that commented in this proceeding discussed the need for Canadian standards with respect to various aspects of the development and distribution of ITV services, most importantly the ITV platform and STBs.
As discussed in earlier sections, there are currently several possible environments or combinations of platforms and STBs in use by BDUs. ITV content producers must therefore choose between developing for a single environment and thereby excluding large groups of potential users, or, incurring the cost of developing an ITV service for multiple environments. As a result, producers have frequently adopted a ‘wait and see’ attitude that has delayed the provision of ITV services.

The use of multiple incompatible ITV standards may not only have delayed the development of ITV services, but may also have altered the business model for delivery of these services. The CCTA argued, for example, that incompatible standards have contributed to an economic shift from marketing of content to promoting personalization and advanced functionality (IPGs, VOD and PVRs). It further suggested that incompatible standards have led to a "two-screen" model for interactivity (i.e. simultaneous use of a television and a computer) in which television viewers are referred to an Internet site for access to ITV-type services.

Several parties noted that the use of multiple environments is not unique to Canada and that, in fact, there is a general lack of consensus between competing potential standards throughout the world. Several countries, however, have begun to examine these issues. Sailor Jones Media and BeyondZ, for instance, indicated that South Korea, Taiwan, Brazil, Finland, Australia, Spain, the US and China have all either selected a standard or made substantial progress towards a selection.

**Potential ITV Standards**

The CCTA described four groups that are currently developing potential ITV standards:

1. CableLabs
2. Advanced Television Forum (ATVEF)
3. Advanced Television Systems Committee (ATSC)
4. Digital Video Broadcasting (DVB)

**Cable Labs: OpenCable**

CableLabs is a non-profit, technology-based consortium whose members serve 85% of Canadian cable subscribers and 92% of subscribers in the U.S.

The OpenCable program began in 1997 with the intent to develop two kinds of standards: a hardware specification and a software specification. The hardware specification, which is now complete, is intended to standardise STBs for retail sale.

Set-top boxes built using the OpenCable hardware specifications may be connected to a home entertainment system in the same way as any other piece of consumer electronics equipment (e.g. a VCR). The consumer would then receive an electronic ‘card’ called a Point of Deployment module (or POD module) from their cable operator. If the consumer moves to an area served by a different cable operator, the consumer returns the POD module to their first cable operator, and obtains a new POD module from their new cable provider.

In order to enable this type of portability, the proprietary features of a set-top box, such as encryption and security, had to be separated from the box and placed on a removable device. The POD security module separates the retail set-top box components from the cable operator’s proprietary conditional access system, thereby enabling portability of the host to other cable networks.
The software specification of the OpenCable project, called the OpenCable Applications Platform (OCAP), is also intended to solve the problem of separating proprietary and non-proprietary components by creating a common platform upon which interactive services may be deployed.

OCAP is intended to enable the developers of interactive television services and applications to design such products so that they will run successfully on any OCAP-compliant cable television system in North America, independent of set-top or television receiver hardware or operating system software choices.

OCAP provides a standard application-programming interface (API), so that any application may be deployed across the full range of OpenCable host devices. These applications may include:

- IPGs
- Impulse PPV
- VoD
- Interactive sports, game shows
- Web access and features such as e-mail, chat, and instant messaging
- Interactive games
- Services such as shopping (television commerce, or "T-Commerce"), home banking, and PVRs

The OCAP 1.0 specification was released in December 2001 to allow platform developers and equipment manufacturers to begin building OCAP-compliant products immediately.

BDUs that provided comments in this proceeding generally supported the OpenCable initiative. The CCTA anticipated that many devices will be compatible with the OpenCable standard. Rogers also indicated its support for OCAP standard. BCE observed that, in North America, there is some movement towards using the OCAP as a common standard.

Future work by CableLabs includes the development of open standards for DOCSIS modems and STB software that is intended to ensure that this equipment will not remain proprietary components of distributors’ networks.

**Advanced Television Forum (ATVEF)**

The Advanced Television Enhancement Forum (ATVEF) is a cross-industry alliance of companies representing broadcast and cable networks, television transports, consumer electronics, and PC industries. ATVEF has defined protocols for Hypertext Mark-up Language (HTML)-based enhanced television, which allow content creators to deliver enhancements to analogue or digital programming via cable or satellite to any STB that complies with the ATVEF standard. The standard set of ATVEF HTML extensions have been adopted by OpenCable, as well as software providers such as Microsoft and Liberate.

Data is contained in the VBI as with Wink, but the ATVEF standard is able to use additional VBI "lines" and is therefore capable of carrying more data than Wink.

A few content providers are broadcasting ATVEF content today. The CAB indicated that several of the platforms being used in Canada nominally support the ATVEF standard, but the standard has not been applied in such a way so as to provide consistent results between platforms.
Advanced Television System Committee (ATSC): DTV Application Software Environment (DASE)

The Advanced Television Systems Committee, Inc. (ATSC), is an international, non-profit membership organization developing voluntary standards for advanced television systems. ATSC was formed in 1982 by the member organizations of the Joint Committee on InterSociety Coordination (JCIC): the Electronic Industries Association (EIA), the Institute of Electrical and Electronic Engineers (IEEE), the National Association of Broadcasters (NAB), the National Cable Television Association (NCTA), and the Society of Motion Picture and Television Engineers (SMPTE). Current members include representatives of the broadcast, broadcast equipment, motion picture, consumer electronics, computer, cable, satellite, and semiconductor industries.

The DTV Application Software Environment (or DASE) Standard provides a specification for software intended to create common platforms for ITV services. The DASE standard is in the "Candidate" stage of approval, meaning that the ATSC is actively examining its viability through technical and commercial trials.

Digital Video Broadcasting (DVB): Multimedia Home Platform (MHP)

The Digital Video Broadcasting (DVB) Project is an industry consortium with members representing broadcasters, manufacturers, network operators, software developers and regulatory bodies in over 35 countries.

The DVB-MHP (Digital Video Broadcasting - Multimedia Home Platform) was initiated in 1997. Its aim was to standardise elements of the home platform that would for future interactive multimedia applications. The MHP takes into consideration not only the Application Programming Interface (API), i.e. platform software, but also issues such as the STB and the distribution network.

In February 2000, DVB approved the first release of the Multimedia Home Platform (MHP) specification (MHP1.0). In July 2000, the European Telecommunications Standards Institute ETSI accepted this standard formally. The current version of MHP (1.1) was released by DVB in June 2001 and accepted by ETSI in November 2001. BCE observed that MHP is emerging as a common standard in Europe.

Development of ITV standards in Canada

In Canada, the development of standards falls under the jurisdiction of Industry Canada and the Standards Council of Canada (SCC). Nonetheless, several parties argued that the Commission has a significant role in the development of Canadian ITV standards. SJ/BZ, for instance, recommended that the Commission explore standardisation of ITV platform technologies. Torstar was more specific in its request that set-top boxes be required to employ open standards and that where BDU-specific software is required, it should be made available to users without charge or on a cost-recovery basis.

The CAB recognized that the Commission does not take part in the development of technical standards, but suggested that the Commission can and should encourage the adoption of standards. Similarly, the CBC argued that the Commission should not attempt to dictate technology choices for industry participants. The CBC suggested instead that the Commission
should set principals and parameters to permit industry members to make choices that are consistent with public policy goals.

In a similar vein, BDUs, generally, did not see a role for the Commission in the development of standards. They did, however, suggest that the Commission play an active role in the facilitating the participation of particular stakeholders. BCE, for instance, argued that it is imperative that broadcasters and other ITV content providers and BDUs co-operate to develop standards that will reduce the costs of developing and distributing applications for all parties.

The Commission’s past participation in the creation of standards has generally been limited to examination of the merits of standardisation in terms of the Canadian broadcasting system in general. For instance, in Public Notice CRTC 1993-74, Structural Public Hearing, the Commission concluded that “the adoption by all Canadian programmers and distributors of a common DVC [Digital Video Compression] standard, including conditional access, would be beneficial to the Canadian broadcasting system.

In its Competition and Culture on Canada’s Information Highway report dated 19 May 1995, the Commission provided a more detailed assessment of its role with respect to technical standards. The Commission stated that it

has supported the development of industry-wide technical standards for communications in Canada in order to maximize benefits to consumers… However, it is difficult to mandate standards for the development of broadband networks, servers and products given the experimental nature of many services, the rate of technological change and evolving business strategies. Competing distribution systems have incentives to differentiate themselves technically in order to obtain market share. The different approaches to the development of set-top boxes is an example of this phenomenon … specific regulatory mechanisms mandating interconnection and interoperability among broadcasting distribution undertakings for the carriage of programming services would not be consistent with the objective of fostering competition in facilities. The terms of such interconnection are better left to negotiations between the parties concerned.

In the same report, the Commission also indicated its general opinion that

Standards … should be developed through co-operation and negotiation, subject to the broad direction and guidance of Industry Canada. That being said, the Government, in approving standards, should be aware that premature adoption of one particular competing approach over another could favour or disadvantage the distribution of Canadian product on the highway, particularly in view of the continuing development of technical equipment and applications. Ideally, the creation of standards should await the emergence of a clear technical market and business consensus.

The general principles enunciated in this report continue to be valuable in the context of ITV standards, namely the

● promotion of competition;
● right of regulated undertakings to retain control of their own activities and facilities and decisions with respect to those activities and facilities within the context of the public
Report on Interactive Television Services

interest;
● jurisdiction of Industry Canada with respect to the development of technical standards;
● importance of industry negotiation in the development of standards;
● benefits and incentives inherent in interoperability; and
● the value of delaying the enactment of standards until a clear technical, market and business consensus has emerged.

The last of these principals, i.e. avoiding premature implementation, has, in fact, already been raised in the context of ITV services in Public Notice CRTC 2001-57, Principles for the launch of Category 1 and 2 digital services, dated 25 May 2001. In this Public Notice, the Commission stated that

As for interactive services, the Commission agrees with parties who submitted that it is too early to develop principles specific to this type of service. The Commission expects that there will be developments in this area in the short to medium term that will clarify the issues to be addressed. To this end, the Commission encourages both programmers and distributors to work together in such areas as the development of technical standards.

In sum, given that the expertise necessary to the development of standards lies with Industry Canada, it would be inappropriate for the Commission to draw conclusions as to an appropriate ITV standard. The Commission certainly has a role, however, in promoting and encouraging the adoption of standards with the purpose of furthering the objectives of the Broadcasting Act.

Commission Findings

The Commission finds that:

The development of Canadian standards for the production and distribution of ITV services would provide long-term benefits both for industry members in the form of reduced costs and increased flexibility and for all Canadians in providing a greater array of available services. To this end, industry members are encouraged to collaborate with each other and with the appropriate Canadian standards organizations in the development of such standards.

6.4 Privacy Considerations

A few interveners commented on issues related to privacy, given the ability of digital set-top boxes to collect information about the behaviour of individual subscribers. For example, SJ/BZ suggested that TV personalization will become an important tool for building loyalty within the interactive television environment and that such personalization will be attractive to advertisers and broadcasters to ensure they reach consumers most effectively. SJ/BZ added that:

Advertisers wish to send the most relevant advertising messages to the consumers with the greatest propensity to purchase their products or services. With personalization, advertisers will insert ads in programs and iTV services appropriate to the household.

While such personalization is attractive to some, the capacity of interactive technologies, such as the STB, to collect information on an individual basis clearly raises concerns about privacy. These technologies permit the collection of detailed information about what system users are...
doing, which shows they watch, when and for how long, what advertisements they see, whether they change channels, etc. As additional features come online, these devices will also be able to track web usage, including what sites are visited, the duration of time spent on each, what is read, and what is purchased.

Torstar suggested that, given the confidential customer information that could become available through interactive services, the Commission should require BDUs to maintain customer privacy.

SJ/BZ and Media Experts pointed to the Personal Information Protection and Electronic Documents Act (the PIPED Act) as a means for ensuring the protection of customer information. Media Experts also recommended the use of anonymous "digital silhouettes." This model is a proprietary solution developed by Predictive Networks in which viewers are placed in categories based on demographics and interests. These silhouettes are linked to random id numbers rather than to information that would identify the individual user, i.e. address, telephone number, billing records, etc.

SJ/BZ stated that, in the US, the ITV industry has taken steps to self-regulate the implementation of personalization technologies. For example, the Association for Interactive Marketing’s (AIM) Addressable Media Coalition (AMC) has developed ITV privacy guidelines.

As of January 2001, Canadians are protected by the Personal Information Protection and Electronic Documents Act, which sets out rules governing how federally-regulated private sector organizations may collect, use or disclose personal information in the course of commercial activities. The Act also specifies what information websites can collect and how this information can be used. It also gives consumers control over how their personal information, including email addresses is used. Under the Act, consumers are also given a right to access and correct any information an organization may have collected about them. Complaints can be filed with the Privacy Commissioner of Canada, however, complainants are encouraged to try to settle concerns directly or with the organization’s industry association, ombudsman or complaint office.

The CCTA has also adopted an industry privacy code that conforms to the Act and provides guidelines that cable companies can use to protect the privacy of customers’ personal information. The Canadian Cable Industry Privacy Code is composed of ten principles and is administered by the Cable Television Standards Council (CTSC). The CTSC’s website provides commentary on each of the principles, recommended best practices and further guidance to help cable companies, their customers and their employees understand the significance and the implications of the principles.

The existence of the Act and the cable code suggests that it would not be appropriate for the Commission to play a role in the privacy issue. The Commission did not address privacy issues in its New Media policy or in its new media exemption order, however, during the August 2000 digital specialty hearing, it did ask Category 1 applicants to comment on measures taken to comply with the Act. In summary, the Commission is of the opinion that it does not have a role to play in this area other than to remind licensees of their obligations pursuant to existing legislation.

**Commission Findings**

The Commission finds that:

Protecting the privacy interests of Canadian is an issue of significance with respect to ITV
services. Where these services are provided by a federally regulated organization, privacy interest are currently served through the Personal Information Protection and Electronic Documents (PIPED) Act, which would also apply equally in the context of ITV services.

6.5 Copyright Issues

A few parties expressed concerns related to copyright. For example, the CFTPA raised questions about who ‘controls’ the interactive content embedded in the broadcasting signal. The CFTPA stated that such issues pit the interests of broadcast programming and distributors against those of producers/creators: "At stake is the ability of producers to create content for and to access audiences with interactive content."

For the producer, it is vital to maintain separate licensing agreements for each broadcast window. In part, such control is important in terms of ensuring that all participants in the creative process are appropriately compensated, for example, through royalties, etc. Thus, the CFTPA stated that it is vital to producers that the broadcasters recognize that interactive rights are separate and distinct from broadcast program rights and that these must be licensed separately at fair market value. It stated, "Interactivity is not simply an ancillary function of the broadcast agreement that has been negotiated."

The CFTPA recommended that the Commission clarify who "owns" the interactive component of broadcast programs delivered through the set-top box and that the Commission oversee the establishment of a Code of Conduct to govern the relationship between broadcasters, distributors and producers, to ensure that no one party has a gatekeeping role.

The CCTA suggested that copyright issues could slow the implementation of interactivity and that the various parties will have to find business solutions to break the current logjam. The CCTA highlighted the following areas where disputes over rights may delay interactivity:

- increased peer-to-peer trading of programs over the Internet via networked PVRs will cause producers to seek copy protection and to pursue legal action;
- increased inclusion of copy protection into consumer electronics and software is increasing costs, delaying product launches, and make interconnection even more difficult;
- licence fees for proprietary technologies may decrease incentives for risk taking by broadcasters and distributors; and
- disputes over the level of MPEG2 licence fees paid by multimedia content providers could hamper deployment of interactive services designed for streaming environment.

The CCTA further stated that the development of copyright protection standards is a contentious process pitting equipment manufacturers, content producers and distributors against each other.

The CCTA highlighted rights issues as one of several major issues that must be resolved before any interactive market can be deemed a success or at least be deemed to have moved beyond the developmental or experimental stage.

Commission Findings

The Commission finds that:

Many ITV services are developed in conjunction with other programming or services produced by
other parties. This bundling of ITV content with other types of content developed by other parties present several challenges with respect to the ownership of this content and the various rights related to that content.

6.6 Accessibility (for persons with Disabilities)

Two parties, the Starks and the National Federation of the Blind: Advocates for Equality (NFB:AE) raised concerns about the accessibility of new technologies, equipment and services for people who are blind or partially sighted. They pointed out that digital set top boxes now provide detailed information in a print format that is unusable to people who are blind or partially sighted.

NFB:AE stated that digital terminals should be able to provide on-screen information in an accessible format, both in large print and synthetic speech. It recommended that if such technologies do not already exist, the introduction of interactive digital services should be stopped so that the industry can ensure that the equipment used to provide such services is accessible. NFB:AE also recommended that the Commission create a task force of government, industry and representatives of the blind to develop and implement access requirements for interactive digital services.

The Starks called upon the Commission to take a more proactive stance when it comes to addressing accessibility issues. They were critical of the Commission for not addressing the need for access in its public notice.

The Starks recommended that no digital service should be licensed or renewed, and no set-top box should be allowed to be attached to the broadcasting system until the ability of the company and the technology to service people who are blind has been proven.

The Commission notes that the cable industry has Guidelines on Cable Service to Blind and Vision-Restricted Customers which are designed to improve cable services to ensure that blind or vision-restricted customers have the basic tools required to use the cable services available. These guidelines were developed by the cable industry in 1997 and are administered by the Cable Television Standards Foundation. The guidelines set out ways in which cable companies will make their services more accessible in the following areas:

- channel line ups in alternative format
- increased attention to the provision of program information (i.e. alternatives to paper program guides)
- alternative format billing and payment
- improvements in community channel services, and
- improved access to reading services (i.e. VoicePrint)

The Commission notes that the guidelines were developed as a response to a complaint.

Commission Findings

The Commission finds that

Ensuring the accessibility of broadcasting services to disabled Canadians is a continuing concern of the Commission. Since ITV services are currently at a very early stage of development, it is
possible for industry members to incorporate ITV service feature intended to promote accessibility for the disabled with less cost and difficulty then may be the case in the future.

7. Further Process

7.1 General Conclusions

The purpose of Public Notice CRTC 2001-113 was to initiate a process to gather facts on broadcasters’, producers’ and distributors’ current and planned interactive services. While these facts have been set out in the preceding sections of this report, here the Commission summarizes its findings in this proceeding:

a) ITV services provide interesting and important opportunities for enhancing and enriching the range and quality of broadcasting services available to all Canadians. Although some broadcasting services are now incorporating ITV elements, interactivity is still in a very nascent stage of development in Canada and its potential is yet unrealized. ITV services currently available to Canadians are limited.

b) ITV services can be divided into three general categories: Enhanced Programming, Non-Traditional Stand-alone and Internet over TV services. These categories may be useful in establishing a framework in which to position future policy considerations.

c) The Commission has previously ruled on a number of issues related to ITV-type services, including VoD services, which have already been licensed by the Commission as set out in Public Notice CRTC 1997-83, Licensing of New Video-on-Demand Programming Undertakings, and non-broadcasting services such as those that are predominately alpha-numeric or sufficiently customizable as set out in Public Notice CRTC 1999-84, New Media.

d) Provision of an ITV service potentially involves several parties that each contribute an element of the total service. Consequently, the development of ITV services may require a greater level of on-going collaboration between producers, broadcasters and distributors than is the case with traditional broadcasting.

e) Development and distribution of ITV services requires significant investment on the parts of producers, broadcasters and distributors. Potential business models, consumer demand and revenue splits for ITV services, however, are still largely unknown. At this stage, a return on investment, if any, would be relatively small.

f) The production and distribution of ITV services present several technical challenges, including limitations to available bandwidth and compatibility of hardware and/or software used by producers and distributors.

g) The development of Canadian standards for the production and distribution of ITV services would provide long-term benefits both for industry members in the form of reduced costs and increased flexibility and for all Canadians in providing a greater array of available services. To this end, industry members are encouraged to
collaborate with each other and with the appropriate Canadian standards organizations in the development of such standards.

h) Protecting the privacy interests of Canadian is an issue of significance with respect to ITV services. Where these services are provided by a federally regulated organization, privacy interests are currently served through the *Personal Information Protection and Electronic Documents (PIPED) Act*, which would also apply equally in the context of ITV services.

i) Many ITV services are developed in conjunction with other programming or services produced by other parties. This bundling of ITV content with other types of content developed by other parties presents several challenges with respect to the ownership of this content and the various rights related to that content.

j) Ensuring the accessibility of broadcasting services to disabled Canadians is a continuing concern of the Commission. Since ITV services are currently at a very early stage of development, it is possible for industry members to incorporate ITV service features intended to promote accessibility for the disabled with less cost and difficulty than may be the case in the future.

k) A number of existing regulatory tools may be useful in the context of ITV services, where these services are considered broadcasting or program-related. Undue preference, for example, could be of use in dealing with complaints of gatekeeping.

l) A policy grey area exists with respect to ITV services that are program-related. Differentiating between program-related and other ITV services should be a primary consideration in future proceedings.

Although Public Notice CRTC 2001-113 did not solicit comments on a policy framework for ITV services, many parties did provide such comments. Generally, interveners were divided as to the Commission’s role, if any, in the regulation of ITV services, the nature of that regulation and the most appropriate time to implement a regulatory framework. Central to this division is the unresolved question of whether some ITV services should be considered broadcasting, and if so, whether such activities should require a separate broadcasting licence, should be considered part of an existing licensed service or should fall under the new media exemption order. As detailed in Section 5, parties also presented a wide variety of positions on this question.

With respect to the timing issue, while some felt that it was too early to implement a regulatory framework for ITV services, others felt that one is urgently needed to ensure fairness and promote investment in ITV services.

Some parties, notably distributors, expressed concern that premature and unnecessary regulation could, in fact, hamper the development of ITV services. For instance, Rogers noted, "Indeed, even the threat of regulatory intervention may have the effect of discouraging investment and force interactive offerings into categories and structures that are not consistent with market demand and technological developments". Vidéotron and BCE were of a similar view. The latter cautioned that it was too early for the Commission to reach any conclusions about its role with respect to ITV services. BCE stated, "...many of the regulatory, jurisdictional and public policy questions cannot be answered easily or reliably at this early stage of ITV development. The Commission
should be cautious about making final determinations in this context, particularly as concerns its jurisdiction under the *Broadcasting Act*."

In contrast, other parties, most notably broadcasters, expressed concern that the absence of a regulatory framework and lack of clear guidelines at this time will have the effect of discouraging the development of ITV services. The CBC noted,

…it is necessary for the Commission to develop a regulatory framework that addresses certain fundamental issues that will inevitably arise. These issues must be addressed at an early stage in order to create an environment that is conducive to investment in and development of enhanced broadcasting services and in which all major stakeholders know their respective rights and obligations.

Similarly, the CAB argued,

In view of the significant investments required to develop and deploy interactive services, guidelines with respect to certain fundamental issues are required to bring a degree of certainty to potential business models that would support such activities.

In determining any further process with respect to interactivity, the Commission considers it useful to recall the objectives that guided the Commission in developing a policy to oversee the transition from analog to digital over-the-air broadcasting, as set out in *Call for comments on a proposed policy to oversee the transition from analog to digital over-the-air broadcasting*, Public Notice CRTC 2001-62, 5 June 2001. The Commission regards these objectives as equally appropriate in considering its role, if any, in the development of ITV services, and in light of this, has adapted the objectives as set out below:

- A policy on interactivity should provide guidance to broadcasters, distributors and producers in their adoption of the new interactive television technology.
- The continued strength and growth of the Canadian broadcasting industry should be fostered and its cultural objectives maintained.
- Canadian viewers should benefit from these technological advances to the fullest possible extent.
- The development of interactive television services should not be impeded by unnecessary regulation.

These objectives align closely with the policy objectives set out in section 3 of the Broadcasting Act and, in particular, with section 3(d)(iv), which states that "the Canadian broadcasting system should be readily adaptable to scientific and technological change." In the Commission’s view, these objectives should serve as the foundation of any approach to ITV services

**Are Interactive Services Broadcasting?**

In Public Notice CRTC 2001-113, the Commission solicited, among other things, comment relating to which interactive activities parties would consider to be broadcasting. The Commission also inquired as to which interactive activities parties would consider to fall under the new media exemption order (Public Notice CRTC 1997-197). While parties presented a wide variety of positions on these questions, in the Commission’s view, the record of that proceeding did not provide sufficient information to assist the Commission in making a determination on this issue.
Generally, the majority of interveners who commented on this question considered that ITV activities referred to as "enhanced programming" would be considered broadcasting under specific circumstances. Enhanced programming services were defined in the ITV report as including, but not limited to, the following services:

- providing viewers with access to more detailed information on program or advertising subjects through the addition of text, graphics, still images or audio-visual content;
- providing viewers with the opportunity to conduct t-commerce such as purchasing products featured in a program or advertisement;
- providing viewers with the opportunity to personalise the viewing experience by selecting camera angles, alternative plot lines or allowing them to play along with a game or television program; and
- providing addressable advertising that can respond more effectively to viewers’ specific interests.

As noted previously, parties considered that, among other things\(^\text{14}\), enhanced programming services would fall under the definition of broadcasting if they were "program-related" or, in some parties’ view, "integral" to a program. For instance, the CBC stated:

… it is the position of the CBC that in many instances the interactive content that is delivered in a subsidiary signal of a programming service would be considered to be part of the program as the term is defined in the Broadcasting Act. Provided that the interactive content does not become the most influential or powerful part of the service – or does not become the primary focus of the service – it is our view that the provision of interactive content in a subsidiary signal would not change a broadcasting service into a telecommunications service.

A number of interactive features when provided as add-ons to the service offered by a licensed programming undertaking, would be considered to be part of that licensee’s "program", as that term is defined in the Broadcasting Act. For example, interactive features such as data and information that is related to the program being broadcast, t-commerce which permits a viewer to purchase products related to the programs or advertisements being watched, personalised video where a viewer can choose camera angles and interactive services that allow a viewer to participate in a program, would be offered to viewers as enhancements to existing programs, in much the same way as closed-captioning and descriptive video are currently provided to viewers.

Parties such as Pelmorex, CHUM and the CAB argued that interactive content that is related to a program should be considered an integral part of that service. BCE, however, stated that first the interactive content must be determined to be "integral" to a broadcasting service. If it is not, then BCE suggested that, "one must determine whether the ITV application would, by itself, be properly considered to be "broadcasting". The Commission notes that none of the parties who used these terms offered any definition or guidelines on how the Commission might determine what is "program-related" or "integral" to a program.

The Commission has used the term "program-related" in other contexts. For instance, section 7(f) of the Broadcasting Distribution Regulations, which prohibits distributors from altering or deleting a programming service, uses terminology that is similar to "program-related". Section
7(f) states that a licensee shall not alter or delete a programming service in the course of its distribution except "for the purpose of deleting a subsidiary signal, unless the signal is, itself a programming service or is related to the service being distributed" [emphasis added]. One example of a subsidiary signal protected by section 7(f) is closed captioning, which, like many ITV services currently available, is transmitted using the Vertical Blanking Interval (See Public Notice CRTC 1985-28). Several parties to this proceeding compared interactive signals to subsidiary signals that carry closed captioning or descriptive video.

The Commission also used the concept of program-related recently in the context of Public Notice CRTC 2002-32, Call for comments on a proposed policy framework for the distribution of digital television services. With respect to the carriage of data services, the Commission proposed, "Distributors would be permitted to delete the subsidiary signals of a programming service in the course of distributing the service unless the subsidiary signals are, themselves, programming services or are related to the programming service being distributed." This is essentially what section 7(f) of the Regulations stipulates.

In that notice, the Commission noted the CCTA’s suggestion that the Commission adopt the test used by the Federal Communications Commission (FCC) in the United States for making determinations as to what constitutes program-related information. In the analog context, the FCC used the factors enumerated by the United States Court of Appeals for the Seventh Circuit in WGN Continental Broadcasting Co. v United Video Inc. for the purposes of determining whether ancillary or supplementary material transmitted in the VBI is program-related and, therefore, entitled to mandatory cable carriage. Under that test, referred to as the "WGN test", the following three criteria must be met. In order for data to qualify as program-related, first, the broadcaster’s intention must be that the information be seen by the same viewers as those who are watching the video signal; second, the information must be available during the same interval of time as the video signal; and third, the information must be an integral part of the program.

The Commission found the CCTA’s suggestion that the Commission adopt the WGN test to be consistent with section 9(1)(g) of the Act, which empowers the Commission to require that BDUs give priority to the carriage of broadcasting and with section 7 of the Regulations as referenced above.

The Commission notes, however, that, in adopting the WGN test, the FCC stated that the factors set forth in this test do not necessarily form the exclusive basis for determining program-relatedness, but did not clarify this statement further. Nor did it provide guidance on how to determine what might be considered an "integral" part of the program. The Commission also notes that, in a Further Notice of Proposed Rulemaking, the FCC has sought public comment on the definition of "program-related" in the digital context, for the purposes of determining what distributors should be required to carry in the digital environment.

The Commission agrees with the view of parties that the concept of "program-related" is key to determining what, if any, ITV services would fall under the definition of broadcasting and what regulatory treatment they should receive as a result. The Commission considers a more methodical consideration of this concept to be a useful starting point for the next stage of public dialogue on the development of ITV services. Such an exploration would be helpful in providing guidance on what types of ITV activities would be considered broadcasting and, as a result, would fall under the Commission’s jurisdiction.

In light of this, the Commission is issuing today a public notice seeking comment on the specific
method or tests that could be employed to determine what ITV content is program-related.

**Glossary**

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tr>
<td><strong>Application</strong></td>
<td>A program or piece of software.</td>
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<tr>
<td><strong>ATVEF</strong></td>
<td>Advanced Television Enhancement Forum. A cross-industry group, whose founding members include CableLabs as well as major computer companies, television programmers and broadcasters. ATVEF is supported under the Open Cable (OCAP) standard. ATVEF established specifications for the transport of enhanced TV content, including the delivery of triggers that activate the display of additional content on the television screen. ATVEF Transport type B triggers are used to deliver ITV content that is transmitted with the video and audio, as a subsidiary signal to the primary broadcast signal. Type B triggers do not require access to the Internet and can be used in a one-way broadcast system.</td>
</tr>
<tr>
<td><strong>Bandwidth</strong></td>
<td>The amount of data that can be sent through a network or portion of a network, usually expressed in bits per second (bps). Higher bandwidth permits the transmission and reception of more data. Where bandwidth is shared between users, higher bandwidth supports a greater number of users.</td>
</tr>
<tr>
<td><strong>Cache</strong></td>
<td>A cache is a place to temporarily store data. Data stored in a cache can be retrieved more quickly than would normally be possible. A computer may store frequently viewed Internet website pages in a cache, for instance, so that the user can quickly retrieve them without having to request them from the original server every time.</td>
</tr>
<tr>
<td><strong>Chat Room</strong></td>
<td>A virtual &quot;space&quot; where users can converse with other users in real-time. Conversations consist of typed messages that are viewable by all other users participating in the ‘chat’.</td>
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<tr>
<td><strong>Digital Set-Top Box (DSTB)</strong></td>
<td>Set-top box; the device (a type of computer) which receives the digital signal and displays it on the television set. It also is capable of providing viewers with the ability to interact with programming in some way, usually through the installation of additional software.</td>
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DOCSIS is a standard used to develop high speed modems that transmit data over digital cable facilities. A DOCSIS modem refers to a high-speed cable modem included in some next generation set-top boxes.

A transmission from a service provider to an end user is referred to as a downstream transmission. In a BDU, for instance, downstream transmissions take place from the head-end through the BDU’s network facilities to the end-user.

HFC Hybrid Fibre-Coax. A hybrid fibre coaxial network combines optical fibre cable and coaxial cable to increase the overall capacity of the network. A cable BDU, for instance, could install fibre optic cable from the head-end to nodes located close to the end user and install coaxial cable between the node and the end user. This permits some of the characteristics of a fibre optic cable (i.e. high bandwidth and low noise and interference) to be brought close to the end user without having to install fibre all the way to the end user.

IPGs are software applications that provide viewers with program listings and descriptions. IPGs also typically allow viewers to search for programs according to certain pre-set criteria (e.g. sports) and program VCRs for recording. A limited amount of this information is usually stored in the DSTB and additional information is downloaded to the DSTB on request or at set intervals.

A general term for a set of digital services that are provided in conjunction with digital television programming. These services require two-way communication between the viewer and the distributor or content provider. This two way communication is composed of a traditional ‘downstream’ signal from the distributor or content provider and ‘upstream’ or ‘return-path’ information from the viewer to the distributor or content provider. This two-way communication used to provide interactive services is facilitated by a Digital Set-Top Box and possibly other Side-Car Devices.
IP

Internet Protocol. The method by which data is sent from one computer to another on the Internet. Data is divided into small pieces called ‘packets’. Packets may take completely different routes to reach the same destination. When they reach their destination, packets are reassembled to reproduce the original data sent.

Message Board

a.k.a. Webboard

A web-site where messages can be left and received by users at any time. Although conversation do occur on message boards through a series of related messages or ‘posts’ (a series of related posts is called a ‘thread’), unlike in a chat room, these conversations do not necessarily take place in real-time.

Middle-ware

See Platform.

MPEG

Motion Pictures Expert Group. A committee composed of technical professionals from different industries dedicated to forming open standards for the transmission of digitized video and audio for computer and television networks. The acronym MPEG is most often used to refer to the internationally agreed upon standard for video compression which can allow full motion video to be played on digital equipment. MPEG is a standard format for both digital video and audio.

New Media Broadcasting Undertaking (NMBU)

NMBUs are considered to be broadcasting undertakings under the Broadcasting Act. These undertakings are, however, exempt from regulation under Part II of the Broadcasting Act as set out in Public Notice CRTC 99-14 Report on New Media and Public Notice CRTC 1999-197 New Media Exemption Order.

Personal Video Recorder

A type of ‘digital VCR’ which records video on a computer-like hard disk rather than a tape. Since the PVR records video digitally it may also provide functions that make live television programming viewable as if it were recorded. A viewer may, for instance, ‘stop’ the programming on-screen while the PVR continues to record the programming as it continues. When the viewer ‘plays’ the program the PVR displays the recorded program from the point at which it was stopped.
Platform

The term "platform" may be used to refer to both a piece or set of software that resides in the DSTB and the software and hardware that resides in the BDU’s uplink centre (head-end) or in the broadcaster’s facilities. An ITV platform enables a network and DSTB to provide certain ITV services that have been produced for that platform. From the end user perspective, a platform functions like the operating system of a computer (e.g. Microsoft Windows) in that it enables the proper functioning of other software (i.e. an interactive programming features) in relation to particular hardware (the DSTB). A platform might also be called middleware.

Real-time

When hardware and/or software act quickly enough to seem immediate to a user or when hardware and software activities make adjustments to external process (e.g. recording weather changes) then the hardware and software are said to be acting in ‘real-time’. Real-time is therefore the correspondence of the human perception of time with duration of machine processes.

Return-Path

The route by which data is transmitted upstream from the end user to the service provider. In the case of ITV, a return path must be established from the user back to the entity which has assumed responsibility for processing and responding to user requests related to a particular service, whether this entity is the BDU, broadcaster or an independent content producer.

Server

A remote ‘computer’ on which data is stored for use by users or other equipment with electronic access to that computer. A DSTB may access a server, for instance, to download program information to be displayed on an EPG. Actions taken by the server, as opposed to the user’s computer or DSTB, are said to take place ‘server-side’.

Side car device

An additional device which connects to the digital set-top box in order to provide additional features. A Personal Video Recorder (PVR) might be considered a "side-car" device if separate from the digital set-top box.
<table>
<thead>
<tr>
<th>Service</th>
<th>Description</th>
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<tbody>
<tr>
<td>Streaming</td>
<td>Data that is ‘streamed’ is sent in compressed form and displayed by the viewer as they arrive as opposed to downloading the data to a file, storing it and viewing it after it has been stored. With streaming video for instance, a user does not have to wait to download a large file before seeing the video. Instead, the media is sent in a continuous stream and is played as it arrives. In order to view streaming data, the user needs a special program that decompresses and sends video data to the display and audio data to speakers.</td>
</tr>
<tr>
<td>SVoD</td>
<td>Subscription Video on Demand. Viewers pay a fixed monthly price to access as much content as they wish. Requesting and delivering content is the same as with standard VoD.</td>
</tr>
<tr>
<td>T-Commerce</td>
<td>Television Commerce. The purchase of products/services over, or in conjunction with the TV. Television viewers may purchase an item or service that they see advertised or depicted on television. If the transaction is made over the television, it is facilitated by the digital set-top box or other side-car device.</td>
</tr>
<tr>
<td>Upstream</td>
<td>Transmission of data from a user to a service provider is said to travel upstream. An email, for instance, is sent ‘upstream’ from the user that writes it to their service provider. Their service provider then transmits it to the service provider of the intended receiver. The email is received downstream by the intended receiver. Upstream bandwidth available to users is typically far less than downstream bandwidth.</td>
</tr>
<tr>
<td>Video-on-Demand (VoD)</td>
<td>True VoD is a service by which the user may request to view any available programming at whatever time they request it. In Public Notice CRTC 1994-118, the Commission described a VoD service as one &quot;that provides programs as defined by the Broadcasting Act, transmitted by means of a telecommunications, where individual consumers select specific programs to be received by means of broadcasting receiving apparatus at any time of their choosing.&quot; Certain VoD services have been licensed to operate in Canada under the licensing framework contained in Public Notices CRTC 1997-83 and 2000-172.</td>
</tr>
</tbody>
</table>
# Appendix A – ITV industry members identified by Interveners

<table>
<thead>
<tr>
<th>Company</th>
<th>Industry Involvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACTV</td>
<td>Personalized Video</td>
</tr>
<tr>
<td></td>
<td>Interactive Gameshows</td>
</tr>
<tr>
<td>AOLTV</td>
<td>TV-based Web access</td>
</tr>
<tr>
<td>ATVEF</td>
<td>Developing proprietary interactive services standards for its members in North America.</td>
</tr>
<tr>
<td>CableLabs</td>
<td>Developing open (i.e. non-proprietary) standards for developing and distributing interactive services in North and South America.</td>
</tr>
<tr>
<td>Commerce.TV</td>
<td>T-Commerce</td>
</tr>
<tr>
<td>Concurrent</td>
<td>VoD</td>
</tr>
<tr>
<td>Digeo (Moxi)</td>
<td>PVR</td>
</tr>
<tr>
<td></td>
<td>Audio/Video Archiving</td>
</tr>
<tr>
<td></td>
<td>Home Networking</td>
</tr>
<tr>
<td>DIVA</td>
<td>VoD</td>
</tr>
<tr>
<td>Expanse Networks</td>
<td>Addressable advertising</td>
</tr>
<tr>
<td>Gemstar-TV Guide</td>
<td>IPG</td>
</tr>
<tr>
<td>Intertainment</td>
<td>VoD</td>
</tr>
<tr>
<td>iSurfTV</td>
<td>IPG</td>
</tr>
<tr>
<td>Jovio</td>
<td>Addressable advertising</td>
</tr>
<tr>
<td>Liberate</td>
<td>ITV Platform</td>
</tr>
<tr>
<td>LocalSource</td>
<td>TV Portals</td>
</tr>
<tr>
<td>MbTV</td>
<td>Addressable advertising</td>
</tr>
<tr>
<td>MetaTV</td>
<td>TV Portals</td>
</tr>
</tbody>
</table>
### Appendix B - Interactive Programming

<table>
<thead>
<tr>
<th>Service/Program Name</th>
<th>Developer</th>
<th>Country</th>
<th>Description</th>
<th>Demand Info.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mixed Signals</td>
<td></td>
<td></td>
<td>Programming enhancements Interactive Gameshows</td>
<td></td>
</tr>
<tr>
<td>Navic Networks</td>
<td></td>
<td></td>
<td>Addressable advertising</td>
<td></td>
</tr>
<tr>
<td>nCUBE</td>
<td></td>
<td></td>
<td>VoD</td>
<td></td>
</tr>
<tr>
<td>OpenTV</td>
<td></td>
<td></td>
<td>iTV Platform</td>
<td></td>
</tr>
<tr>
<td>RespondTV</td>
<td></td>
<td></td>
<td>T-Commerce Enhanced Advertising</td>
<td></td>
</tr>
<tr>
<td>SeaChange</td>
<td></td>
<td></td>
<td>VoD</td>
<td></td>
</tr>
<tr>
<td>SONICblue/Replay TV</td>
<td></td>
<td></td>
<td>PVR</td>
<td></td>
</tr>
<tr>
<td>SpotOn</td>
<td></td>
<td></td>
<td>Addressable advertising</td>
<td></td>
</tr>
<tr>
<td>TiVo</td>
<td></td>
<td></td>
<td>PVR</td>
<td></td>
</tr>
<tr>
<td>TV Gateway</td>
<td></td>
<td></td>
<td>IPG</td>
<td></td>
</tr>
<tr>
<td>Two-Way TV</td>
<td></td>
<td></td>
<td>Interactive Gameshows</td>
<td></td>
</tr>
<tr>
<td>UltimateTV</td>
<td></td>
<td></td>
<td>PVR</td>
<td></td>
</tr>
<tr>
<td>WebTV</td>
<td></td>
<td></td>
<td>TV-based Web access Programming enhancements</td>
<td></td>
</tr>
<tr>
<td>WINK</td>
<td></td>
<td></td>
<td>Programming enhancements T-Commerce Enhanced Advertising</td>
<td></td>
</tr>
<tr>
<td>WorldGate</td>
<td></td>
<td></td>
<td>TV-based Web access TV Portals</td>
<td></td>
</tr>
<tr>
<td>N/A</td>
<td>Wink</td>
<td>US</td>
<td>Enables users to cast votes over a dedicated channel. Voters are assigned a ballot ID number. City of San Luis Obispo, California is expected to use this system in its Nov. 2002 municipal elections.</td>
<td>N/A</td>
</tr>
<tr>
<td>-----------</td>
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<td>------</td>
<td>-------------------------------------------------------------------------------------------------</td>
<td>-----</td>
</tr>
<tr>
<td>PlayJam</td>
<td>Static 2358</td>
<td>UK</td>
<td>A &quot;games channel&quot; offered by the BskyB satellite service.</td>
<td>750 000 viewers in its first year. Viewers are mainly 16-34 yrs old, 55% female. 8th largest audience for a BskyB channel.</td>
</tr>
<tr>
<td>Yo-Yo</td>
<td>Static 2358</td>
<td>UK</td>
<td>Intended to create an on-line community for viewers to &quot;chat, set-up dates and compete in games and quizzes.&quot;</td>
<td>N/A</td>
</tr>
<tr>
<td>Inside the Actor’s Studio</td>
<td>Bravo Volvo</td>
<td>US</td>
<td>The &quot;Inside the Actor’s Studio&quot; television program is broadcast by Bravo. Quizzes, polls, background info and chat areas related to the program are available to customers using specific set-top boxes. These features are available beginning 15 minutes prior to each program and ending 15 minutes after the program has concluded.</td>
<td>N/A</td>
</tr>
<tr>
<td>Wimbledon, Football Assoc. Cup and 2002 Olympics coverage.</td>
<td>BBC</td>
<td>UK</td>
<td>BSkyB viewers can use their remote to select from separate audio and ‘highlight’ channels and can also view statistics related to the sports event.</td>
<td>2/3 of BSkyB viewers used ITV services during the first week of Wimbledon.</td>
</tr>
<tr>
<td>Service</td>
<td>Operator</td>
<td>Country</td>
<td>Description</td>
<td>Votes</td>
</tr>
<tr>
<td>-------------------------</td>
<td>----------</td>
<td>---------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-------</td>
</tr>
<tr>
<td>Watch Your Own Week</td>
<td>Nickelodeon</td>
<td>US</td>
<td>Viewers were able to cast votes on what programming they would like to see and when. 300,000 votes were received.</td>
<td>N/A</td>
</tr>
<tr>
<td>Sarah’s Secrets</td>
<td>BeyondZ</td>
<td>US</td>
<td>Viewers of the Food Network’s &quot;Sarah’s Secrets&quot; television show have access to &quot;menu review&quot;, &quot;email me the recipe&quot; and cooking tips features.</td>
<td>N/A</td>
</tr>
<tr>
<td>Band of Brothers</td>
<td>BeyondZ</td>
<td>US</td>
<td>Viewers of HBO’s &quot;Band of Brothers&quot; mini-series had access to reviews of episodes, historical/chronological information, cast/character backgrounds and other information.</td>
<td>N/A</td>
</tr>
<tr>
<td>&quot;Town Hall&quot; format</td>
<td>CBC</td>
<td>Canada</td>
<td>Many of CBC’s public affairs programs are broadcast in a &quot;town hall&quot; format. This format uses interactive features to permit viewers to provide electronic input to programming in real-time.</td>
<td>N/A</td>
</tr>
<tr>
<td>&quot;Drop the Beat&quot;</td>
<td>CBC</td>
<td>Canada</td>
<td>The Drop the Beat program has enhanced broadcasting features.</td>
<td>N/A</td>
</tr>
<tr>
<td>&quot;Our Hero&quot;</td>
<td>CBC</td>
<td>Canada</td>
<td>Expanded web content.</td>
<td>N/A</td>
</tr>
<tr>
<td>&quot;0340&quot;</td>
<td>CBC</td>
<td>Canada</td>
<td>An interactive poll was conducted for this French language children’s show. This poll was used in conjunction with CBC website features to allow children to design the wardrobe of the show’s characters.</td>
<td>N/A</td>
</tr>
<tr>
<td>Programme Name</td>
<td>Network/Channel</td>
<td>Country</td>
<td>Interactive Features</td>
<td>Provider/Platform</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>-----------------</td>
<td>---------</td>
<td>---------------------------------------------------------------------------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>&quot;Zed&quot;</td>
<td>CBC</td>
<td>Canada</td>
<td>Interactive features allow viewers to provide input that directly alters the story line of the on-air broadcast.</td>
<td>N/A</td>
</tr>
<tr>
<td>&quot;Walking with Beasts&quot;</td>
<td>BBC</td>
<td>UK</td>
<td>BSkyB viewers of this program could select between &quot;normal&quot; and &quot;scientific&quot; commentary that would appear at the bottom of the screen.</td>
<td>N/A</td>
</tr>
<tr>
<td>&quot;Big Brother&quot;</td>
<td>Channel 4</td>
<td>UK</td>
<td>BSkyB viewers of this program can choose from multiple video streams and participate in votes/polls.</td>
<td>N/A</td>
</tr>
<tr>
<td>&quot;Banzai&quot;</td>
<td>Channel 4</td>
<td>UK</td>
<td>BSkyB viewers can vote on which participant will win.</td>
<td>N/A</td>
</tr>
<tr>
<td>&quot;Destinations in Hong Kong&quot;</td>
<td>ICE Interactive WIN TV</td>
<td>Australia</td>
<td>Additional interactive content was synchronised with the program to provide additional information on history, geography, cuisine, etc.</td>
<td>N/A</td>
</tr>
<tr>
<td>&quot;Degrassi, The Next Generation&quot;</td>
<td>CTV</td>
<td>Canada</td>
<td>Final episode of 2001-2 will allow viewers to access character sketches, past storylines and &quot;secret thoughts&quot; of characters.</td>
<td>N/A</td>
</tr>
<tr>
<td>MuchMusic CityTV Star!</td>
<td>CHUM Rogers WINK</td>
<td>Canada</td>
<td>Viewers have access to news-on-demand related to the topic area of the channel.</td>
<td>Liberate</td>
</tr>
<tr>
<td>Newsnet</td>
<td>CTV</td>
<td>Canada</td>
<td>Viewers are able to access additional information on news stories from a website.</td>
<td>ATVEF – Web TV Plus</td>
</tr>
<tr>
<td>&quot;Christine Cushing Live&quot;</td>
<td>Food Network</td>
<td>Canada</td>
<td>Viewers are able to share recipes, tips or ask questions via email.</td>
<td>N/A</td>
</tr>
</tbody>
</table>

"The Chatroom" | TalkTV Canada | Host monitors a real-time chatroom and incorporates discussion from the chatroom in the discussion on the program. | N/A | N/A

Footnotes

1 The BCE submission to Public Notice CRTC 2001-113 is a joint submission by CTV Television Inc. and the Bell ExpressVu Limited Partnership. return

2 The terms "Electronic Programming Guide" and "Interactive Programming Guide" are often used by different interveners to describe the same function. For the sake of simplicity, the term Interactive Programming Guide (IPG) will be used throughout the document. return

3 The provision of interactive content through an ‘ancillary data stream’ referred to here is simply another way of describing the ‘carousel’ method set out in section 2.2. return

4 The vertical blanking interval (VBI) is a portion of the television signal which is unusable for video and audio but can be used to carry additional information related to the transmission. The television picture, in most analogue television sets, is generated by an ‘electron gun’ that fires a narrow beam of electrons across the screen from right to left, and from top to bottom, in a sequence of horizontal lines similar to the way eyes move when reading. The horizontal lines are generated at such a rapid rate that the eye sees a constant image over the entire screen. The VBI is the time required for the beam to move from the bottom of the screen back up to the top. The VBI is commonly used, for example, to carry closed-caption text. return

5 The Motion Pictures Experts Group (MPEG) standard is an internationally agreed upon standard for digital video compression. Data sent in this format can be decompressed and viewed on digital equipment. MPEG is a standard format for both digital video and audio. return

6 Throughout the balance of this report we will use the term ‘platform’ exclusively for the sake of simplicity. Although middleware and platform may have different technical meanings, the Commission has elected to use the term platform since this term is often used more generically to describe software which might also be called middleware as well as certain hardware/software combinations that could not properly be considered middleware. return

7 There is no current single standard for ITV platforms or middleware although several possibilities are currently being developed. ITV standards are discussed in more detail in section 6.3. return


9 The "Wink" service is described in more detail in section 2.2 of this report. return

11 BCE has proposed that its *Code of conduct for the Fair Provision and Distribution of Digital Programming Services* be adapted and apply to all parties. return

12 The CCTA’s submission cites different payments to Wink – advertisers pay Wink up to 12% of purchase revenue for purchases and $1 to $2.50 for each "lead". return

13 The Standards Council of Canada (SCC) is a crown corporation created by an Act of parliament and is independent of government in its policies and operations. Its main responsibilities involve overseeing and co-ordinating Canada’s standardisation efforts both at home and internationally. The SCC is also the co-ordinating body of the National Standards System, which is a federation of independent, autonomous organizations focussed on the development and advancement of voluntary standardisation in the national interest. The organization reports to Parliament through the Minister of Industry. return

14 VOD is another ITV service that the Commission has already determined to fall under the definition of broadcasting. return

Date Modified: 2002-10-22