Flexible Vision v.2.0

A compendium of new and emerging audiovisual content delivery platforms and government intervention

2nd edition

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SCREEN AUSTRALIA

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Introduction

This report, *Flexible Vision: A compendium of new and emerging audiovisual content delivery platforms and government intervention*, is an update of the publication *Flexible Vision: A snapshot of merging audiovisual technologies and services, and options for supporting Australian content*, published by the Australian Film Commission in November 2003.

This second edition has focussed on developing a concise compendium of new and emerging audiovisual content delivery platforms, detailing Australian and international Government intervention in, and support for, each area – be it in regulatory (ie local content quotas, expenditure requirements, classification etc), direct (ie government funding, subsidies) or indirect (ie tax schemes) form. Information is provided also on government reviews, green papers or reports undertaken in each area, where relevant.

For each new and emerging content delivery platform, a profile is provided including the following information:

- definition
- consequences for current content delivery
- current status for the technology overseas and in Australia
- current Australian and international regulations applying to the platform, and
- direct and indirect support for local content provided on the platform.

At the time of publishing the first edition, Australia was beginning to witness the impact of new content delivery platforms on audience viewing habits and access to Australian and international content. Many governments, including our own, continue to face similar challenges and are undertaking reviews of regulatory options for content on digital and interactive delivery systems.

This second edition highlights some of the major changes that have occurred over the past four years in emerging new audiovisual content delivery platforms. Recent technology developments have reinforced the control of consumers on their consumption of media with the ability to access content from an increasing multiplicity of platforms: Internet Protocol TV (IPTV), mobile television, video-on-demand and second-generation broadband websites (Web 2.0). Consumers also have more control on the moment they access content thanks to functionalities such as time-shifting, viewing recorded programs on demand on personal video recorders, or emerging video-on-demand offerings.

Thirteen forms of content delivery are reviewed:

1. Broadband
2. Digital cinema (digital distribution and exhibition)
3. Digital television: free-to-air
4. Digital television: subscription
5. File-sharing websites and peer-to-peer networks (P2P)
6. Game consoles
7. High-definition television (HDTV)
8. High-definition video formats

9. Interactive television services
10. Internet protocol television (IPTV)
11. Mobile Television
12. Personal video recorders (PVRs)
13. Video-on-demand (VOD)

In 2007 eight out of 13 new delivery platforms reviewed had been introduced into the Australian market, while five have just recently emerged or are still in their trial phase – digital cinema, high-definition DVD, IPTV, mobile TV, and video-on-demand.

It should be noted that the information presented is based on research undertaken during 2007 and early 2008. Given the pace of development in this area, the information is likely to become outdated quickly.

1. Broadband

1.1 Definition

The term Broadband is the commonly used shorthand for broadband Internet and is characterised by a high rate of data transmission as opposed to slower speeds found in dial-up services. In Australia, the Australian Competition and Consumer Commission (ACCC) defines broadband services as any high-speed connection greater than 256kb/sec over a mix of media.[1] Although, there is no specific bit rate defined by the industry, any connection to the consumer of 256kb/sec or more is generally considered broadband Internet.

1.2 Consequences for current content delivery

As the bandwidth delivered to end-users increases, it is expected that video-on-demand (VOD) and Internet protocol television (IPTV) services streamed over the Internet will become more popular, though at the time of publishing such services generally require specialised networks. It is expected that broadband sites will continue to challenge other forms of content delivery such as television, DVD, compact discs (CDs), newspapers and games consoles, for eyeball time and share of wallet.

1.3 Current status

International: Broadband is fast becoming the base standard for Internet delivery. The United States has the largest total number of broadband subscribers in the OECD (66.2 million broadband connections in December 2006).[2] The leading countries in terms of broadband penetration were Denmark, The Netherlands, Iceland, Korea and Switzerland with over 29 broadband subscribers each per 100 inhabitants.[3]

The main technologies for Broadband at the moment are DSL (Digital Subscriber Line) and cable modem. Other technologies include satellite, fibre-to-home and fixed wireless. While DSL continues to be the leading platform in most OECD countries, cable modem dominates in Canada and the United States. Fibre-to-home is becoming increasingly important in Japan and Korea. The breakdown by technology for OECD is 62 per cent DSL, 29 per cent modem, eight per cent fibre-to-home and two per cent other.[4]

An estimated 81 million people, or 63 per cent of the 129 million people who access the Internet over broadband in the US watch broadband video at home or at work.[5]

Australia: As at 30 September 2006, the total broadband take-up in Australia according to the ACCC was 3,639,700 subscribers, a penetration rate of 18 per cent of the total Australian population.[6] Eighty per cent of connections are DSL, 17 per cent modem and three per cent other technologies – satellite, fibre and fixed wireless.[7] According to another estimate provided by the Department of Communications, Information Technology and the Arts to the OECD, Australia has a total of 4,700,200 Broadband subscribers as at June 2007.[8]

1.4 Regulation

Current Australian regulation

'Internet Content' is regulated under schedule 5 of the *Broadcasting Services Act 1992* (Cth) (BSA) for the purpose of restricting access to content that is likely to offend reasonable adults.

Under the current regime, audio and video streaming on the Internet is not subject to the same regulatory requirements as television. On 21 July 2000, the Minister for Communications and the Arts, Senator the Hon. Richard Alston made a Ministerial Determination that Internet services such as audio and video streaming would not be considered broadcasting services under the BSA.[9]

However in its *Meeting the Digital Challenge: Reforming Australia's Media in the Digital Age Discussion Paper*, the government stated that:

> In considering applications for [new commercial FTA television licences delivered outside BSB spectrum (such as wireless, satellite and broadband services)] after 31 December 2006 the Government will consider whether allocation is in the public interest.[10]

The Discussion Paper went on to say that:

> Further consideration would be given to the degree of other regulation that should apply to these services (for example, local content rules), in line with the general intention set out in the BSA that different levels of regulatory controls should be applied across the range of broadcasting services according to the degree of influence of those services. As far as possible, a consistent approach should be developed to regulation across different types of digital services, which reflects the nature of those services rather than their method of delivery.[11]

The Australia-US Free Trade Agreement (AUSFTA) allows the government some freedom to respond to changes in media technology. Annex II to the Australia-US Free Trade Agreement states that:

> *where a free-to-air commercial television channel subject to a* transmission quota is rebroadcast over another transmission platform – or where a free-to-air commercial television service provider moves a channel subject to a transmission quota to another transmission platform, the quota may be applied to that channel.[12]

Furthermore, the Australian Government has retained the right to regulate "interactive audio and/or video services".[13] The government can take measures to ensure that Australian content on new media is not unreasonably denied to Australian consumers.

Overseas scenarios

Canada: The Canadian Radio-television and Telecommunications Commission (CRTC) was one of the first regulators in the world to clarify its position on the Internet. It announced its decision not to regulate the Internet in May 1999.[14] The CRTC applies the New Media Exemption Order to Internet and mobile telephony services offering content. This Order means that these services are not subject to licensing or other regulatory measures under the Broadcasting Act (Canada).[15]

The CRTC considered the circumstances that led to the need for regulation of Canadian content in traditional broadcasting, as they do not currently exist in the Internet environment. It believed that market forces were providing a Canadian presence on the Internet that was also supported by a strong demand for Canadian new media content. If Canadian content on the Internet diminishes, is under threat, or disappears altogether, the CRTC maintains the power to intervene and regulate to support the production/creation of Canadian Internet content.

Under the Telecommunications Act, the CRTC has refrained from applying tariff filing and approval obligations to Internet Service Providers (ISPs) and mobile operators, while retaining other powers including the ability to prohibit "undue preference".[16] The CRTC has also exempted ISPs from the "common carrier" obligations of the Act with respect to content of a carrier's own Internet service.

The CRTC is currently undertaking a comprehensive policy review of potential regulation of new audiovisual technologies called the New Media Project Initiative.[17] This initiative seeks to investigate the social, economic, cultural and technological issues associated with New Media, and what actions, if any, the CRTC should take to ensure that New Media Broadcasting meets the objectives of the Broadcasting and Telecommunications Acts into the future.

The purpose of this Initiative is to provide a solid basis for policy development in the new environment. It will build on the foundation of a 2006 report entitled *The Future Environment Facing the Canadian Broadcasting System*.[18]

European Union: The European Union has decided to impose baseline regulation of audiovisual content covering different broadcasting and media types. In December 2007, the European Parliament agreed to a new Audiovisual Media Services Directive (AVMSD) to replace the Television Without Frontiers Directive (TVWF) first introduced in 1989 and updated in 1997.[19] The new directive is modernised to take into account digital TV and broadband.

The AVMSD introduces the concept of "audiovisual media services"[20] with a distinction between "linear services" or traditional broadcasting,[21] and "non-linear"[22] or on-demand services.[23] "Non linear" audiovisual services will be subject to minimal blanket regulation. A channel will remain regulated in the country from which it operates.

The European Union chose a graduated regulatory approach:

- Non-linear services are submitted to a light touch regulation and need to comply with basic principles such as minor protection, prevention on incitement to racial hatred, restriction on tobacco and alcohol advertising, and an obligation to promote European works.
- Linear services are submitted to an additional layer of rules including local content requirements.

The amending directive was adopted on 11 December and entered into force on 19 December 2007. Member States have two years to transpose the new provisions into national law, so that the modernised legal framework for audiovisual media services will be fully applicable by the end of 2009.

France: Until 2004, the French regulatory framework did not take into account new media. In 2004, a new law "pour la confiance dans l'économie numérique" (21 June 2004)[24] made a new distinction between:

- Private communication ("correspondance privée") and communication to the public via electronic means. Private communication is the exchange between two identified persons – one to one – while communication to the public is one to many.
- Audiovisual communication – where the information is a "programme" – and online communication to the public – where the sender provides some content which the recipient chooses (for instance, a website). Under this distinction, video-on-demand (VOD) is online public communication, while pay-per-view (PPV) is audiovisual communication.

This distinction is used as the basis for the French regulatory framework. The Conseil supérieur de l'audiovisuel's (CSA) efforts are now focused on clarifying which rules are applicable to both audiovisual and online communication, or specific to one or the other. For example, broadcasting quotas are applied to "audiovisual communication", regulations relating to spam are applied to online communication while defamation applies to both forms.

New Zealand: The Broadcasting Standard Authority (NZBSA) does not have jurisdiction to deal with the content of programs broadcast over the Internet through website downloads and audiovisual content published on overseas-based websites. However, in a recent report on the future of media regulation,[25] the NZBSA reviewed the need to change media regulation. The report identifies gaps and inconsistencies in the current regulatory regime revealed by new formats.[26] The report suggests filtering and labelling, voluntary standards and self-regulation as the key to regulating Internet content in the future.

UK: The Communications Act 2003 (UK), which gives statutory powers to the Office of Communications (Ofcom), was deliberately kept technologically neutral in order to reflect the convergence of media to deliver services.[27] Television and radio broadcast over cable, satellite and terrestrial platforms, or private IP (Internet protocol) networks running for example over ADSL, are regulated by Ofcom.[28] However, Internet content is largely unregulated under the Communications Act 2003 (UK) with video streaming and audio streaming unregulated. Television in section 233 of the Communications Act 2003 (UK) is defined as "not … a two-way service". Video streaming over the Internet would normally be seen as a part of a two-way service.[29] Internet content was explicitly excluded from Ofcom's regulatory remit except in the context of media literacy. However, during a debate organised by the Internet Service Providers' Association (ISPA), Lord Currie – chairman of the Ofcom – did not rule out the possibility of regulation.[30] Laws relating to obscene publications, defamation and copyright continue to apply.

US: There is no specific regulation of broadband. The government has sought to bring in two laws to censor offensive online content but both have been struck down on the grounds of the First Amendment. One was the Communications Decency Act and the other was the Child Online Protection Act. Both attempts have been struck down on the basis of the First Amendment.

1.5 Support for content

Australia

In 2002/03, the Australian Film Commission (AFC) received some additional funding of A$2.1 million over three years to establish a Broadband Production Initiative. The objective of this funding was to provide seed funding for innovative Australian content producers to pursue opportunities in new broadband applications, with an emphasis on high-end, high technology content, including interactive applications. Since the winding up of this direct funding, the AFC delivered a Broadband Cross-media Production Initiative with the Australian Broadcasting Corporation (ABC) and integrated Broadband content funding into its Film Development Cross-Platform Digital Media Funding Guidelines 2008.[31]

Overseas scenarios

Canada: The Canadian Government funds broadband content through the money raised by the broadcasting distribution undertakings (BDUs). All broadcasters are required to participate in the production of new quality Canadian programming through a financial contribution to be directed to an independent production fund – typically a minimum of five per cent of annual gross revenues. Eighty per cent of these funds are directed to the Canadian Television Fund and 20 per cent of the contribution must be directed to more independently administered production funds, one of which is the Bell Broadcast and New Media Fund. This fund supports projects, which include a new media/broadband component as well as a television component. The television component must be designated as a drama, variety, documentary, children's program or educational programming.

Broadband content support is provided by other government organisations including the Department of Canadian Heritage under The Applied Research in Interactive Media (ARIM) program; Telefilm Canada (New Media Fund). Canada also offers indirect forms of support to new media, with tax credits on labour expenditure available in some provinces.

Europe: In March 2005, the European Parliament announced a new program, eContentplus, to support the development of multi-lingual content for innovative online services. The program was allocated a budget of €149 million for 2005–2008. The program concentrates on three areas of the digital content market where there is fragmentation in Europe and insufficient market forces – spatial or geographical data, educational material and cultural content.[32]

France: France has specific support programs for new media content, including games, digital interactive works, research and development and new production technologies. One of the most important programs is the Multimedia Publishing Support Fund (Fonds d'Aide à l'Edition Multimédia – FAEM), an initiative of the Ministry of Industry managed by the CNC, which primarily supports video games, CD and DVD-ROMs, as well as interactive content for the Internet and, since 2004, mobile telephones.[33] This support includes assistance for the production of prototypes, pre-production costs, production and editing of interactive programs, and support for the industry as a whole.

Northern Ireland: In 2006, the Department of Enterprise, Trade and Investment (DETI) of Northern Ireland announced a Broadband Content Initiative as part of its Skills and Science Fund. A shortlist of 20 projects was subsequently

selected and provided support to develop their ideas. These were presented to a commissioning panel in October 2006 with a final recommendation for six showcase projects to be developed. The companies were able to provide ideas to deliver broadband content to personal computers, televisions, MP3 players, mobile phones and networked games consoles. The support received includes business and marketing plans plus intellectual property rights and digital rights management.[34]

Singapore: In Singapore, the Media Development Authority (MDA) has a number of schemes to support content for digital media and technologies:[35]

- Invigorate is a mobile game development initiative targeting the development of innovative mobile game concepts for mobile phones.[36]
- The Digital Content Development Scheme supports the development of innovative ideas and concepts (original TV animation, original animated feature films, playable game demos for original computer, console and mobile games and interactive media pilot projects).[37]
- Synthesis is an Online Content Initiative to support innovative digital productions made for the Web such as interactive 'webisodes', animation, games, educational content and any innovative experimental work.[38]
- Digital Technology Development Scheme to support the development of original and innovative products or processes that will help bring about value-added services, products and technology to the broadcasting industry.[39]

United Nations: In 2002, UNESCO launched its 'Creative Content Program', an initiative aimed at stimulating creativity and innovation in local content production for television, radio and new media in developing countries.[40]

New Zealand: NZ On Air announced the creation of a new NZ$1 million contestable fund, the Digital Content Partnership Fund.[41] The fund will support programs involving the use of new media and is part of NZ On Air's new digital strategy. This will follow Amendments to the NZ Broadcasting Act that intend to allow funding of online and other digital content. The Act currently requires a 'broadcast outcome', which means that successful projects for the first year's allocation, at least, must still air on a New Zealand television or radio station. But the fund will also allow reversioning and streaming on online and mobile platforms.[42]

2. Digital cinema (digital distribution & exhibition)

2.1 Definition

Digital cinema encompassing digital film distribution and digital exhibition is the digital delivery to an acceptable commercial standard of content to cinemas for theatrical exploitation via hard disc, satellite and online for screening.[43] Content can be full-length motion pictures, trailers, advertisements and other audiovisual 'cinema-quality' programs. The delivery of content can happen via the Internet, dedicated networks, DVD, digital tape, a digital storage device, or satellite transmission.

A distinction is commonly made between d-cinema and e-cinema. *D-cinema* refers to the high-end digital screening of films in cinemas equipped to screen such material, while *e-cinema* refers to digital cinema using low-end projectors.

2.2 Consequences for current content delivery

The key consequences are expected to include:

- More flexible programming options: exhibitors will be able to expand the number of screens devoted to a popular film without having to wait for extra prints to be shipped. They will also be able to improve the quality and versatility of pre-feature advertising.
- Productivity gains in running theatre operations: this would follow significant and expensive investment in new technology and reduction of print costs.
- Access to new or improved revenue streams: once theatres are networked and able to display digital content delivered by cable or satellite, it becomes possible to use the big screen for live broadcasting, sport, music and gaming.

The conversion to digital can also significantly enhance the sector's diversity in terms of forms of content.

2.3 Current status

International: There were 4,869 d-cinema screens worldwide in early 2007.[44] The leading countries in terms of number were the US (3,521 of d-cinema screens), UK (283 d-cinema screens), China (224 d-cinema screens), South Korea (134 d-cinema screens) and Germany (132 d-cinema screens).[45] Ninety-two per cent of the deployments of d-cinema are of 2K resolution, with some 4K deployments in the US, the UK and Singapore.

Several territories have embraced e-cinema to overcome large geographical areas and provide a more advanced film exhibition method for widely spaced out populations. India has the largest number of e-cinema screens with around 775 screens in 2006. Digital cinema operators are targeting over 6,700 digital screens by the end of 2008.[46]

While the technology is now sufficiently advanced for a commercial rollout as demonstrated in the figures, there are still some barriers to the full deployment of digital cinema – the key being the lack of certainty over what can be considered acceptable d-cinema equipment. US studios have agreed on specifications through the Digital Cinema Initiative (DCI) in July 2005, but according to DCI's position on compliance, each studio can decide to what extent they enforce compliance measures and which entities are acceptable for compliance testing. In October 2006, international exhibitors in 14 countries called for the creation of a uniform certification scheme for digital cinema systems.

There also remains uncertainty on who should pay for the conversion. In the US, where the industry is largely vertically integrated, studios are paying the costs of conversion. Another obstacle to a wide scale rollout of digital cinema has been the lack of availability of movies in digital format. Exhibitors have held back because of the lack of digital film content, and distributors hold back because of the lack of digital screens.

On-screen gaming sessions are offered in Belgium and operas are shown in theatres in the US, Canada and Europe. There is also a stream of content being produced for 3D screens.

Australia: In March 2008, Australia had 30 d-cinema and e-cinema screens deployed.[47]

2.4 Regulation

Current Australian regulation

Australia currently imposes no regulation on film distribution and film exhibition outside of the classification of films.

In the past, a quota was introduced in Victoria in 1927 requiring cinemas to screen at least one Australian production in each program. This was easily met by including a cheap travelogue or newsreel. The Royal Commission that sat from June 1927 to February 1928 proposed establishing a quota for Australian and Empire productions but no legislation followed, at least partly out of deference to American distributors and Australian exhibitors, who opposed a quota. Australian production plummeted in 1929.[48]

Overseas scenarios

France: French strategy for digital cinema conversion has been developed in a report commissioned by the CNC (Rapport Goudineau 2006).[49] The report lists 14 recommendations for public policy including requiring producers to make their films available in digital format by 2009/10. The report also recommends examining the possibility of establishing support mechanisms to protect the most vulnerable screens (especially one screen cinemas) and distributors with limited release plans (digital/35mm mix). France continues to have a cinema ticket levy and subsidises the release of copies of films.

China: The government is promoting a local standard for digital cinemas limiting US content available digitally in China.

US: DCI is a joint private venture of different studios – Disney, Fox, Paramount, Sony Pictures Entertainment, Universal and Warner Bros Studios – created in 2002 to establish and document voluntary specifications for an open architecture for digital cinema that ensures a uniform and high level of technical performance, reliability and quality control.[50] DCI contracted the Fraunhofer Institute to develop a standardised set of procedures to test comprehensively for technical compliance. However the result of this work does not constitute a formal compliance system.[51]

In October 2006, international exhibitors in 14 countries collaborated to call for the creation of a uniform certification scheme for digital cinema systems. According to DCI's position on compliance, each studio can decide to what extent they enforce compliance measures and which entities are acceptable for compliance testing.[52]

2.5 Support for content

Australia

Support for exhibition of Australian films, video and interactive media programs through the Industry and Cultural Development Program of Screen Australia. In December 2006, the AFC launched the Regional Digital Screen Network (RDSN), a digital cinema network providing regional areas with access to a greater variety of Australian programming. Stage one involves eight screens across regional Australia. The equipment installed is currently low end (1.4K projector with physical delivery of digital hard drives initially) but is capable of being upgraded to DCI standard in the future.

Overseas scenarios

Europe: The European Union allocated MEDIA 2007 €755 million to support Europe's film industry from 2007–2013.[53] MEDIA 2007 is the successor to the four previous programs MEDIA I, II, III and Training. The program concentrates on support to the pre- and post-production phases of filmmaking, with a clear priority on distribution and promotion (65 per cent of the support) of European films outside their originating country. MEDIA 2007 does not fund production.

MEDIA 2007 offers two support schemes particularly designed to ensure players of the audiovisual European industry incorporate new technologies in their business practices:

The pilot projects scheme offers support (€2 million in 2007) for new ways of creating and distributing and promoting European content via non linear services, as well as networked databases to broaden and strengthen the access and exploitation of catalogues.[54]

- The Video on Demand and Digital Cinema Distribution scheme (€4 million in 2007) supports the creation and exploitation of catalogues of European works to be distributed digitally across borders to a wider audience and/or to cinema exhibitors through advanced distribution services.[55]

There are also several publicly-financed e-cinema networks throughout Europe.

CinemaNet Europe is a pan-European digital film network, which was launched in November 2004 with plans to rollout 210 screens in nine territories.[56]

Portugal: In Portugal, the ICAM allocated some funding to a digital cinema project proposed by Rede Cine Network. In 2006, four out of 20 cinemas targeted had been equipped.[57]

Norway: In Norway, the government is organising and part-funding a study – the NORDIC project – and testing process to determine the best way forward in digitising the country's publicly-owned cinemas.[58]

UK: In August 2004, the UK Film Council launched the Digital Screen Network,[59] a £12 million scheme, funded by the National Lottery installing 240 screens in 210 cinemas with state-of-the-art digital projection facilities by spring 2007.[60] The network is intended to improve access for audiences across the UK to a more diverse range of films. The UKFC funding meets the capital cost of the equipment required by the cinema in return for devoting a set percentage of playing time to specialised programming. The UKFC also contracts with each cinema for a certain number of programming slots to be booked centrally by the UKFC. These slots include educational content, archive material and short films.

France: French strategy for digital cinema conversion as developed in the Rapport Goudineau[61] recommends limiting public funding for investment in digitisation of cinemas to 2K projectors (minimum).[62] Lesser hardware specifications are not to be excluded from public support if this serves to complement current 35mm projection equipment. Furthermore, it recommends research funding to encourage cinema diversity.

Singapore: Singapore is building an infrastructure to become the hub for digital cinema in Asia. In 1999, the government launched an initiative to establish Singapore as a 'digital shipping port' that can receive digital cinema content, such as movies and online games, and manage all aspects of the redistribution of that content to Asian markets. Cross Continent Digital Content Transmission or CCTx is a pilot driven by government and industry players to develop a viable business model for digital delivery across continents from the United States to Asia.[63]

Korea: The Korean Ministry of Culture will invest US$49 million in d-cinema for the period 2006–2009.[64] The Korean Film Council is undertaking work on a document for local technical standards. As of mid-2007, the equipment in Korea has consisted of 2K projectors with JPEG 2000 compatible servers in line with DCI recommendations.

3. Digital television: free-to-air broadcasting

3.1 Definition

Digital television (DTV) is a telecommunication system for broadcasting and receiving moving pictures and sound by means of digital signals, in contrast to analogue signals used by analogue or traditional television broadcasting. DTV can be transmitted over the air (digital terrestrial television or DTT), by cable or by satellite. DTV uses data that is digitally compressed and requires decoding by a specially designed television set (integrated digital television) or a standard receiver with a set-top box. DTV is also commonly used as an umbrella term encompassing high-definition television (HDTV) and several other applications, including standard definition television, datacasting, multicasting and interactivity.

Free-to-air broadcasting means the distribution of audiovisual content on a public or commercial channel to audiences without paying. Free-to-air broadcasting covers transmission by cable, satellite and terrestrial technologies, but excludes services to which access is limited by conditional access systems such as television services.

3.2 Consequences for current content delivery

Digital television broadcasting technology brings significant improvement in terms of transmission capacity (the technology allows each digital broadcast station to split its bit stream into two, three, four or more individual channels of programming and/or data services), picture quality, information management (electronic program guides) and interactivity.

Additional channels will increase the demand for content by broadcasters. It is likely that the content forming these channels will not be of a type that will be in direct competition to the main channel and may well be highly specialised, niche or complementary to the main channel, so as not to undermine their key value proposition of delivering mass audiences to mass advertisers.

3.3 Current status

International: As digital television has been introduced around the world, some countries have vigorously encouraged the introduction of new digital channels (UK), while others have opted to use the technology to deliver better quality pictures via HDTV (Australia, US).

DTT services were relaunched in the UK in 2002 (following the commercial failure of the pay TV proposition ONDigital) with free-to-air DTV Freeview. Freeview broadcasts free-to-air television channels, radio stations and interactive services from the BBC, Sky and other broadcasters. Freeview offers no premium or pay-per-view channels and no subscription channels. In the first quarter of 2007, there were more Freeview devices connected to the main television set in the home than pay satellite set-top boxes with 80.5 per cent of UK households (20.4 million homes) able to receive digital television.[65]

Services similar to Freeview have been introduced in France and Spain with a Freeview service made up of TVNZ, CanWest (who manage TV3 and C4), Maori

Television and Radio New Zealand to be introduced in New Zealand in early 2008.

Australia: Digital television in Australia commenced on 1 January 2001 and uses the DVB-T standard. Latest estimates published by Digital Broadcasting Australia shows that 28 per cent of Australian households have adopted free-to-view digital television as of March 2007 with cumulative sales of digital receivers at 2.5 million units.[66]

The comparatively low take-up of DTV in Australia (28 per cent of homes compared to 70 per cent in the UK or France) is thought to be the lack of incentives to adopt digital TV, other than better picture and sound quality. There remains limited content available with only ABC and SBS currently authorised to use more than one digital channel for purposes other than simulcasting. SBS has had a second world news channel since 2002, and ABC launched ABC2 in March 2005. With the change of regulation regarding genre restrictions for multi-channelling in October 2006, ABC TV has been able to provide more appealing content on its second digital channel. Network Ten and the Seven Network launched HD Channels in December 2006.[67]

3.4 Regulation

Current Australian regulation

Free-to-air broadcasters have been required to broadcast in digital form since 1 January 2001. Spectrum has been provided free of charge to existing analogue broadcasters on the condition that they use the spectrum to simulcast their analogue signal in digital.

In 2006, Australia's Communications Minister Senator the Hon. Helen Coonan announced a package of reforms called the New Media Framework. The Framework includes:

- The development of a Digital Action Plan to drive the take-up of digital television services with a new switch-over target between 2010 and 2012.
- The establishment of two new digital channels for in-home services (Channel A) and mobile services (Channel B).
- The removal of the requirement for HD programming to be a simulcast version of standard definition. From 1 January 2007, broadcasters have been permitted to run a separate HD channel in advance of switch-over while continuing to be required by law to transmit a quota of their programming in HD (at least 20 hours/week) (see '7. High-definition television (HDTV)').
- Allowing commercial free-to-air television stations to broadcast one additional standard definition channel from 1 January 2009, with full multichannel services by the time of digital switchover (2012).
- A date for switch-over to solely broadcasting digitally by 2012.
- Retaining the prohibition on 'full multichannel' services for commercial broadcasters prohibiting the screening of anything considered as 'entertainment', while lifting the genre restrictions imposed on the national broadcasters digital multichannels.
- A relaxation in cross-media and foreign ownership restrictions.

In September 2006, as part of the Digital Action Plan, the Australian Government announced its plans to auction two sets of DTT spectrum. Ten-year licences were to be auctioned separately. Services on both allocations must start within 18 months of assignment. Channel A is reserved for in-home standard definition non-subscription services. Channel B is for 'a wider range of uses', which could include new digital services such as mobile TV. Channel B could charge a fee for a mobile service.

There is currently no requirement for minimum Australian content on digital multichannels or enhanced services enabled by digital television. According to the government's Framework though, arrangements for the regulations of multichannels by commercial FTA broadcasters, including local content rules, will be considered prior to the end of the restrictions on commercial television broadcaster multichannelling.[68]

Reservations in the AUSFTA ensure that the Australian Government may introduce new additional local content requirements in relation to possible digital multichannelling on free-to-air commercial TV, subscription TV, interactive audio and/or video services.

There are a number of reservations to the AUSFTA's Chapters on Cross-Border Trade in Services and Investment addressing the use of additional local content requirements in the audiovisual sector. These include Australia reserving to adopt or maintain:

- the existing 55 per cent local content transmission quota imposed on free-to-air commercial analogue and digital (other than multichannelling) television broadcasting services as well as subquotas within the 55 per cent programming quota[69]
- advertising broadcast on free-to-air commercial analogue and digital (other than multichannelling) television service[70]
- with regards to multichannelling, a 55 per cent transmission quota on programming on no more than two channels, or 20 per cent of the total number of channels[71] (whichever is greater), made available by an individual broadcaster[72]
- with regards to multichannelling, an 80 per cent transmission quota on advertising may be imposed on no more than three channels made available by an individual broadcaster[73]
- a transmission quota to a free-to-air commercial television channel subject rebroadcast over another transmission platform – or where a free-to-air commercial television service provider moves a channel subject with a transmission quota to another transmission platform.[74]

Overseas scenarios

Canada: The CRTC is treating digital technology as a replacement for analogue technology and transitional digital licences have been issued. Existing broadcasters, including community broadcasters, wishing to simulcast existing analogue services qualify for a transitional digital television licence. While the licence is to be used for simulcasting existing analogue broadcasts, up to 14 hours/week of non-simulcast material may also be broadcast in digital format. This is to encourage innovation in digital broadcasting, and is seen as an aid to consumer transition between the two technologies. If broadcasters fail to take up a transitional digital television licence within a 'reasonable' period, the Canadian

licensing authority has stated it will be open to applications by new broadcasters.[75]

Any new material broadcast on transitional digital licences must be broadcast in HD, and continue to meet the 50 per cent local content requirement to which all broadcasters in Canada are subject.

The government has not set a date for analogue terrestrial broadcasting switch off, suggesting instead that the process of switch off should be market-driven.

The CRTC is currently undertaking a comprehensive policy review of potential regulation of new audiovisual technologies called the New Media Project Initiative.[76] This initiative seeks to investigate the social, economic, cultural and technological issues associated with New Media, and what actions, if any, the CRTC should take to ensure that New Media Broadcasting meets the objectives of the Broadcasting and Telecommunications Acts into the future.

The purpose of this Initiative is to provide a solid basis for policy development in the new environment. It will build on the foundation of a 2006 report entitled *The Future Environment Facing the Canadian Broadcasting System*.[77]

European Union: The Commission published a Communication on the transition from analogue to digital broadcasting.[78] This Communication analyses the main issues arising out of the migration from analogue to digital broadcasting from a market and policy perspective and proposes a deadline of 2012 for switch off of analogue terrestrial TV broadcasting throughout the EU. The deadline has been endorsed by the Council and the Parliament.

France: France started DTT in March 2005, after some measures were introduced in the Audiovisual Law[79] to enable the deployment of DTT in France.[80]

The CSA, in charge of introducing licences for terrestrial digital television, gave priority access to public free-to-air networks and a number of digital DTT channels were allocated for existing and especially created channels – France 2, France 3, France 5, Arte, La Chaine Parlementaire, and new digital channels of France Television. The selection of private operators on French DTT was based on the following criteria:

- capacity to fulfil the expectations of a large audience and encourage the rapid take-up of DTT in France
- necessity to ensure real competition and diversity among operators
- preservation of pluralism and diverse nature of socio-cultural expression
- experience of applicants
- commitment to production and broadcasting of cinematic and audiovisual works
- coherent proposal
- finance.

The French regulation includes a limitation of the number of licences a company can own either directly or indirectly. According to the Law of September 30, 1986, a company can own – either directly or through companies it controls – a maximum of five licences.[81]

Hong Kong: The government announced the implementation framework for DTT in July 2004. The existing two terrestrial TV broadcasters, Asia Television Limited

(ATV) and Television Broadcasts Limited (TVB) are required to launch DTT by 2007 and achieve at least 75 per cent of coverage in 2008.[82] Subject to further market and technical studies, the government aims to switch off analogue broadcasting in 2012.

South Africa: The government has approved the timetable for digital switch-over. DTT services are set to begin in 2008 and analogue switch off will take place on 1 November 2011, after a three-year period of dual broadcasting.

UK: Licences to broadcast in digital are allocated to all broadcasters. Although a digital licence fee was recommended in the UK,[83] the government chose to increase the extant licence fee instead.

The Secretary of State for Culture, Media and Sport announced a firm date for digital switch-over, which will commence in 2008 and come to its conclusion four years later. Digital UK launched the first advertising campaign to raise awareness of switch-over in June 2006.

In 2006 Ofcom ruled that, on request of each multiplex operator, the free-to-air channel's only requirement put in place at the launch of Freeview in 2002 may be lifted. The effect of this ruling was that if an operator requests the restriction to be lifted, their multiplex may carry pay TV services.

US: Broadcast content regulation is limited by the First Amendment and the Communications Act that prohibit pre- or post-transmission censorship. Action may only be taken by the Federal Communications Commission (FCC) for channels on public platforms. Despite these restrictions, the FCC has begun to enforce regulations covering 'obscenity and indecency' including introducing a law that requires television sets with screens larger than 13" to be equipped with 'v-chip technology' which links program classifications with program blocking technology.

In September 2004, the FCC adopted an order regarding children's programming obligations for digital television broadcasters. DTV broadcasters have to broadcast three hours of children's educational programming. Multicast channels can chose to air children's programming on a single channel or on several of them, provided there are at least three hours on the main channel.[84]

Full-power television stations are required to cease analogue broadcasting on 18 February 2009. To facilitate the conversion to digital TV, the National Telecommunications and Information Administration administers a program to provide US$40 coupons to consumers for use towards the purchase of digital-to-analogue converter boxes. Beginning in 2008, US households may be able to obtain up to two coupons worth US$40 each toward the purchase of converter boxes.

3.5 Support for content

While there is no specific scheme for digital television content, support is available for television content in Australia and overseas.

Australia

In addition to funding the national broadcasters, the ABC and SBS, direct support for television content is available though Screen Australia and SBS Independent (SBSi).

Screen Australia provides support for telemovies, mini-series and documentaries. SBSi – a separate unit from SBS formed in 1994 – commissions quality multicultural drama and documentaries from the Australian independent production sector.

A Commercial Television Production Fund was established by the government and administered from 1995 to 1999 to increase the levels of Australian content on television and to strengthen the Australian production industry at large.

In the 2006/07 Federal Budget, the Australian Government announced an additional A$30 million over three years to enable the national public broadcaster, the ABC, to establish an independent commissioning arm to invest in high quality drama and documentaries from the Australian independent production sector. The funding is aimed at addressing the reduction in Australian content on ABC TV over recent years and to boost the domestic production sector.

Overseas scenarios

Canada: In Canada, the Canadian Television Fund (CTF) is a public-private partnership partly funded by the cable industry.[85] It provides A$242 million for television funding. Some funding for television is also available through Telefilm Canada (A$119.7 million).

France: France has a specific program for television operated by the CNC, the COSIP (or Le Compte de Soutien a l'industrie des Programmes Audiovisuels). The majority of this support is delivered via automatic mechanisms: producers with French television broadcast credits access an account and are entitled to reinvestment subsidies for developing and producing new works. Companies that have used all their automatic support can apply for supplementary subsidy in subsequent years. Producers who do not have access to automatic support are eligible for selective support.

New Zealand: NZ On Air supports the local production of TV programs for NZ broadcasters.

4. Digital television: subscription broadcasting

4.1 Definition

Subscription TV (or pay TV) operates by offering as a package a range of 'niche' or specialised programming channels which subscribers must pay to receive. A major distinctive feature of subscription TV is the direct contractual relationship between the service provider and the subscriber. Digital subscription services can be received by hybrid fibre coaxial cable or satellite and supplied on payment of subscription fees. Some subscriptions services are delivered via broadband Internet in Japan and Hong Kong.

4.2 Consequences for current content delivery

The digitalisation of subscription television services allows the ease of transition into interactive television, and increases the number of available channels.

4.3 Current status

International: The US market for subscription television is the largest in the world with the two largest US cable operators, Comcast and DirecTV, generating over US$30 billion in subscription revenue in 2005/06. Among European operators, BSkyB's subscription revenue, at £3.2 billion, is the largest.[86]

Australia: Subscription television was first launched in Australia in 1995 (satellite/MDS in January 1995 and cable services in September and October 1995) with the digital Foxtel service launching in March 2004. At end of June 2007, 26.1 per cent of TV households (2.1 million homes) were subscribing to subscription television.[87] As of April 2007 all subscribers to Foxtel were digital.

4.4 Regulation

Current Australian regulation

Legislation was enacted in 1992 providing for the introduction of subscription television services in Australia. An Australian content requirement applying to drama channels only was also introduced. The licence condition at s. 102 of the BSA requires drama channels to spend at least 10 per cent of program expenditure on new Australian drama programs for each year of operation.

A reservation introduced in the Australia-US Free Trade Agreement enables Australia:

- to introduce similar expenditure requirements of up to 10 per cent on four additional program formats (the arts, children's programming, documentaries, and educational programming)[88]
- to increase the existing 10 per cent expenditure requirement on drama channels on Subscription TV up to 20 per cent if necessary.[89]

In the most recent review of the drama expenditure requirement, it was decided not to extend the current drama requirement to documentary, nor increase it to 20 per cent.[90]

There are no must-carry rules in place in Australia.

Overseas scenarios

Canada: Under Canada's Broadcasting Distribution Regulations, all licensees of cable services, Direct-to-Home (DTH) satellite distribution undertakings, and multi-point distribution systems (MDS) must ensure that a majority of video and audio channels received by subscribers are Canadian programming services.[91] Expenditure requirements also apply, with distribution service providers required to make financial contributions to an independent production fund, which will support the production of new, quality Canadian programming. Typically the contribution is expected to be a minimum of five per cent of annual gross revenues, of which a minimum 80 per cent must be directed to the Canadian Television Fund, and the remainder directed to one or more independently administered funds.

Under a new framework for digital subscription services, the CRTC has licensed two categories of new services: Category 1 and Category 2 services.

Category 1 services are specialty services that make a strong contribution to the development, diversity and distribution of Canadian programming and are the most attractive services for early digital distribution. The CRTC's Category 1 criteria for licensing included among others: contributions to Canadian programming, including minimum commitments to exhibition (not less than 50 per cent by the end of the licence term), expenditures and original production. These services will have digital access privileges and genre protection to assist them to launch vibrant services during the uncertain period of digital rollout. To make Category 1 services available to the maximum possible number of digital subscribers, distributors who offer programming services to the public using digital technology are required to distribute all Category 1 services appropriate to their market on a digital basis. This requirement is imposed by regulation.

Category 2 services have been licensed on a more open-entry basis characterised by greater risk and competition. The CRTC recognised that some services were prepared to accept the risks of launching on a digital-only basis without the types of regulatory support that will be provided to Category 1 services. The CRTC expects applicants for Category 2 licences to commit to minimum Canadian content exhibition requirements. For English- and French-language specialty services, the minimum is 35 per cent. For ethnic specialty services, it is 15 per cent. Music video services are also required to exhibit a minimum of 30 per cent Canadian music videos.

Currently, cable and satellite distribution companies must carry existing free-to-air (terrestrial) programming as a condition of their broadcast licences.

In 2006, the CRTC set out its framework to guide the migration to a digital distribution environment of those pay and specialty services that were approved under the analogue licensing framework[92] and includes continuing to mirror analogue services until 85 per cent of the cable system's subscribers have a digital set-top box and are receiving one or more programming services on a digital basis, or 1 January 2013 whichever comes first. The CRTC also set out its policy for the licensing and distribution of HD pay and specialty services.[93] The CRTC is undertaking a review of the regulatory framework for BDU's and discretionary programs in 2007 and 2008.[94]

Europe: There is extensive content regulation (via quotas) for subscription television services through Europe based on the AVMSD (formerly the TVWF).[95] The Directive stipulates that, where practicable, television stations should reserve a majority of their broadcasting time for European works.[96] Ten per cent

of transmission time or program budget should be reserved for independent productions. 'Must-carry' rules are applied across most EU nations.

France: Local content requirements are imposed on cable television operators except for the first three years of operation. For films and audiovisual programs, at least 60 per cent of European programs, and at least 40 per cent of French-language programs. No obligations are imposed on cable television regarding investment. Must-carry rules apply in France. The Law of July 9, 2004 provides a double legal obligation: one on the cable or satellite operator to carry certain channels, and one on channels benefiting from must-carry rules to accept being carried by the operator.[97]

Ireland: In Ireland, cable, multichannel multipoint distribution service (MMDS) and satellite companies have regulated 'must-carry' stations.[98] For cable companies, this covers RTÉ One, RTÉ Two, TV3 and TG4. The same rules apply to licence satellite television (Sky Digital) and digital MMDS. Analogue MMDS companies are required to carry only TV3 due to serious bandwidth limitations.[99]

Japan: Local stations must broadcast at least 10 per cent self-produced programming. Commercial channels must devote at least 10 per cent of their programming to education and 20 per cent to cultural shows. In Japan, 'must-carry' rules are applied to cable services. Cable television operators must carry programs of all terrestrial television broadcasters of the area intact and simultaneously.[100]

Korea: There are some local content requirements in Korea. A least 50 per cent of monthly broadcasting must be Korean programs. Individual quotas apply for films, animation, and popular song genres.[101] Cable system operators, relay cable operators and satellite broadcasters must simultaneously carry programs of terrestrial broadcasters, which a Presidential Decree designates. Cable system operators and satellite broadcasters must also provide three or more channels for public and missionary work.

New Zealand: No local content requirements apply to national subscription TV in New Zealand. There are no must-carry rules in place New Zealand.

UK: As a member of the EU, the UK requires terrestrial, cable and satellite broadcasting service providers to comply with article 4 of the Audiovisual Media Services Directive and devote a majority of transmission time to European works. In addition, a proportion of programming provided by all providers in specific categories must be sourced from independent production companies.[102] Cable and satellite broadcasters must carry free-to-air channels on their digital distribution networks.

US: The United States was the first country to implement a must-carry scheme. Must-carry rules were implemented in the US by the FCC for cable operators to carry content editors others than those affiliates of the major broadcast networks. Although cable providers argued that such regulation would impose an undue burden on their flexibility in selecting which services would be most appealing to their customers, 'must-carry' rules were enacted by the US Congress in 1992. The Cable Television Consumer Protection and Competition Act of 1992 codified the 'must-carry' rules. The must-carry rules require broadcast television stations either to be carried on respective local cable systems or, in the case of commercial broadcasters to negotiate retransmission consent with the cable operator, whereby stations attempt to receive compensation for the carriage of their programming.[103] In the digital context, the FCC ruled that cable operators only have to carry either an existing analogue or

digital-only television station. The commission twice rejected multicast must-carry in January 2001 and February 2005. Multicast must-carry would expand the requirement to include every free programming service a TV station can pack into its digital bandwidth – which could mean six to 12 programming services using current compression technology.

4.5 Support for content

Screen Australia provides support for telemovies, mini-series and documentaries and is available to all broadcasters including subscription television channels.

5. File-sharing websites and peer-to-peer networks (P2P)

5.1 Definition

File-sharing is the public or private sharing of computer data or space in a network with various levels of access privilege. File-sharing websites allow a number of people to use, read, view, copy, and print the same file.

Peer-to-peer (P2P) networking is a popular technology for decentralised file-sharing. A P2P computer network leverages the collective connectivity and bandwidth between network users to distribute digital files including audiovisual material and software. Material is stored on individual computers in a shared file and accessed by other users on the network. All networks users function as both clients and servers. P2P software applications enable users to upload and download files over the P2P network services.

File-sharing websites have generated the formation of virtual communities or online communities – a term used for a social groups interacting via Internet.

A corollary to the file-sharing website phenomenon has been the expansion of user-generated, largely centralised, file-sharing websites including:

- social networking websites that build online social networks for communities of people who share interests and activities and enable the uploading of audiovisual material be it audio, video, photos and text information, eg www.facebook.com, www.myspace.com
- video-sharing websites that enable users to upload video clips to a host website and server and therefore share them with other users, eg www.youtube.com
- photo-sharing websites that allow users to upload digital photos to a host website and server and therefore share them with other users either publicly or privately, eg www.flikr.com.

5.2 Consequences for current content delivery

File-sharing websites and P2P networks have been blamed for the decline in physical CD sales. Downloading (legal or illegal) content – movies, TV shows, music – is competing with the sales of physical media (DVD, CD). According to the Australian Recording Industry Association (ARIA) however, the creation of the digital download market has offset any decline in the value of the physical CD market.[104]

File-sharing websites are largely used to download pirated files (software, video, music). Legal action has been undertaken against individuals using peer-to-peer networks and Internet access providers. Meanwhile, solutions to protect audiovisual content against unauthorised redistribution have emerged, such as the pending broadcast flag in the US or the encryption at the source used for free-to-air digital TV in Japan.

According to a study by *Screen Digest*, online television is acting as a supplement to traditional viewing, rather than a substitute.[105] However broadcasters' sites attract a small audience in comparision to YouTube and other user-generated video sites.

5.3 Current status

International: According to Morgan Stanley analysts, video content accounted for 62 per cent of the content shared in 2005 on four main P2P networks – Bittorrent, eDonkey, FastTrack, Gnutella.[106]

Content owners are experimenting with Internet distribution. The British Broadcasting Corporation (BBC) signed a partnership with Azureus, a US company behind Zudeo specialising in peer-to-peer distribution, to distribute its most famous series, *Red Dwarf*, *Strange*, *Invasion Earth*, and *Fawlty Towers*.[107] The BBC iPlayer service offers 400 hours of television programs, broadcast within the previous seven days, for storing on a PC's hard drive.[108]

Australia: Almost one in two young Australians (47 per cent) reported watching television shows, movies, cartoons or video clips that had been downloaded from the Internet – two-thirds of these (32 per cent) watch downloaded content at least once a month with 22 per cent watching downloaded content once a week or more.[109]

One survey placed P2P networking as making up 37 per cent of total Internet traffic overtaken by http at 46 per cent following the increase in use of sites such as YouTube.[110]

According to a study by LEK Consulting, piracy losses in Australia in 2003 were over A$233 million. Twenty-three per cent of Australians aged 10+ were involved in piracy, mostly 16–24 year olds. According to another study by Bergent Research, 86 per cent of pirates tested had seen a film before its cinema release. Fifty-nine per cent did not then see the film in cinemas.[111]

5.4 Regulation

Current Australian regulation

Content downloaded via P2P networks is 'Internet content' and is regulated for classification purposes under schedule 5 of the BSA.[112] 'Internet content' includes content on the World Wide Web; postings on newsgroups and bulletin boards; and files that can be downloaded via peer-to-peer software.

In mid-2006, the government also indicated its intention to introduce legislation to extend TV content regulation to video streaming on the Internet or to mobile phones.

In 2006, the government implemented significant reforms to Australia's copyright legislation including introducing two new exceptions to infringement to allow greater flexibility for the private use of copyright materials by consumers.[113] The two new exceptions allowed time-shifting of recorded television and radio programs to view or listen at a later time; and format-shifting permitting a consumer who has legitimately acquired certain types of copyright materials to make a copy of those materials in a different format. This format-shifting exception will allow consumers to store their personal music collection (whether it be stored on digital or analogue formats) on digital media players, such as iPods. Government also introduced a range of new measures to tackle piracy. The private Australian Federation Against Copyright Theft (AFACT) was established in January 2004 to work with industry, government, law enforcement and education to protect the interest of the film and television industry against copyright theft.

Overseas scenarios

Major content owners and artists' organisations have been keen to make consumers aware of illegality of copyright infringing downloads and to attempt to prosecute persistent offenders.

Spain: In Spain, a recent case legitimised downloading of copyrighted files for personal use and for non-financial purposes.[114] Downloading content from file-sharing sites, copying onto physical formats and exchange with others is not illegal provided it does not involve cash. The exchange of physical CDs or DVDs was viewed as a private activity as no financial gain was involved.

Germany: In Germany, Internet users uploading files on P2P networks risk up to five years in jail. Since 2006, accorded to new German copyright laws, private copying is allowed if the source is legal. It is illegal to modify digital right management (DRM) protection. Downloading and uploading copyright infringing files on peer-to-peer networks is illegal. Internet users doing so will risk up to two years of jail if there is no commercial use; up to five years if there is a commercial use.[115]

France: In France, the Law Dadvsi (August 1, 2006) sets a system of sanctions against illegal downloading using peer-to-peer networks. Internet users now risk up to €300,000 fine and three years of jail. However according to the Minister of Culture, this is aimed at companies and Internet users organising piracy of works.[116]

US: In the US, the US Congress is looking to pass legislation that will provide the FCC authority to promulgate the broadcast flag regulation. Broadcast flag content protection technology will be incorporated by manufacturers to consumer devices because such flags will be required in order to display and record cable and satellite programming.[117]

5.5 Support for content

No specific direct support scheme for content available on file-sharing websites was identified.

6. Game consoles

6.1 Definition

Game consoles are interactive digital devices that primary enable users to play computer games. Examples include the Nintendo Wii, Microsoft's Xbox 360 and the Sony Playstation 3 (PS3).

6.2 Consequences for current content delivery

The latest generation of games consoles are capable of playing and recording DVDs (including HD-DVD), logging on to the Internet and displaying IPTV, in addition to enabling game playing.

The games console is becoming increasingly important as a platform for linear content delivery. Demonstrative of this has been the success of the Blu-ray HD-DVD technology over the rival HD-DVD standard, which has been attributed to Blu-ray technology being included in the Sony PS3, which sold over 10.5 million units as compared to the one million stand alone Toshiba DVD units.[118] While Toshiba did have a tie-in with Microsoft's Xbox 360 games console, Xbox users were required to buy an external HD-DVD drive.

The key strategy for games consoles makers including Sony and Microsoft are to drive digital distribution of games, movies and music, through services such as Xbox Live Marketplace for the Xbox 360.[119] The Xbox 360 has the capacity to play HD-DVD (via an external drive) and Microsoft is developing facilities for IPTV with personal video recorder (PVR) functionality incorporated. Users will be able to access both VOD and IPTV providers. A limitation will be the size of the hard drive – 20GB.[120]

Nintendo has also embraced digital distribution with its Virtual Console game downloading service enabling to download titles on its 512MB flash memory. Game downloads will be purchasable using Wii points available through retailers via pre-paid cards or purchased online using credit cards.

6.3 Current status

By the end of 2007 Sony Playstation 3 had sold 10.49 million units worldwide,[121] Nintendo Wii had sold 20.13 units worldwide[122] and Xbox 360 17.7 million units worldwide.[123]

6.4 Regulation

Current Australian regulation

According to the Technological Protection Measures (TPMs) liability scheme under the new Australian copyright laws,[124] consumers can circumvent the region coding TPMs on legitimate DVDs purchased overseas. The new scheme also allows for the continued availability of region-free DVD players. These amendments codify the existing case law. The Australian High Court ruled console modding legal in 2005.[125]

There are separate classification guidelines for film and video, publications and computer games. The policy on content regulation for films, videos, computer

games and certain publications and recorded music is the responsibility of the Attorney-General through the Office of Film and Literature Classification (OFLC).

Overseas scenarios

China: In 2005, China initiated programs to curb online gaming addictions. The Chinese government introduced restrictions on Internet cafes and entertainment content, including video games, prohibiting teenagers from entering Internet cafes or karaoke bars. In 2006, China announced measures to ensure legality and suitability of content. Game distributors must first get approval to release new online games. They will be responsible for detailed monthly reporting and to ensure operators do not add illegal or improper content.

Europe: The Pan European Game Information (PEGI) system is a self-regulatory initiative started by the Interactive Software Federation of Europe in 2003 with the view to parents and gatekeepers making more informed decisions when it comes to buying offline and online games. While most of European countries have self-regulatory regimes in place, Finland has a legal classification in place.

6.5 Support for content

Australia

Screen Australia supports the development of games through its Cross-Platform Digital Media Fund.[126] Since 2000 Film Victoria has run a Digital Media Fund whose aim has been to develop innovative digital content, computer game prototypes, digital animation and digital media internships. In 2006/07 and 2007/08, Film Victoria has made available A$4.05 million to support the Victorian digital sector in the development of prototypes for games consoles.

Overseas scenarios

Canada: In Canada, the Department of Canadian Heritage allocates CA$14.5 million per year to the Canada New Media Fund, including funding for games. It has two main programs: Product Assistance, which provides conditionally repayable advances for the development, production and marketing of Canadian interactive digital cultural content; and Sectoral Assistance, which provides conditionally repayable advances for events and initiatives that contribute to the industrial and professional development of the interactive digital content industry. More recently the Canada New Media Fund, with the support of the Department of Canadian Heritage, Electronic Arts, Ubisoft and Radical Entertainment, have developed the Great Canadian Video Game Competition, assisting video game developers to vie for CA$2 million in financing and mentorship.[127]

Europe: In the context of regional development, the European Union has also taken a role in encouraging the development of the game industry. It has, for example, partly funded Game Republic, an independent trade alliance supporting the computer game industry in the Yorkshire and Humber region.

France: The French game industry received early recognition of games as artistic products, and since 2002 firms have been eligible for financial support through the FAEM. A €4 million fund goes to prototype funding, consisting of interest-free loans repayable only if a publisher buys the prototype. The government is contemplating moving to more general tax incentives and similar moves are contemplated in Germany.[128] In 2003, the French government

announced the creation of a Production Aid Fund of €30 million for the video game sector – to be co-funded by private investors, to enable six major international productions each year. In addition to this scheme, there is also support for content available through the Multimedia Publishing Support Fund (see '1. Broadband').

Ireland: Ireland adopted the 2002 Digital Content Strategy, which supports the industry particularly through research and development programs, establishment of a specialist venture capital fund, and IP protection. The games sector was identified as a key sub-sector and a number of critical issues specific to the games industry were identified, notably access to funding and skills.[129]

Korea: The Korean government has given priority in the games area to development of online multi-platform game engines as well as other core technologies such as 3D computer graphics.[130] The Korean government has identified the game industry as of strategic importance since the reform of the Sound, Records, Video, and Game Products Act in 1996. The objective is to transform Korea into one of the five major providers of online games and mobile content by 2007, notably also by creating a global brand 'Game Korea'.[131]

New Zealand: New Zealand's government has taken steps towards supporting the industry with the creation of a Design and Screen Production Taskforce following the Growth for Innovation Framework.

OECD: All OECD governments provide general tax incentives to R&D (current year write-offs, R&D tax credits, etc) that could in principle apply to R&D for games hardware, software and infrastructure.[132] For example, in the United Kingdom, the R&D tax incentive scheme applies to game development.

UK: The UK Department of Trade and Industry provides funds to support innovation, but this support is not specific to the games industry. The UK government adopted the Digital Content Sector Action Plan for Growth in January 2000 to outline possible strategies to support these industries, using, for example, competitiveness analysis of the UK games software industry.[133] It also launched the Digital Content Forum – a network formed to provide a conduit between industry and government to gather views and provide input into policy-making processes.[134]

7. High-definition television (HDTV)

7.1 Definition

High-definition television (HDTV) is a digital television broadcasting system with a significantly higher resolution than traditional formats (NTSC, SECAM, PAL). HDTV uses the wide-screen aspect ratio 16:9 rather than the traditional 4:3 format together with multi-track surround sound audio.

A number of HDTV standards are competing for the still-developing markets. The generally agreed definition of HDTV is approximately twice both the vertical and horizontal picture resolution of traditional television, which essentially makes the picture four times as sharp.[135]

7.2 Consequences for current content delivery

The combination of wide-screen, high resolution and big displays improves the viewing experience of the consumer and sets new standards for sound and picture quality in television. It is expected HD will become the new standard in mid-2010s. However cost is a possible barrier to the widespread take-up of HDTV. The access to HDTV requires consumers to have a television set capable of showing HD content.

For broadcasters and producers, HD content is more expensive to record and produce because of the cost of upgrading to HD equipment and the need to increase production values of sets and costumes due to the clarity inherent in the medium.

7.3 Current and future status

International: HDTV technology was first introduced in the US during the 1990s. At the end of 2006, there were over 100 HD channels globally – excluding HD quality VOD services. General interest channels have been the first to offer HD versions or simulcast and account for a third of the HD channels worldwide (36 channels), followed by documentary (29 channels), movie (20 channels), and sports channels (nine channels). In the US, the HD customer base is reaching critical mass with forecasts of 45 million households equipped with HD capable TV sets at the end of 2007.[136]

Nearly 450,000 households subscribe to HD television services in the UK (1.7 per cent of total TV homes).[137]

Australia: The estimated number of free-to-view digital television receivers sold to retailers and installers in the Australian market during the first quarter of 2007 reached 247,000 units with the cumulative total sales figures since DTT began to over 2,547,000.[138] HDTV receivers are estimated to account for 39 per cent of receivers in Australian homes.[139]

In the second half of 2007, networks Ten and Seven launched stand-alone HD channels – the first new commercial television channels in metropolitan areas of Australia since 1988. The Nine Network continues to simulcast in HD.

Foxtel has launched a new HD service called Foxtel HD+ in mid-2008 to initially carry content provided by the BBC, Discovery, National Geographic, FOX SPORTS and ESPN brands, but will also include a pay-per-view movie channel to be called

Foxtel Box Office HD. The programs will be in 720p or 1080i resolution.[140]

7.4 Regulation

Current Australian regulation

In Australia, HDTV quotas ensure at least 1,040 hours of HD content is available per year.[141] However the existing quota does not require HDTV content to be local content. Australian broadcasters are required by law to transmit a quota of their programming in HD. Commercial stations have to broadcast at least 1,040 hours of HD content per year.

In the new media reforms, the Federal Communications Minister Senator the Hon. Helen Coonan dropped simulcasting obligations for free-to-air broadcasters.[142] In place, they are now able to offer stand-alone HD channels. The HDTV quota is retained until the end of the simulcast period. After switch-over broadcasters will be allowed to decide how to split their spectrum between standard and HD services. The change is seen as an end to the previous Australian plan that HDTV would be the driver for the change to digital TV.

Overseas scenarios

Canada: The CRTC requires all of the programming on a digital service that is not duplicated on the analogue service must be in the HDTV format to help create consumer demand for the new digital services.[143] At least half of this programming must be Canadian product aimed at assisting the country's production industry during the transition to digital. All Canadian digital programs aired by licensees between 6pm and 12pm have to be HD where such a version exists. Broadcasters should also ensure that, by the end of December 2007, two thirds of their schedules must be available in the HD format. The CRTC also set out its policy for the licensing and distribution of HD pay and specialty services.[144]

UK: HDTV is not yet available on the DTT platform Freeview, however Ofcom are currently undertaking consultations on proposals to introduce HDTV after the analogue switch-off.[145]

7.5 Support for content

Singapore: The MDA provides support to producers and broadcasters to produce HDTV content – leading to 100 hours of Singapore-made HD content in 2006 and 200 hours in 2007.[146]

8. High-definition DVD

8.1 Definition

High-definition DVD stores HD video and/or data and has been designed to replace the standard DVD format. The new HD video format uses blue laser instead of red laser used in standard DVDs. There have been two leading and competing HD formats: Blu-ray discs (BD) and High-definition DVDs (HD-DVD).

8.2 Consequences for current content delivery

The market size and consumer prospects for stand-alone HD video players are difficult to assess with games consoles now including HD-DVD players.[147] The existence of two formats has caused some confusion with consumers and caused delays in investment in equipment. However, once a standard is settled it is likely to make standard DVD players and recorders obsolete.

8.3 Current status

International: Both Toshiba and Microsoft have announced that they will cease production of HD-DVD discs and players.[148] This is a consequence of a move by a number of major industry players including Warner Bros and US retailer Wal-Mart to support the Sony Blu-ray format and follows the development of dual format players and computers. Despite the development of a third HD video format, High-definition Versatile Multilayer Disc (HD VMD) it is unlikely to threaten the Blu-ray format which is now set to dominate the market.[149] As at 18 February 2008, over 450 Blu-ray titles have been released in the US.[150] The Sony Playstation 3 (PS3) console has a Blu-ray player included.

Australia: In Australia, combined sales of Blu-ray and HD-DVD discs was less than 200,000 by the end of 2007, while 150,000 HD Players and recorders were sold with 98 per cent Blu-ray due to the popularity of the Sony PS3.[151]

8.4 Regulation

Current Australian regulation

Aside from censorship rules administered by the OFLC, there are no content regulations applying to DVDs, nor are there levies on recordable DVDs.

The Australian Government attempted to introduce a private copying levy for home audio copying under the *Copyright Act* in 1989. However, a High Court challenge lodged by blank media manufacturers, led to the levy being characterised as a tax in 1992 and therefore ruled unconstitutional.[152]

In 2002, Australian copyright collecting societies and screen industry organisations including the Australasian Performing Rights Association (APRA), Screenrights and the Screen Producers Association of Australia (SPAA) reignited claims for the introduction of a private copying levy on blank media sold in Australia. However these efforts appear to have been extinguished by recently announced reforms to Australia's copyright legislation allowing certain types of private copying without the introduction of a statutory levy.

According to the Technological Protection Measures (TPMs) liability scheme, under the new Australian copyright laws,[153] consumers can circumvent the region coding TPMs on legitimate DVDs purchased overseas. The new scheme also allows for the continued availability of region-free DVD players. These amendments codify the existing case law. The Australian High Court ruled console modding legal in 2005.[154]

Overseas scenarios

Levies on sales of recorded video and DVD are in place in France, Germany and Japan, with levies on blank audiovisual media also in place in Canada, France, Germany and Japan. Taxes on the video/DVD/VOD market are in place in France and Germany. Although they are directed at the same market, they are distinct levies.

Canada: Canada currently imposes a blank audiovisual media levy by the Canadian Private Copyright Collective, which covers audio tapes, CD-Rs and CD-RWs (recordable CDs and re-writeable CDs). There have been calls to extend this to DVD-R, DVD-RW, DVD+RW, DVD-RAM, and non-removable electronic memory cards, and flash memory cards intended for MP3 players.[155] However Canada's Federal Court of Appeal rejected the Copyright Board's proposal to extend the levy to MP3 players, computers and other digital storage devices.[156]

France: In France, the tax on video is two per cent paid by retailers on the sale and rental of VHS, DVD and VOD (following an extension in 2004) and is directed at the audiovisual and film sectors.

Private copying levies are added to the cost of blank media sold – including video and audio cassettes, DVD-Rs, CD-Rs, digital media players, memory sticks and digital video recorders – to compensate copyright owners for reproduction of their works. These levies are administered by collecting societies. The ARP (France's Association of Authors, Directors and Producers) manages the fees on blank tapes and reallocates them into activities for the general interest of the profession. The levy is used for training activities and the exhibition of French and European arthouse films.[157]

Germany: In Germany, the tax on video applies to video publishers and distributors with rates ranging from 1.8 per cent for €30 million (A$48.9 million) turnover to 2.3 per cent for annual net turnover superior to €60 million (A$97.8 million).

Furthermore, according to Art. 54 of the Urhebergesetz (German Copyright Act), authors are entitled to equitable remuneration from the manufacturers of devices (eg copiers) or media (eg blank CDs) that can be used to copy their work. This applies to data carriers with a memory capacity of 4.7 gigabytes (equivalent of 120 minutes of video recording capacity), as well as microfilm reader printers, fax machines and scanners.[158]

Japan: Since May 2000, a one per cent royalty on sales of DVD players and recorders is collected by the Japanese Copyright Office. The royalty is limited to hardware products sold in Japan. Manufacturers of digital VHS recorders in Japan are also subject to the one per cent rate. The royalty is designed to compensate program rights holders for potential unauthorised duplication of copyrighted material.[159]

8.5 Support for content

No specific direct support scheme for content available on HD-DVD was identified.

9. Interactive television

9.1 Definition

The term interactive television covers both enhanced broadcasting – local interaction with an application that is temporarily resident in the receiver – and 'true interactivity' where there is a return channel. Interactivity in a service implies control by the user of the service by means of an ongoing system of two-way communication between the user and the service provider. 'True interactivity' refers to a request by an individual transmitted through a 'return channel' to which the service provider replies by supplying individually requested data and services separately from the main program.

The application program interface (API) – also known as middleware – is a software interface between applications, made available by broadcasters or service providers, and the resources in the enhanced digital television equipment for digital television and radio services. It is the underlying technical facility for features such as the electronic program guide (EPG), hard disk personal video recorders (PVRs) and any interactive television service, whether enhanced broadcasting or return-channel enabled.

An EPG is an on-screen display of channels and program data, which helps viewers navigate through the many channels available in digital television. EPGs are especially useful on services that offer a large number of channels (cable, satellite, digital TV).

9.2 Consequences for current content delivery

Producers are expected to progressively 'bundle' the TV program and the interactive application into the one 'rights' package. Interactivity is largely used by broadcasters to enhance advertising.

EPGs act as 'gatekeepers', directing viewers to particular content. The way they are designed and how they present information influence what content the viewer finally selects. Therefore, measures on fair and non-discriminatory EPGs may prove necessary to guarantee pluralism and availability of diverse content.

PVRs are having a profound effect on the way viewers watch television allowing viewers to record a large amount of broadcast material and replay it with great flexibility (eg skip over advertising, pause live television etc with unprecedented convenience) (see '12. Personal Video Recorders (PVRs)').

9.3 Current status

International: In the UK, the BBC launched its digital interactive television service BBCi in 2001, which is broadcast on all digital platforms.[160] BBCi delivers text and video services including enhanced television programs and offers extra information on video news and sports updates, weather forecasts, extra material, alternative sports commentary, viewer feedback, surveys and quizzes, as well as games and stories for children.

The number of US households with a PVR has grown to 20.5 per cent with over 22 million households – reaching 30 per cent in states such as Texas.[161] Nielsen Media Research have begun examining playback ratings. According to the most

recent ratings, 10 per cent of viewing was spent using the playback function. Among households with DVRs, the average prime time broadcast program audience increases by 40 per cent when including same day DVR playback and 73 per cent when including three days of playback.[162]

Australia: Foxtel launched its Foxtel IQ in 2006 – a set-top box and PVR capable of recording up to 60 hours of digital television on its 160GB hard drive. It integrates an on-screen EPG. The HD Foxtel IQ2 launched in 2008 includes a 320GB disk drive, allowing subscribers to record approximately 30 hours of HD programming or 90 hours of standard-definition programming. Only three out of five free-to-air broadcasters allow their digital content to be carried on the Foxtel network. Foxtel subscribers are able to use the PVR to record shows on the ABC, SBS and Nine, but can't access programming on Seven and Ten.

Free TV Australia announced in mid-2007 that commercial broadcasters would make their program listing information available to manufacturers of set-top boxes, PVRs and other service providers on the condition that the equipment displaying the EPG complies with some basic requirements. This will protect copyright and the integrity of the program information, in addition to facilitating the collection of ratings information.[163]

The subscriber EPG service Ice TV is also available.

The popular US PVR service TiVo has been available in Australia since July 2008. For a small subscription fee plus the price of the hardware, consumers will be able to pause live HDTV, fast-forward ads, record shows and series from any of the free-to-air digital TV channels, and access broadband content such as video-on-demand.[164]

9.4 Regulation

Current Australian regulation

Schedule 6 of the BSA sets up a system for regulating the provision of datacasting services. Datacasting service providers must hold datacasting licences. There are restrictions on the services that can be offered under a datacasting licence. Those restrictions are designed to encourage datacasting licensees to provide a range of innovative services that are different to traditional broadcasting services. Datacasting licensees are allowed to provide the following types of content:

- information-only programs (including matter that enables people to carry out transactions)
- educational programs
- interactive computer games
- content in the form of text or still visual images
- Parliamentary broadcasts
- ordinary electronic mail
- Internet content.

Broadcasters are permitted to provide datacasting services on their allocated digital channels. The Australian Communications and Media Authority (ACMA) is responsible for the allocation of these licences and a number of broadcasters have been allocated datacasting licences since commencing digital broadcasts. In October 2006, the government announced its decision

on unallocated spectrum, with the allocation of two dedicated channels of television broadcasting spectrum nationally for new digital services. Channel A will allow new free-to-air, in-home digital services such as datacasting.

Conditions are also placed on EPGs under the datacasting regime. These state that if an EPG is used and contains information about one commercial or national television broadcasting service, the licensee must transmit the equivalent information about each other commercial or national television service.[165] Each national broadcaster must also provide program guide information to each other under the Digital Television provisions of the BSA.[166]

In the Annex II of the US Free Trade Agreement, Australia reserved the right to adopt or maintain measures to ensure that

> *upon a finding by the Government of Australia that Australian audiovisual content or genres thereof is not readily available to Australian consumers, access to such programming on interactive audio and/or video services is not unreasonably denied to Australian consumers. Any measures addressing such a situation will be implemented through a transparent process permitting participation by any affected parties, be based on objective criteria, be the minimum necessary, be no more trade restrictive than necessary, not be unreasonably burdensome, and be applied only to a service provided by an enterprise that carries on business activities in Australia in relation to the supply of that service*.

Overseas scenarios

Canada: In 2002 the CRTC undertook a review of interactive television services, in which it identified three broad categories of interactive services. These were:

1. *Enhanced programming services*: included services that provide viewers with, among other things: access to more detailed information on a program or an advertisement through the addition of text, graphics, still images or audiovisual content; and the opportunity to conduct "t-commerce", such as ordering products featured in a program or advertisement. The CRTC supported the concept that "program-related" activities could be deemed 'broadcasting' and therefore fall under the CRTC's regulatory framework and undertook a further review to clarify its position. In that review the CRTC adopted the following criteria for assessing whether ITV content is "program-related":
    - The broadcaster's intention must be that the content be seen by the same viewers as those who are watching the main program.
    - The content must be available during the same interval of time as the main program.
    - The content must have a substantial connection to the main program, providing enhancement to the viewers of the main program.[167]

2. *Non-traditional stand-alone services*: include services that have not previously been accessible through a television set and are offered independently of programming services. Services of this type include TV portals and virtual channels.[168] The CRTC posits two tests for non-traditional stand-alone services, to determine whether or not they fall under the definition of 'broadcasting':

- The Commission would first have to examine each service individually to determine if it is a 'program', ie that it does not consist predominantly of alphanumeric text.
- If the service is found to be predominantly non-alphanumeric, the second test that it must pass is that its transmission is to the public.[169]

3. *Internet-over-TV services*: 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 would need to be individually assessed against the tests set out under 'non-traditional stand-alone services'.

In its review of interactive television services, the CRTC considered that an interactive program guide (IPG) is a type of virtual channel and would fit into the non-traditional stand-alone services category.[170]

When deciding whether an IPG is broadcasting and therefore subject to local content regulation, the CRTC posits two tests:

- determine if it is a 'program', consisting predominantly of alphanumeric text
- if it is found non-alphanumeric, the transmission must be to the public.

The CRTC 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.

European Union: Questions have arisen with regard to the prominence or the visibility of certain broadcast contents on EPGs and with regard to access to EPGs. The Electronic Communication Package offers National Regulatory Authorities the possibility to impose fair, reasonable and non-discriminatory access rules or Significant Market Power remedies to associated facilities for digital television, including EPG.[171]

The Framework Directive part of the Electronic Communication Package also provides that interoperability of digital interactive television services and enhanced digital television equipment, at the level of the consumer, should be encouraged in order to ensure the free flow of information, media pluralism and cultural diversity.

The Framework Directive requires Member States to encourage providers of digital interactive television services to use an API for distribution to the public in the Community on digital interactive television platforms.[172] As of mid-2007, the sole API standardised by a European body is Multimedia Home Platform (MHP) developed by the Digital Video Broadcasting Project. Other APIs are MHEG 5, Open TV, Liberate.

Art. 18 (3) of the Framework Directive requires a review of interoperability of digital interactive television services. The Digital Interoperability Forum has been established to develop industry-led solutions to interoperability, which will make digital and interactive TV accessible to the largest number of people on the widest choice of platforms. Members are European companies in the delivery of digital TV.

In an "Interpretative Communication on certain aspects of the provisions on televised advertising" in the TVWF,[173] the Commission clarified that split-screen advertising is compatible with the Directive,[174] provided it is readily recognisable

and kept quite separate from other parts of the program by acoustic or optical means so as to prevent viewers mistaking advertising for editorial content. This has been further clarified by the new AVMSD, which permits split-screen advertising, as ad breaks are no longer required to be 'separated' but merely distinct from the program.[175]

New Zealand: New Zealand On Air's New Technologies and the Digital Future report recommended that the free-to-air channels be carried on all cable and satellite platforms and be given prominence on the EPG.[176]

UK: Under powers provided by the Communications Act 2003 (UK), Ofcom has introduced a Code of Practice on Electronic Program Guides setting out the practices to be followed by EPG providers including:

- giving appropriate prominence for public service channels (the BBC's public services, ITV 1, Channel 4, Channel 5, S4C and Teletext)
- to provide the features and information needed to enable EPGs to be used by people with disabilities affecting their sight or hearing or both, and
- to secure fair and effective competition.[177]

9.5 Support for content

Singapore: As part of its support to digital TV, the MDA encourages the development of innovative applications that further enhance the potential of digital TV, such as electronic program guides. The Digital Technology Development Scheme supports the development of digital content and services (either DTV or Digital Audio Broadcast). Projects are allocated up to S$200,000.[178]

10. Internet protocol television (IPTV)

10.1 Definition

Internet protocol television (IPTV) involves the delivery of television programs, movies and other multimedia content to a television set via broadband Internet. A set-top box is used to decode the signal. IPTV differs from open Internet TV, which refers to all video and television content currently available through websites and peer-to-peer networks.

10.2 Consequences for current content delivery

IPTV is less costly than cable or satellite and enables increased interactive functionalities such as time-shifting, video-on-demand, on-screen guides, on-screen chat or email, and interaction with other Internet services. In the US, some research conducted in 2005 by Harris Interactive to test consumers' interest in interactive features of IPTV revealed that the fist motivator for consumers is to save money. The other four leading services attracting consumers are the ability to watch program on-demand, receive a broader array of programs, HD viewing, and digital video recording.[179]

Sending television signals over the Internet requires a great deal of bandwidth.[180] Fibre-optic cables closer to the home or advanced high-speed connections – such as VDSL – could overcome these limitations, but these solutions are expensive. Fibre-to-home typically costs €1,500 per home, plus the cost of a more advanced modem.

Open Internet has the advantage over IPTV in that it does not require users to subscribe to one service. Viewers can pick and choose episodes from different pay-sites, file-sharing services and free download pages. However, the lack of an easy solution to watch downloaded content on the TV screen is putting consumers off. The cost of legitimate download services can be expensive.[181]

10.3 Current status

International: IPTV rollouts are taking place around the world. In Europe, at the end of 2005, the leading countries in terms of number of IPTV subscribers were France (840,000), Italy (234,600) and Spain (206,600). France counted six IPTV operators in 2005: MaLigne tv (France Telecom), Canal Plus Le Bouquet (CanalSat) and FreeBox (Free Telecom) led with 200,000 subscribers each.[182] TPS has 170,000 subscribers and newcomer Alice Box 5,000 subscribers. The Spanish IPTV operator Imagenio (telefonica) is leading in Europe with 206,600 subscribers.

With increased broadband penetration and a massive increase in speeds, IPTV is talked about as an important step for the future of television. Multimedia Research Group is projecting global growth from 3.7 million subscribers in 2005 to 36.9 million in 2009.[183] However, Jupiter Research forecasts that IPTV will still be a niche service, with six per cent of European households by 2011, up from two per cent in 2006.[184]

In China, *s*ix studios (Warner, Sony/Columbia, Fox, Disney/Buena Vista, Paramount and Universal Studios) have signed to supply content to Best TV, the Chinese IPTV operation of Shanghai Media Group. The service is advertising-

supported and distributors receive a share of the revenue. The deal also shows the confidence from studios in the encryption technology towards unpiratable downloads.[185]

Australia: In Australia, two players, ReelTime and Anytime, started to emerge in the broadband IPTV market with set-top boxes linked to TV sets solutions. Telstra BigPond launched a similar service available only to PC – not to TV sets – due to contractual obligations with Foxtel. The fibre network operator TransACT also offers IPTV (TransTV Digital).[186]

10.4 Regulation

Current Australian regulation

IPTV services raise some regulatory issues. Under the Australian regulatory framework, content delivered via a 'broadcasting service' or as 'Internet content' is regulated by the BSA.[187] In 2000, the Minister for Communications and the Arts, Senator the Hon. Richard Alston made a Ministerial Determination that 'a service that makes available television programs or radio programs using the Internet, other than a service that delivers the television programs or radio programs using the broadcasting services bands' was not a broadcasting service.[188]

However in its *Meeting the Digital Challenge: Reforming Australia's Media in the Digital Age Discussion Paper*, the government stated that:

> In considering applications for [new commercial FTA television licences delivered outside BSB spectrum (such as wireless, satellite and broadband services)] after 31 December 2006 the Government will consider whether allocation is in the public interest.[189]

The Discussion Paper went on to say that:

> Further consideration would be given to the degree of other regulation that should apply to these services (for example, local content rules), in line with the general intention set out in the BSA that different levels of regulatory controls should be applied across the range of broadcasting services according to the degree of influence of those services. As far as possible, a consistent approach should be developed to regulation across different types of digital services, which reflects the nature of those services rather than their method of delivery.

Overseas scenarios

European Union: The European Union has decided to impose baseline regulation of audiovisual content covering different broadcasting and media types. In December 2007, the European Parliament agreed to the new AVMSD to replace the TVWF first introduced in 1989 and updated in 1997.[190] The new directive is modernised to take into account digital TV and broadband.

The AVMSD introduces the concept of "audiovisual media services" with a distinction between "linear services", which refer to traditional broadcasting, while "non-linear" refer to on-demand services.[191] Linear services, which include IPTV, will be subject to the full burden of the TV regulations.

The amending directive was adopted on 11 December and entered into force on 19 December 2007. Member States have two years to transpose the new

provisions into national law, so that the modernised legal framework for audiovisual media services will be fully applicable by the end of 2009.

Singapore: All media service operators who wish to offer any IPTV services or any form of subscription TV services, in or from Singapore, need to obtain a licence from Singapore's broadcast regulator, the MDA. The MDA has created two types of licenses for IPTV:

- A Nationwide Subscription TV Licence for players providing services that has wide reach (over 100,000 subscribers) and impact. The framework is similar to a mass-market pay TV operator.
- A Niche Subscription TV Licence for IPTV services which have limited reach (100,000 subscribers or less). This facilitates the entry, offering and impact of new niche players. The licensee is subject to a lighter licence framework. For example, niche licensees will not be required to carry the local free-to-air channels.

The MDA's new regulations announced in January 2007 were created with a desire to boost the growth of the IPTV market.

Licensees are required to exercise editorial responsibility to ensure that their programs comply with the applicable program code.

The Subscription TV Programme Code is applicable for scheduled TV programs, while the Video On-Demand Programme Code is applicable for on-demand programs.

UK: Ofcom currently takes the view that if the IPTV service 'looks' like a TV service then it would require a Television Licensable Content Service Licence – applicable to those providing television programs via an electronic communications network. In such a case, the IPTV services would be subject to all the TV regulations including the Ofcom Broadcasting Code. If the service appeared to be more like an Internet service then it would be exempt. Webcasting and UK-based VOD type IPTV services fall outside the scope of the Television Licensable Content Service Licence requirement. VOD services are subject to a lighter regulatory regime including that set out by the VOD industry self-regulatory body.

10.5 Support for content

No specific direct support scheme for content available on IPTV was identified.

11. Mobile television

11.1 Definition

Mobile television refers to television or video services that are delivered to consumers via a mobile handheld phone or personal digital assistant (PDA). Such services may be free-to-air, purchased, or offered on a subscription basis.

11.2 Consequences for current content delivery

Mobile operators and content providers have developed video offerings available over 2.5G and 3G networks. Initiatives are underway to develop handsets that can receive broadcast TV signals and maintain those signals as the user moves from place to place.

As traditional phone revenues saturate, telecommunication companies will try to boost revenues from data services – mobile TV, IPTV and open Internet TV. The move by some operators towards offerings with unlimited data use should stimulate mobile content consumption. Unlimited use data offerings are common in the US market, while most of the European operators charge for access according to volume of data downloaded. Sports video content has proved to be a particularly popular content offering for mobile operators.

The first Sydney Mobile TV trial revealed a high level of consumer interest in commercial Mobile TV with 80 per cent of the participants attracted to the ability to watch TV anytime, anywhere – particularly when waiting, travelling, at home or commuting. Total TV viewing increased during weekdays, particularly in the mornings and at lunchtime.[192]

11.3 Current status

International: At the moment, South Korea and Japan lead the world with mobile TV, with a combined total of 15 million people subscribing to free-to-air mobile TV.[193] Just under 80 per cent of worldwide mobile TV subscribers are free-to-air subscriptions as opposed to a little over 20 per cent for pay TV.[194]

China Central Television (CCTV) launched mobile TV services in December 2006. With an estimated consumer base of three billion handsets in use by 2007, mobile TV is a potentially huge market. By the end of 2011, nearly half a billion people will be watching TV on their mobile phones. Driven primarily by the adoption of broadcast-based services such as DVB-H, mobile TV will experience 50 per cent year-on-year growth through 2010.[195]

In France the CSA plans to deliver 16 mobile TV licences by July 2008 using the DVB-H standard.

Australia: There are currently a number of 3G mobile television services offering live streaming and walled garden services include 3, Vodafone and Telstra. Portions of Foxtel programming are available to Telstra customers. The latest mobile television trial was conducted by Broadcast Australia and Irdeto Access in 2007 testing the DVB-H system on the unassigned digital Channel B.

11.4 Regulation

Current Australian regulation

Mobile operators subscribe both to the Mobile Content and Premium Rate Services co-regulatory code. The 2006 Review of the Regulation of Content Delivered Over Convergent Devices identified a need to provide safeguards comparable to those in place for traditional media for content delivered over convergent devices.[196] This resulted in the Minister for Communications, Information Technology and the Arts, Senator the Hon. Helen Coonan announcing that regulation of broadcasting and the Internet will be extended to convergent mobile devices including:

- prohibition of content rated X18+ and above
- requirements for consumer advice
- age-restricting access to content suited only to adults.

Overseas scenarios

Canada: With regards to mobile broadcasting services in Canada, the CRTC determined in 2006 that they are "delivered and accessed over the Internet", and therefore fall under the current exemption order.[197] In February 2007, the CRTC also exempted "point-to-point" mobile television broadcasting undertakings, whether or not these services are delivered and accessed over the Internet.[198]

European Union: In December 2006, European Parliament agreed to the new AVMSD to replace TVWF first voted in 1989 and updated in 1997. Whilst the TVWF currently in force applies only to television broadcasting, the Commission's proposal is to extend its scope to cover all audiovisual media services including mobile multimedia services, mobile television broadcasting (linear) and video-on-demand (non-linear) services.

Singapore: Voluntary self-regulatory code is in place in Singapore for mobile content.[199] For mobile games, mobile operators must adhere to the MDA's censorship guidelines for video games/interactive software, which stipulate that these should not: contain scenes of excessive violence, sex, nudity or drug abuse; denigrate any race or religion; affect Singapore's national interest; and should not be obscene.

UK: Premium rate telephony services (fixed and mobile) are regulated by a co-regulatory body, PhonepayPlus, backed by Ofcom.[200] Mobile operators have developed a system of self-regulation and have supported the creation of an independent classification body, the Independent Mobile Classification Body (IMCB).[201] The IMCB provides an important function in self-regulation. In essence, its role is to identify content that is unsuitable for customers under the age of 18. Together with age verification measures to be put in place, the new system should help reduce access by minors to unsuitable content.

Mobile television content is not explicitly excluded from licensing and content regulation by the Communications Act 2003 (UK). According to Richard Hooper, Deputy Chairman of Ofcom and Chairman of the Content Board, the mobile television standard DVB-H has the potential to be defined as broadcast television and fall under Ofcom's regulation of broadcast content.[202]

11.5 Support for content

Australia

Screen Australia supports the development of mobile phone content through its Cross-Platform Digital Media Fund.[203] Since 2000, Film Victoria has run a Digital Media Fund whose aim has been to develop innovative digital content, computer game prototypes, digital animation and digital media internships. In 2006/07 and 2007/08, Film Victoria has made available A$4.05 million to support the Victorian digital sector to develop prototypes for mobile phones amongst other platforms.

Overseas scenarios

Europe: In Europe, partially government-owned telecommunications companies provide money for research and development of mobile technologies. In addition, many EU member states financially support content development.

Government support varies from sponsorship for local content industries at major industry events, fact-finding missions to improve local company competitiveness, and sponsorship of local or regional forums to specific government support for development of content by local developers.

For example, the French Government is offering grants toward the development of new games, with the government paying up to 40 per cent of the development costs of a new game. Since 2004 support available under Fonds d'Aide pour l'Edition Multimédia (FAEM) is also available for content for mobile phones.

In Finland, the Finland National Technology Agency allocated €39 million for mobile entertainment projects, technology development and game production.[204]

In addition, there are pan-European support programs for audiovisual content. Media Plus, an EU-funded initiative, supports production of European content.

There are also a number of demonstration projects in the EU – projects where governments invest money to increase the speed of innovation or bring together relevant market players to facilitate the development of content markets. The European Union's Information Society Technologies work plan includes three initiatives: Mobile and Wireless Systems and Platforms Beyond 3G;[205] Networked Audiovisual Systems and Home Platforms;[206] and Cross-media content for leisure and entertainment.[207] The objectives of those initiatives are:

- to develop mobile and wireless systems beyond 3G
- to develop end-to-end networked audiovisual systems and applications
- to improve the full digital content chain, covering creation, acquisition, management and productions, through effective multimedia technologies enabling multichannel, cross-platform access to media entertainment and leisure content in the form of film, music, games, news and the like.

Malaysia: The Malaysian Communications and Multimedia Commission (MCMC) has identified digital content development as one of the growth areas to be focused on in the next five years. In July 2007, the MCMC launched the Networked Content Development Grant (NCDG) to facilitate and encourage Malaysian involvement in the creation, production and distribution of highly creative, original and marketable 'networked content' (including all text, audio, audio-text, still pictures, moving pictures and software that is accessible over publicly accessible electronic networks) for domestic and international markets. The NCDG will focus on content development in two areas: Mobile Content for

2.5G and 3G, and TV Content.[208] Content can be information-based content, entertainment, e-commerce, and education.

12. Personal video recorders (PVRs)

12.1 Definition

A personal video recorder (PVR) or digital video recorder (DVR) is a television recording device that encodes an incoming video data stream and stores it on a hard disk.[209] Like a video cassette recorder (VCR), a PVR enables time-shifting of content by recording and playing back television programs, but unlike the VCR it stores the programs in digital format (rather than analogue). Like a VCR, a PVR has the ability to pause, rewind, stop, or fast-forward a recorded program. A PVR can also record a program and replay it almost immediately with a slight time lag. As a result, live programs can be manipulated as though they were recorded programs. A PVR's capabilities include time marking, indexing, and non-linear editing.

There are products that offer similar functionality but are software-based (such as SnapStream Personal Video Station) or network-based. SnapStream PVS software programs let viewers record and view video on a desktop PC. A personal video station (PVS) requires a TV tuner card to be installed on a desktop PC and a connection to a video source. The combination of the tuner card and PVS software enables the recording and viewing of video from any source: cable, satellite dish, VCR, DVD player, or even a traditional antenna.

12.2 Consequences for current content delivery

There are a number of controversial issues surrounding the capabilities that PVRs and similar technologies enable. For example, ReplayTV PVRs in the US make it possible to skip through commercials by using a 30-second 'auto-skip' function. This capacity is popular with consumers, but not with advertisers.

The ability to download programming from the Internet and send files to friends is similarly unpopular with service providers, since it can enable a user who hasn't paid for a service (such as premium channels, eg HBO) free access to content.

PVRs, as hardware, commonly come as part of a subscriber service that may or may not charge a monthly fee. The service enables such activities as searching for shows with an EPG, according to type (movies or sports, for instance) as well as choosing among VOD options.

Playback from PVRs has been demonstrated to increase the amount of time people spend watching television. In comparing total television usage (live viewing plus DVR playback), Nielsen Media Research found that viewing had increased slightly throughout the day, and was three per cent higher at 9pm and five per cent higher between 11pm and midnight.[210]

12.3 Current status

International: The number of US households with a PVR has grown to 20.5 per cent with over 22 million households, reaching 30 per cent in states such as Texas.[211] Nielsen Media Research have begun examining playback ratings. According to the most recent ratings, 10 per cent of viewing was spent using the playback function. Among households with DVRs, the average primetime

broadcast program audience increases 40 per cent when including same day DVR playback and 73 per cent when including three days of playback.[212]

Australia: In Australia, Foxtel's PVR IQ was launched in 2006 and the HD Foxtel IQ2 was launched in 2008. The popular US PVR service TiVo has been available in Australia since July 2008. For a small subscription fee plus the price of the hardware, consumers will be able to pause live HD TV, fast-forward ads, record shows and series from any of the free-to-air digital TV channels, and access broadband content such as video-on-demand.[213]

12.4 Regulation

Current Australian regulation

New Australian copyright laws authorise time-shifting, as well as the private copying for domestic and personal use of different materials owned into a different format.

Under the recently introduced *Copyright Amendment Act 2006*, it is legal to record free-to-air broadcasts as well as pay TV broadcasts to watch or listen to at a more convenient time.[214] However, some conditions apply:

- The recording must be made solely for personal and domestic use. This allows private use within your family and domestic circle.
- There is no fixed time for keeping the recording. A recording can be kept until there is a convenient opportunity to watch it or listen to it, but not indefinitely.
- A time-shift copy can't be stored for repeated use.
- It is possible to lend the copy to a member of the family or household, but not to sell, swap, lend or give away a recording to anyone else.
- The recording cannot be used to make a further copy of the material broadcast.

Consumers are not allowed to:

- copy material from a DVD or material that is made available over the Internet as a download or webcast
- upload a recording to the Internet to share with others
- keep a library of copied television and radio programs.

The copyright amendment also allows a private copy to be transferred into a different format for private and domestic use of books, newspapers, periodicals,[215] photographs,[216] and videocassettes.[217] The original copy must be a legitimate copy. Users are allowed to make a copy for each player owned and sequential copies (eg to copy a CD to a computer and from a computer to an iPod).[218] A user is not allowed: to sell, hire, lend or give away any copy made but it is possible to lend a copy to a member of the family or household; to make multiple copies in a similar format, either from the original copy or from a later copy; to copy computer games; to remove any anti-copying measures applied by the manufacturer to the material.

Overseas scenarios

One way of giving greater control to service users is to ensure that a consistent set of information accompanies content during its distribution, ideally on all

platforms. Such content information (metadata) allows more effective filtering processes in the distribution networks and automatic or manually imposed control at the user end.

In some countries (Canada, US), metadata are already integrated within broadcast content. The Canadian and American V-chip solutions that allow the blocking of material considered inappropriate for children already require such metadata to be attached, although awareness of such facilities is relatively low.

International technology initiatives such as TV Anytime aim to develop metadata structures to accompany content distribution via broadcast and other electronic platforms.

12.5 Support for content

No specific direct support scheme for content available on PVRs has been identified.

13. Video-on-demand (VOD)

13.1 Definition

Video-on-demand (VOD) is a content delivery system that enables viewers to select, and view content at a time the viewer specifies either as a live stream or as a download to a set-top box, PVR, mobile device or hard drive. VOD requires two-way communication and can be delivered via a network such as a cable, satellite TV network or DSL. Near-video-on-demand (NVOD) is a near equivalent using only one broadcast channel. This can be accomplished by staggering the start of programs every 15 or 30 minutes.

13.2 Consequences for current content delivery

Traditionally VOD was available on subscription television and could be seen to be an extension of the subscription service whereby viewers must pay for the right to view a content on a per program basis rather than a per channel/package of channels basis. However, VOD is now available through IPTV and broadband offering the ability to download video contents and watch them on different devices – TV, computer, mobile phone. Studios are exploring new delivery channels and Internet-based VOD offerings such as CinemaNow (US) and CanalPlay (France) enable consumers to burn VOD content onto DVD. With the expansion of HD consumers are likely going to have their expectations raised in terms of quality of support for VOD. VOD is also likely to impact negatively upon video and DVD hire stores.

Online DVD rent-mailers are well positioned to enter the VOD marketplace. They are using digital distribution and adding VOD to their services. The UK-based DVD by post specialist Lovefilm pioneered this strategy.

13.3 Current status

International: By the end of 2007, nearly 13 million households in Europe will be enabled for TV-based video-on-demand.[219]

The VOD platform CinemaNow, launched in the US in 2006, was first to authorise the burning of download video content onto a DVD. The movies are sold between US$9 and US$15. The content can only be burnt on DVD once.

Apple is offering a video download service on iTunes in the US. Movies have proven very successful with half a million movies bought since September 2006 – an average of 62,500 movies each week since the launch.[220] Apple is about to launch a VOD service in Europe. The service will be managed from Luxembourg, where iTunes Europe is located. Series and feature films will be available at a unique price and deliver video just after their release in Great Britain and before their delivery in the rest of Europe. This means that the service won't respect the regulations regarding release windows set in France for film releases – minimum six months after theatrical release for DVD and seven months for VOD distribution in general.

Australia: In Australia, there are a number of VOD service providers including ReelTime Broadband TV launched in November 2006 and offering both Download to Rent and Download to Own service,[221] BigPond Movies launched in 2006,[222] Foxtel Box Office, and TransAct Movies on Demand and Sport on Demand

available in the ACT. Quickflix, which also announced VOD plans trailing a VOD service in 2007, operates a VOD service in the ACT only. According to Reeltime, the Australian rental market – including video stores, rentmailers and online – is approximately A$1 billion versus US$8 billion (A$10.6 billion).[223]

13.4 Regulation

Current Australian regulation

There is currently no regulation specific to VOD in Australia. In 2001/02, near-VOD service Optus NVOD fell within the scope of the pay TV drama expenditure requirement regulations and classification schemes.

In mid-2006, the government indicated the possibility of extending TV content regulation to cover video streaming on the Internet and mobile phones (see '9. Internet protocol television (IPTV)').

Overseas scenarios

Canada: Content of VOD is regulated in Canada. VOD programming services have to be licensed by the CRTC and are subject to the same regulations as broadcast services of Canadian content, linguistic codes and so on. They are not allowed to carry advertising.[224] Licensees are required to meet the cultural objectives of the Broadcasting Act 1991 (Canada):

- VOD licensees, in common with pay and specialty channel licensees, are required to contribute a proportion of gross annual revenues (in this case a minimum of five per cent) to an independently administered Canadian program production fund.
- The licensees are also subject to Canadian content regulations, with specified amounts of 'shelf space' needing to be provided on video servers and made available to subscribers.
- Bilingual services and English-language services are required to maintain in their inventories a minimum Canadian to non-Canadian ratio of 1:20 for feature films, and 1:10 for all other programming types. French-language services are required to maintain a minimum ratio of 1:12 for feature films.
- In addition, licensees are required to ensure that not less than 25 per cent of the titles promoted each week on the licensee's barker channel (the entry point to the service which details program offerings) are Canadian titles, and that Canadian titles are given equal treatment to comparable foreign product on the menu-based navigation system.

Europe: The European Union is planning to impose some baseline regulation of audiovisual content covering different broadcasting and media types. In December 2006, European Parliament agreed to the AVMSD to replace the TVWF, first voted in 1989 and updated in 1997. The new directive is modernised to take into account digital TV and broadband.[225]

The Directive introduces the concept of "audiovisual media services" with a distinction between "linear services", which refer to traditional broadcasting, while "non-linear" refer to on-demand services. "Non linear" audiovisual services will be subject to minimal blanket regulation. A channel will remain regulated in the country from which it operates.

However, the definition of "non linear services" has not yet been fully agreed upon. The Directive requires a common position of European Parliament and Council. Once a common position is reached and finally adopted, member states will have two years to transpose the Directive into national law. It is expected that new provisions should be enforced by 2009.

The Directive sets minimal rules for audiovisual regulation including advertising regulation and audiovisual production. State members can set stricter rules when transposing the Directive into their national laws.

Hong Kong: The Hong Kong Broadcasting Authority currently regulates VOD services though licence conditions. Regulations specific to content are not currently imposed.

Singapore: The MDA provides licences to VOD service providers but only places censorship regulations upon these licences.[226]

South Africa: A self-regulatory body for mobile content is run by the industry called the Wireless Application Service Providers Association. This has a code of conduct.

UK: The UK has adopted a self-regulatory approach. In 2003, the Association for Television On-Demand (ATVOD) was set up alongside Ofcom to be a self-regulator for the on-demand industry.[227] In return for its self-regulatory status, ATVOD was required to produce a Code of Practice and set up a robust complaints procedure for customers of member organisations. ATVOD makes regular reports to the government department that oversees it and works closely with Ofcom and other co-regulatory bodies in the industry.

Ofcom has asked the industry to consider a pan-platform content labelling system. The system run by ATVOD allows on-demand services to choose which system content classification is offered to the user. The BBC is experimenting with a labelling system for content that is downloaded.

US: The First Amendment and the Communications Act prohibit pre or post-transmission censorship, and action may only be taken by the FCC for channels on public platforms. Despite these restrictions on broadcast content regulation, the FCC has begun to enforce regulations covering 'obscenity and indecency'. There is also a law that requires television sets with screens larger than 13" to be equipped with violence chip (v-chip) technology which links program classifications with program blocking technology. The v-chip provides an internal mechanism that instructs the television receiver to select and to block out programs, which have particular triggering signals.

13.5 Support for content

Australia

There is currently no specific support scheme for VOD in Australia.

Overseas scenarios

Europe: The European Union has set up a program to support VOD as part of the media program Media 2007 (see '2. Digital cinema'). The Video on Demand and Digital Cinema Distribution scheme (€4 million in 2007) supports projects of services enabling individuals to select audiovisual works from a central server for viewing on a remote screen by streaming and/or downloading.

Content can be feature films, TV films or series (fiction, animation, documentary) or alternative content (operas, concerts, performances, shorts) and must include audiovisual works from at least four European countries representing at least three different official languages of the European Union. No more than 40 per cent of the content (in program hours) may come from a single territory.[228]

Acronyms and abbreviations

ABC	Australian Broadcasting Corporation
ACCC	Australian Competition and Consumer Commission
ACMA	Australian Communications and Media Authority
ADSL	Asymmetric Digital Subscriber Line
AFACT	Australian Federation against Copyright Theft
AFC	Australian Film Commission
API	application program interface
APRA	Australasian Performing Rights Association
ARIM	The Applied Research in Interactive Media program (Canada)
ATV	Asia Television Limited
ATVOD	Association for Television On-Demand
AUSFTA	Australia-US Free Trade Agreement
AVMSD	Audiovisual Media Services Directive (EU)
BBC	British Broadcasting Corporation
BBCi	BBC Interative
BDU	Broadcasting Distribution Undertaking (Canada)
BSA	*Broadcasting Services Act 1992* (Cth)
BSA	Broadcasting Standards Authority
BSB	Broadcasting Services Band
CCTV	China Central Television
CCTx	Cross Continent Digital Content Transmission (Asia)
CD	compact disc
CNC	Centre National de la Cinématographie (France)
COSIP	Le Compte de Soutien a l'industrie des Programmes Audiovisuels (France)
CRTC	The Canadian Radio-television and Telecommunications Commission
CSA	Conseil supérieur de l'audiovisuel (France)
CTF	Canadian Television Fund
DCI	Digital Cinema Initiative
DETI	Department of Enterprise, Trade and Investment (Northern Ireland)
DRM	Digital Right Management
DSL	Digital-Subscriber Line
DTT	digital terrestrial television

DTV	digital television
DVB-H	digital video broadcasting – handheld
DVB-T	digital video broadcasting – terrestrial
DVD	digital versatile disc
DVR	digital video recorder
EPG	electronic program guide
EU	European Union
FAEM	Fonds d'Aide pour l'Edition Multimédia (France)
FCC	Federal Communications Commission (US)
FTA	free-to-air
HD	high-definition
HD-DVD	high-definition DVDs
HDTV	high-definition television
HD VMD	High-definition Versatile Multilayer Disc
ICAM	Instituto do Cinema e do Audiovisual (Portugal)
IMCB	Independent Mobile Classification Body (UK)
IP	Internet protocol
IPG	interactive program guide
IPTV	Internet protocol television
ISPA	Internet Service Providers' Association (UK)
MCMC	The Malaysian Communications and Multimedia Commission
MDA	Media Development Authority (Singapore)
MHP	Multimedia Home Platform
NCDG	Networked Content Development Grant (Malaysia)
NTSC	National Television System Committee
NVOD	near video-on-demand
NZBSA	Broadcasting Standard Authority (NZ)
OECD	The Organisation for Economic Co-operation and Development
Ofcom	Office of Communications (UK)
OFLC	The Office of Film and Literature Classification
P2P	peer-to-peer
PAL	phase alternating line
PDA	personal digital assistant
PVR	personal video recorder
PVS	personal video station
R&D	Research and development
RDSN	Regional Digital Screen Network

SPAA	Screen Producers Association of Australia
TPMs	Technological Protection Measures
TVB	Television Broadcasts Limited (Hong Kong)
TVWF	Television Without Frontiers Directive
SECAM	Séquentiel couleur avec mémoire
SBS	Special Broadcasting Service
SBSi	Special Broadcasting Service Independent
UKFC	UK Film Council
UNESCO	United Nations Educational, Scientific and Cultural Organization
VCR	video cassette recorder
VDSL	very high speed DSL
VOD	video-on-demand

Notes

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> a service … which is under the editorial responsibility of a media service provider and the principal purpose of which is the provision of programmes in order to inform, entertain or educate, to the general public by electronic communications networks .... Such an audiovisual media service is either a television broadcast … or an on-demand audiovisual media service.

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[22] *Non-linear service (or on-demand audiovisual media service)* is an audiovisual media service provided by a media service provider for the viewing of programs at the moment chosen by the user and at his individual request on the basis of a catalogue of programs selected by the media service provider. Examples include video-on-demand, on-demand video material on mobile phones such as 'mobisodes' and clips.

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[82] Digital TV is being offered by all pay TV operators in Hong Kong via cable, satellite and broadband network.

[83] Davies Review Panel 1999.

[84] FCC, *FCC adopts children programming obligations for digital Television broadcasters*, media release, 9 September 2004, http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-251972A1.pdf, accessed 10 March 2008.

[85] www.ctf-fct.ca/ctf_home_en.html, accessed 10 March 2008.

[86] Ofcom, The International Communications Market 2006, November 2006, www.ofcom.org.uk/research/cm/icmr06/icmr.pdf, accessed 10 March 2008.

[87] OzTAM statistics at www.afc.gov.au/GTP/wptvfast.html, accessed 10 March 2008.

[88] Australia-US Free Trade Agreement, Annex II – Australia – p6, (c), www.dfat.gov.au/trade/negotiations/us_fta/final-text/non-conforming_measures/Annex_II_combined.pdf, accessed 10 March 2008. No one channel can be subject to an expenditure requirement for more than a single program format.

[89] Annex II, Australia, p 6, (c); The expenditure requirement on drama may be increased up to 20 per cent upon finding by the Australian Government that the 10 per cent requirement is insufficient to meet its stated goal for such expenditure. This finding has to be made through a transparent process including consultations with affected parties. The increase will be non-discriminatory and no more burdensome than necessary.

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[95] Audiovisual Media Services Directive, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2007:332:0027:01:EN:HTML, accessed 10 March 2008.

[96] Article 4 of Audiovisual Media Services Directive, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2007:332:0027:01:EN:HTML, accessed 10 March 2008.

[97] Ministére de la culture, et de la communication, Le "must carry", www.ddm.gouv.fr/rubrique.php3?id_rubrique=42, accessed 10 March 2008.

[98] Multichannel multipoint distribution service - also known as MMDS or Wireless Cable - is a wireless telecommunications technology used for general-purpose broadband networking or as an alternative method of cable television programming reception. MMDS is used in the United States and other countries, including Canada, Mexico, Ireland, Brazil, Australia and India, usually in sparsely populated rural areas, where laying cables is not economically viable.

[99] The Commission for Communications Regulation (ComReg) is the general communications regulator for the Republic of Ireland, covering all types of communications: www.comreg.ie/, accessed 10 March 2008.

[100] OECD, Communications Outlook 1999, www.oecd.org/dataoecd/57/33/1868693.pdf.

[101] OECD, Communications Outlook 1999, www.oecd.org/dataoecd/57/33/1868693.pdf.

[102] Communication Act 2003 (UK) and the Broadcasting Act 1990 (UK).

[103] Must-carry may only be applied if the television station has made the request to be carried under this provision. Foreign signals are not required to be carried. Low power broadcast stations are not required to be carried.

[104] ARIA, Australian Record Sales – 2006 Full Year Results: Digital music and strong Australian music sales buoy market, 12 April 2007, www.aria.com.au/2006AustralianWholesaleRecordSales.htm, accessed 10 March 2008.

[105] 'Online viewing upward trend', *Screen Digest*, December 2007, p. 358.

[106] eDonkey ceased in September 2006.

[107] BBC, BBC moves to file-sharing sites, 12 December 2006, http://news.bbc.co.uk/2/hi/technology/6194929.stm, accessed 22 February 2008.

[108] 'BBC joins Adobe for IPlayer streaming feature', *Screen Digest*, November 2007, p. 345.

[109] ACMA, *Media and Communications in Australian Families*, 2007, p. 1.

[110] redorbit, Ellacoya Data Shows Web Traffic Overtakes Peer-to-Peer (P2P) As Largest Percentage of Bandwidth on the Network, 18 June 2007,

www.redorbit.com/news/technology/971474/ellacoya_data_shows_web_traffic_overtakes_peertopeer_p2p_as_largest/index.html, accessed 22 February 2008.

[111] Quoted in Adrianne Pecotic, AFACT presentation, Australian Broadcasting Summit, 6 March 2007.

[112] The following categories of Internet content are prohibited:

- Content which is, or would be, classified Refused Classification (RC) by the Office of Film and Literature Classification (OFLC), including material containing detailed instruction in crime, violence or drug use, child pornography, bestiality, excessively violent or sexually violent material.
- Content which is (or would be) classified X 18+ by the Classification Board - such content contains real depictions of actual sexual activity.
- Content hosted in Australia, which is classified R 18+ and not subject to a restricted access system which complies with criteria determined by ACMA.
- Content classified R 18+ is not considered suitable for minors and includes material containing excessive and/or strong violence or sexual violence; material containing implied or simulated sexual activity; material that deals with issues or contains depictions which require an adult perspective.

[113] Phillip Ruddock MP (The Attorney General), *Major Copyright Reforms Strike Balance*, media release, 14 May 2006, www.ag.gov.au/agd/WWW/MinisterRuddockHome.nsf/Page/Media_Releases_2006_Second_Quarter_14_May_2006_-_Major_Copyright_Reforms_Strike_Balace_-_0882006, accessed 22 February 2008.

[114] 'Spanish Judge acquits illegal use of P2P network', *Screen Digest*, December 2006, p. 407.

[115] Roger Boyes, 'Two years in prison for downloading latest film,' *The Times*, 24 March 2006, http://entertainment.timesonline.co.uk/tol/arts_and_entertainment/article694986.ece, accessed 10 April 2008.

[116] Loi n° 2006-961 du 1er août 2006 relative au droit d'auteur et aux droits voisins dans la société de l'information, www.assemblee-nationale.fr/12/dossiers/031206.asp, accessed 10 March 2008.

[117] Adrianne Pecotic, AFACT presentation, Australian Broadcasting Summit, 6 March 2007.

[118] Will Smale, 'How the PS3 led Blu-ray's triumph', *BBC News*, 19 February 2008, http://news.bbc.co.uk/2/hi/business/7252506.stm, accessed 26 February 2008.

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[123] Brendan Sinclair, 'MS: 17.7 Million 360s Sold,' *GameSpot,* 3 January 2008, http://au.gamespot.com/news/6184291.html, accessed 26 January 2008.

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[125] *Stevens v Kabushiki Kaisha Sony Computer Entertainment* [2005] HCA 58; (2005) 221 ALR 448; (2005) 79 ALJR 1850, www.austlii.edu.au/au/cases/cth/high_ct/2005/58.html, accessed 11 March 2008.

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[131] Ministry of Information and Communication (2004b), White Paper 2004 – Internet Korea, July, National Computerization Agency, Korea.

[132] Organisation for Economic Co-operation and Development, *Digital Broadband Content: The online computer and video game industry, Policy Framework*, DSTI/ICCP/IE(2004)13/FINAL, 12 May 2005, pp.46-54, www.oecd.org/dataoecd/19/5/34884414.pdf, accessed 11 March 2008.

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[136] 'DirecTV to offer a hundred HDTV channels', *Screen Digest*, January 2007, p. 25.

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www.ag.gov.au/www/agd/agd.nsf/Page/Copyright_issuesandReviews_CopyrightAmendmentAct2006-Factsheets.

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[167] CRTC, Broadcasting Public Notice CRTC 2004-82, Regulatory framework for interactive television services, 4 November 2004, www.crtc.gc.ca/archive/ENG/Notices/2004/pb2004-82.htm, accessed 10 March 2008.

[168] 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. Virtual channels are portals that provide access to a sort of website that contains proprietary content related to television programming.

[169] Regarding the second test, the CRTC stated:

> 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 … This content, created by the end-user, would not be transmitted for reception by the public. The CRTC 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.
>
> 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'. 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.

[170] CRTC, *Report on Interactive Television Services*, 22 October 2002, www.crtc.gc.ca/eng/publications/reports/interactive_tv.htm#5, accessed 11 March 2008.

[171] Art. 6 Access Directive Electronic Communication Package. The electronic communication package is the common regulatory framework for electronic communications networks and services enclosed in Directive 2002/21/EC.

[172] Member States must encourage providers of all enhanced digital television equipment deployed for the reception of digital interactive television services on interactive digital television platforms to comply with an open API in accordance with the minimum requirements of the relevant standards or specifications. Member States must encourage proprietors of APIs to make available on fair, reasonable and non-discriminatory terms, and in return for appropriate remuneration, all such information as is necessary to enable providers of digital interactive television services to provide all services supported by the API in a fully functional form: Art. 18 of the Framework Directive Electronic Telecommunication package.

[173] Commission interpretative communication on certain aspects of the provisions on televised advertising in the 'Television without frontiers' Directive (2004/C 102/02), *Official Journal of the European Union*, 28 April 2004, www.ebu.ch/CMSimages/en/leg_ref_ec_communic_advert_tvwfd_280404_tcm6-11951.pdf, accessed 26 February 2008.

[174] Split-screen advertising consists of the simultaneous or parallel transmission of editorial content and advertising content. For example, one or more advertising spots appear in a window during the transmission of a program in such a way that two separate images are visible on the screen.

[175] 'New Television without Frontiers', *Screen Digest*, January 2007, p. 8.

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[178] The Digital Technology Development Scheme superseded the Digital Broadcasting Development Fund introduced in 2000. See the detailed guidelines on the website, www.mda.gov.sg/wms.file/mobj/mobj.1108.dtds_guidelines.pdf, accessed 11 March 2008.

[179] Harris Interactive cited in *Screen Digest*, March 2006, p. 95.

[180] Access to two simultaneous channels (one live, one recorded) requires a connection of 20 Mbps. If consumers demand high-definition programs, the need increases to 20-50 Mbps connections per channel.

[181] For example, each episode of *CSI* on Amazon Unbox costs US$1.99 and can only be watched for 30 days, while other download services have similar restrictions.

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[183] Multimedia Research Group, Inc, 'MRG Forecasts Iptv Growth At 36 Million In 2009', 10 October 2005, www.mrgco.com/press_releases2005.html#GFU_PR_100605, accessed 11 March 2008.

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[185] 'China signs IPTV movie VOD deals,' *Screen Digest*, December 2006, p. 407.

[186] The price for TransTV Classic line-up is included in a TalkTV or Home Pack package. Additional package (Discovery, Lifestyle and Family) and Director's Choice are available but must be purchased for a minimum of six months. Prices are $17.95 per month, $12.95 for Lifestyle package, $7.95 for Discovery package, and from $1.95 per individual channel. Prices at February 2007 are $17.95 per month, $12.95 for Lifestyle package, $7.95 for Discovery package, and from $1.95 per individual channel.

[187] Section 6 of the BSA defines a broadcasting service to be: 'A service that delivers radio programs or TV programs using radio frequency spectrum, cable, fibre, satellite or any other means (or any combination) and excludes services providing only data or only text; on demand on a point to point basis; and as determined by the Minister.'

[188] Senator the Hon. Richard Alston (Minister for Communications, Information Technology and the Arts), *Internet video and audio streaming defined*, media release, 27 September 2000, www.dbcde.gov.au/Article/0,,0_4-2_4008-4_15292,00.html, accessed 10 March 2008. Determination under paragraph (c) of the definition of "broadcasting service" (No 1 of 2000), No GN38.

[189] Australian Government, *Meeting the Digital Challenge Reforming Australia's Media in the Digital Age: Discussion Paper On Media Reform Options,* at

http://archive.dcita.gov.au/__data/assets/pdf_file/37572/Media_consultation_paper_Final_.pdf, accessed 11 March 2008.

[190] Directive 2007/65/EC of the European Parliament and of the Council of 11 December 2007 amending Council Directive 89/552/EEC on the coordination of certain provisions laid down by law, regulation or administrative action in Member States concerning the pursuit of television broadcasting activities Text with EEA relevance, *Official Journal L 332, 18 December 2007 P. 0027 – 0045,* http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2007:332:0027:01:EN:HTML, accessed 10 March 2008.

[191] "On-demand audiovisual media service" (ie a non-linear audiovisual media service) is defined under the Audiovisual Media Service Directive as an audiovisual media service provided by a media service provider for the viewing of programs at the moment chosen by the user and at his individual request on the basis of a catalogue of programs selected by the media service provider.

[192] Broadcast Australia, *Sydney movemedia Trial reveals strong consumer interest in Mobile TV*, media release, 11 July 2006, www.broadcastaustralia.com.au/UserFiles/Media/2006-06-22-General-Press-Sydney-movemedia-Trial-reveals-strong-consumer-interest-in-Mobile-TV.pdf, accessed 11 March 2008.

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[199] http://home.singtel.com/terms/self-regulation_code.pdf, accessed 11 March 2008.

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[204] www.tekes.fi/eng/, accessed 11 March 2008.

[205] www.cordis.lu/ist/so/mobile-wireless/home.html, accessed 11 March 2008.

[206] www.cordis.lu/ist/so/audiovisual/home.html, accessed 11 March 2008.

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[208] Section 1.4 of the NCDG information package, 2007.

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[215] *Copyright Amendment Act 2006*, s.43c.

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[219] 'True Video on Demand market', *Screen Digest*, December 2007, p. 355.

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