SKMM

Suruhanjaya Komunikasi dan Multimedia Malaysia

INDUSTRY REPORT 2007
Volume 1

Broadcasting: Television – Demand of the Digital Media

About the Cover

The Kuda Kepang is a highly-spirited traditional dance performance from Malaysia's southern state of Johor. Usually performed by nine dancers sitting astride two-dimensional horses, the dance forges the image of great determination with stories of historical and victorious battles told in various vigorous yet graceful movements. The Kuda Kepang image is set against the background of the Istana Budaya, the icon of Malaysian traditional performances and regarded as among the 10 most sophisticated theatres in the world. Much like the dance, the SKMM identifies and weaves the spirit, synergy and story depicted by the Kuda Kepang and the grandiose of the Istana Budaya with our own commitment in bringing about the progressive development of the communications and multimedia industry.

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FOREWORD

The Suruhanjaya Komunikasi dan Multimedia Malaysia (SKMM) is working on a number of special or topical industry reports planned for the year of 2007 and it is my great pleasure to present the report on **Broadcasting: Television – Demand of the Digital Media**.

The scope of issues covered in this report includes an overview of the stages of television development since commencement of television broadcasting to the apparent trend towards convergence in the switchover from analogue to digital television nowadays. The analysis highlights the broadcast services provision in the digital era, including country comparatives on analogue to digital switchover and segment developments on high definition television, mobility in broadcast, advertising avenue perspectives, and consumer premise equipment availability.

Furthermore, there is a discussion on the drivers for development of television services, including consideration of the view of the consumer as the ultimate driver of growth or more applications in television broadcast services such as video-on-demand, user generated content, and home digital video networks. The issues of content and other related developments such as security, digital rights and asset management; and standards development are also discussed. Going forward, the digital dividend has relevance and how the industry stakeholders can work together to achieve optimal benefits of this potential windfall is crucial.

A soft copy of this report can be obtained from the SKMM website at:

http://mcmc.gov.my/what_we_do/Research/industry_studies.asp

I trust this document will provide useful information to our readers. We welcome feedback to assist us in improving our industry reports in the future. Please send your comments to webmaster@cmc.gov.my.

Thank you.

Yang Berbahagia Datuk Dr. Halim Shafie
Chairman
Suruhanjaya Komunikasi dan Multimedia Malaysia

EXECUTIVE SUMMARY

Today, one of the most significant changes happening worldwide in the broadcasting industry is the conversion to digital television (TV). Since colour TV was first introduced in 1928, a majority of households worldwide were equipped with coloured TV in the 1970s. Malaysia viewed colour TV in 1978. The TV industry also has seen developments in devices and equipments, like the VTR introduced in the 1950s, followed by VCR in the 1980s. In the 1990s, digital satellite dishes were introduced in the market and made it one of the biggest selling electronic item worldwide and in Malaysia under the pay-TV segment. Then, as the year 2000 came, DVD became a major player in the market especially in the home entertainment field as most movie studios now release their movies on DVD.

Now, the television viewing experience for consumers is about to be revolutionised at even faster pace than before by digital technology permitting high-definition television (HDTV) content, wide screen displays, more platforms for content, greater levels of interactivity, improved picture and sound quality; and even the introduction of new players in the broadcast scene. It will enable more efficient use of broadcasting spectrum which in turn will free up more spectrum for new services that can offer communications services at prices lower than it costs today. It is estimated that the number of homes with digital TV will grow to more than 200 million by 2011 from 21 million in 2005 and at that time as the transition to digital accelerates, China, India, Japan and South Korea will lead and contribute to the digital home growth. Malaysia analogue switch-off is planned for 2015. It is expected that digital TV will reach 95% household in terms of coverage in 2010. Meanwhile, Netherlands became the first country to switch-off their analogue transmission in December 2006.

Digital delivery worldwide in the form of cable, satellite and terrestrial has propelled media companies, including new entrants, to bloom and further expand their services into pay-TV offerings such as video on demand (VoD), pay-per-view (PPV), interactive TV (iTV) and games. Receivers with silicon tuners that facilitate reducing cost, improving form factor and requiring lower power are just only entering current market scene.

An alternative platform gaining popularity is broadband access. This is expected to be pervasive and available at reasonable cost eventually; allowing content to reach the masses easily; facilitating various forms of media content production portals such as peer-to-peer (P2P) file sharing, social networking sites, user generated content (UGC) and broadband TV or internet protocol television (IPTV). YouTube leads in UGC and video sharing areas capturing more than 100 million viewers per day visiting the site.

Advertising remains one of the most important sources of revenue for broadcasting companies. It is estimated that global ad spend will grow to USD458.6 billion in 2007, with the fastest growth recorded in the Internet medium. Malaysia may not yet be included in this medium but as international markets boom and expands their services through the increasing penetration of broadband, this may well capture the Malaysian market soon. Nevertheless, other alternatives for advertising in platforms of IPTV and mobile TV is expected to create revenue through personalised advertising and forming ventures with other media related companies.

The commercialisation of UGC and social networking websites, perceived also as the second generation web-based communities and hosted services (Web 2.0), has made broadcasters looking to bringing UGC content to the mainstream broadcast market from its original content in the web and on mobile. This is still considered something new and worth exploring and requires broadcasters to target viewers within a certain age range and interest. In Malaysia, UGC type service is observed in respect of weblogs.

EXECUTIVE SUMMARY

As digitisation progresses, the concept of digital home has been very much accelerated in certain markets especially the developed markets of US and Japan. By year 2015, it is expected that Asia will form the largest home network penetration at 55% compared to the US and Canada region at 50%. Under the MyICMS 886 initiatives, Malaysia is promoting the One Home One Internet Access campaign under the banner of *"Info Savvy You"* with expectation that Malaysia would have one million digital homes by 2010.

The digital transition involves every man in the street, or more specifically, every household which owns a TV set or is just about to acquire a set. In order to create awareness amongst consumers on the change to digital, the Internet has become one medium of such education. For example, the UK and Australian governments have set up special websites to inform the consumer of the switchover to digital, including information on its impact. The regulators have worked with other parties to place relevant information on these information websites such what consumers need to do prior to the transition, and what options they have in terms of cost, equipment purchase and government subsidies as well.

Content protection is very much needed in any available platform, be it digital broadcast or on the Internet. There are several content management systems that can provide distribution and access with the necessary control factor. With rising UGC content which mostly offers TV content, issues of content ownership is becoming ever more important to not only avoid facing legal charges from the content owner, but also to propel the selling proposition ahead. For traditional and new players alike, the advent of digitalisation can facilitate the various means of doing business by utilisation digital asset management systems for inventory control of rich media files to archiving for future retrieval by multiple users.

As TV moves into the fully digitised era, there exist benefits to reap. From a technical point of view, spectrum availability which is no longer occupied by analogue services offers other opportunities to launch a wide range of different services including increase in number of channels, coverage of digital TV transmissions, new services via handhelds, HDTV and non-broadcast services involving telco voice and data networks. Yet, the allocation of which spectrum band for what services optimises efficiency and effectiveness needs to be debated exhaustively across all industry and cross sectors concerned. For example, in the case for UK, the usage of freed spectrum is still debatable as public broadcasters and telecommunication companies are all vying to acquire more spectrum.

Glossary

ADSL	Asymmetric Digital Subscriber Line	MiTV	MiTV Corporation Sdn Bhd
ASTRO	ASTRO All Asia Networks Plc	PCCW	Pacific Century CyberWorks
BBC	British Broadcasting Corporation		Limited, Hong Kong
BS	Broadcasting Satellite	PMP	Portable Multimedia Player
BSkyB	British Sky Broadcasting	RSS	Really Simple Syndication
CS	Communications Satellite	RTM	Radio Television Malaysia
CWC	Cable & Wireless Communications	SDIO	Secure Digital Input/Output
DFI	Deutsch-Französisches Institut	SKT	SK Telecom
DVB-CPCM	Digital Video Broadcasting-Content	TCI	Tele-Communications Inc
	Protection & Copy Management	USB	Universal Serial Bus
DRM	Digital Rights Management	VCR	Video Cassette Recorder
DVR	Digital Video Recorder	VDSL	Very High Speed Digital Subscriber Line
KT	KT Telecom	VoIP	Voice over Internet Protocol

THE STAGES OF TV DEVELOPMENT

One Channel to Many

The early TV stations apart from being government owned depended on advertising for revenue. The TV programmes from one or two channels were not as wide in choice as the varied channels and more programmes sourced from world wide that we have on satellite direct-to-home (DTH) TV now. For example, commercial TV stations started in Malaysia only in 1984, with TV3. Only in the late 1990s did DTH TV start with ASTRO providing successful pay-TV service.

Going Digital For Greater Efficiency

RTM is undertaking trials for digital terrestrial TV (DTT) while MiTV and Maxis/ASTRO are undertaking mobile TV trials. The analogue free-to-air (FTA) TV we have today has its limitations, which is expected to be alleviated by the digital format. For instance, improved compression technology allows more HDTV programmes, with enhanced video and sound quality, to be transmitted within the bandwidth originally used by analogue TV channel. New broadcasting platforms are emerging, e.g., mobile TV broadcasting services, and new entrants such as telcos alike, to broadcast TV programmes to consumers on the move. Also, IPTV technology enables broadcast services to provide personalised services to the end user such as VoD and iTV.

Bigger Pie to be Shared with More Players

With such developments happening worldwide, the broadcast arena is no longer confined to the traditional broadcasters. Furthermore, there is potential for rise of the P2P type of transactions as the trend is in place for capabilities of technology permitting the shifting of time, place and media. P2P signals a shift in the architecture and availability of broadcast video assets, and increases competitive forces or, in other words, lowers the entry barriers for video distribution. Careful strategic planning and execution required to take advantage of potential opportunities in a new era in broadcast through digital TV and manifestation of its associated benefits. The broadcast arena to come is not expected to grow smaller, but bigger as, for example, P2P is expected to complement traditional broadcast; effectively this means a bigger pie that has more revenue source options compared to what is available today and this can be shared amongst more players as it reaches old consumers in new ways and of course the new type consumers.

Fast Pace of Changes Indicating to Act Now

Changes are not new to the broadcast arena. This can be seen in the Malaysian scenario over the decades. However, the difference between then and now is the pace of developments, which appears to race on today compared to sedate gallop of the past. Such scenario offers opportunities, especially for the incumbents as they have the requisite muscles to garner economies of scale.

MALAYSIAN TV DEVELOPMENT

1963
TV Started

1969
2nd TV channel

1978
Color TV

1984
Private TV Started

1994 - 2000
Metrovision

1995 - 2001
Cable

1998
2nd Private TV

1996
MEASAT-1

1999
DTH TV Started

2003
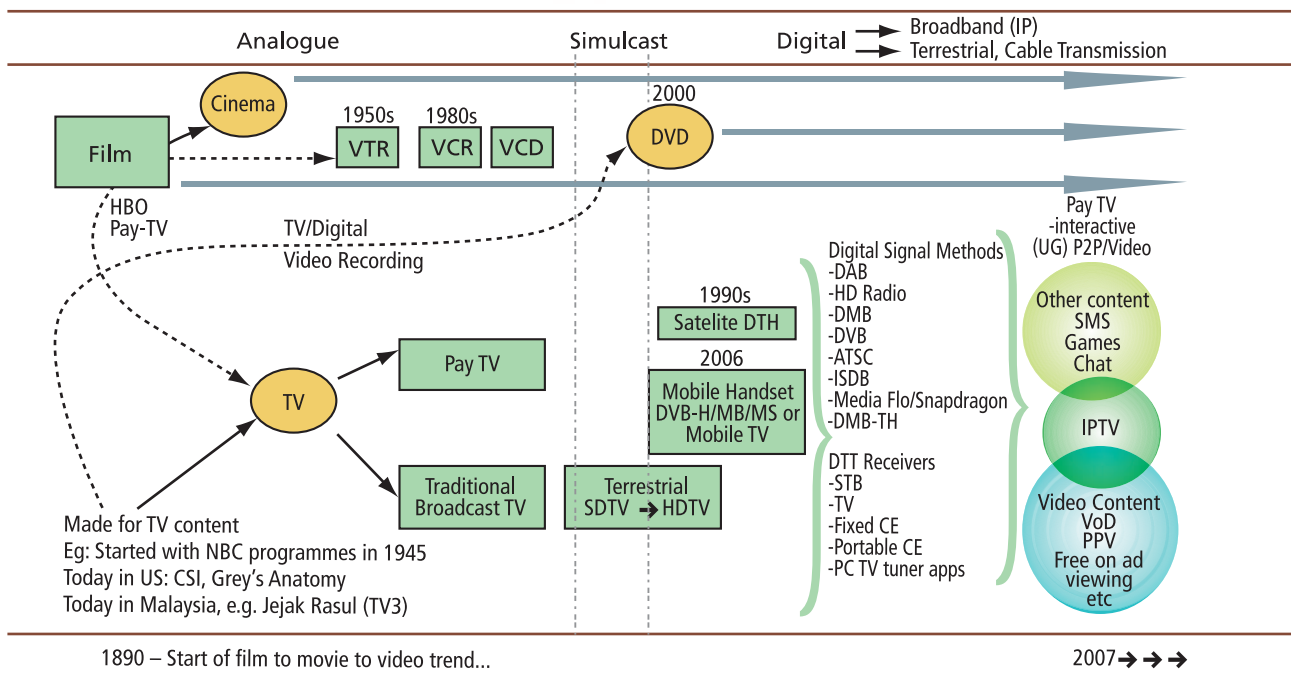*3rd Private TV*

2004
4th Private TV

2005
IPTV

2006, 2007 onwards
Later on Digital TV

Source: *History of Film & TV, TelecomAsia news developments, Mobile developments, ABI Research*

THE DIGITAL REVOLUTION

More Efficient Spectrum Usage

Many countries have decided to cease analogue transmissions to switch to digital. This initiative is mainly driven by the government, with the switchover to digital mandated at a specific date to propel user take-up. The preference is for the switchover to be effected as early as possible in order to free up spectrum from the less efficient spectrum usage of analogue systems to cater to more bandwidth hungry content delivery and applications.

The UK, which started the transformation as early as 1998, has more than 7 million subscriber homes in 2006. Its digital service has a broad range of channels and is reported to be integrating with British Telecom IPTV services to provide value added services such as VoD. DTT operators in other countries are looking to leverage revenue from digital services by including high definition (HD) programming and personal video recording (PVR).

Services to Lock-in Consumer Demand

Amongst the key drivers for transition to digital are, as always, consumer demand. A digital platform shifts their lifestyle to include viewing a wide range of high quality channels/programme, with improved formats such as wide screen displays and HDTV; and empowerment through interactive services such as opting to view or not to view advertisements. Amidst all this is eventual lower cost and wider choice of services.

The service providers, on the other hand, are driven by the higher revenues that can be derived from digital services. Apart from retaining customers through innovative programme packages and services, there is enablement to provide premium or value added services through access to the Internet for home shopping or banking; digital devices equipped with electronic programme guide (EPG) for programme monitoring that can facilitate add-ons in terms of advertisements or special targeting of individual user market.

Worldwide Digitalisation Movement

When digitalisation started in late 1990's, many were doubtful of the take up. Viewers' perspective cited that the transition involved expensive digital equipment to purchase; consumers would require new subscription service to watch TV; and operators require standards that are compatible to the services offered. In addition, consumers were somehow at ease with what they had then and were not willing to pay premium for it.

Now, as market forces and consumer awareness is eventually driving the digitalisation of broadcasting and as each country follow its own switchover path, governments in developed countries have formed action task groups to work closely and coordinate with platform operators, equipment manufacturers, broadcasters and retailers to address issues of a smoother transition which includes standardisation of digital equipments and lower prices for decoders. For example, in US, the government introduced a converter coupon programme subsidy for the purchase of a set-top box (STB) for US households and set up online information of digital products for consumers to learn on every aspect of the transition. UK and Australia are also in the forefront to educate consumers through their respective websites.
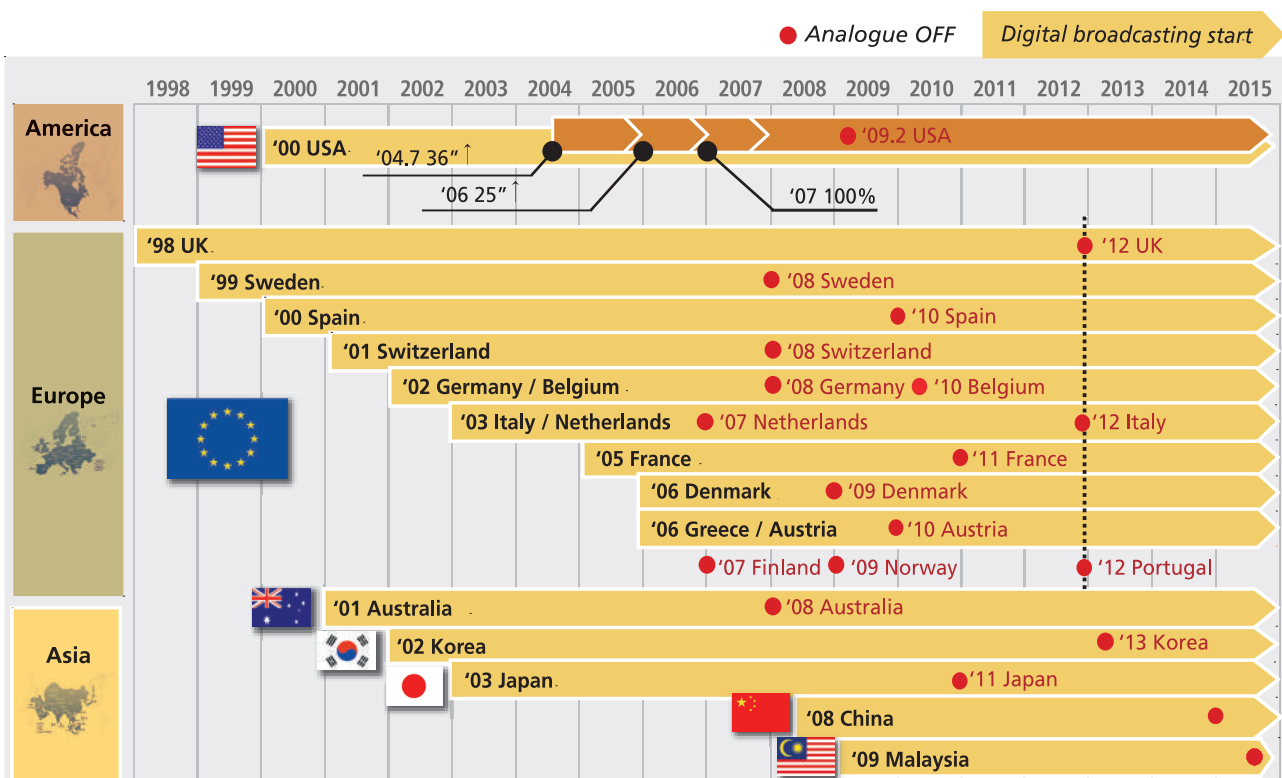
Source: Samsung Electronics, 4th ASEAN Digital Broadcasting Meeting, 29 March 2007
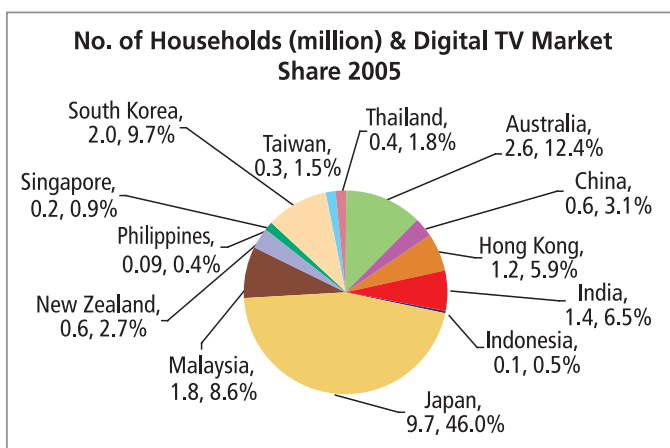
Source: Asia Pacific TV 10th Edition, Informa Telecoms & Media

In Asia Pacific, digital TV households growth is expected slow until year 2011. By then, China would close ranks to 100 million digital homes. As at end 2005, Japan remains the region's digital leader, with 46% (9.7 million homes) of the 2005 total, followed by Australia and South Korea at 12% (2.6 million) and 10% (2 million) respectively. The digitalisation movement is expected to eventually free up spectrum for digital convergence that would include more pervasive digital home environment and higher bandwidth mobility.

Digital TV Households in Asia Pacific
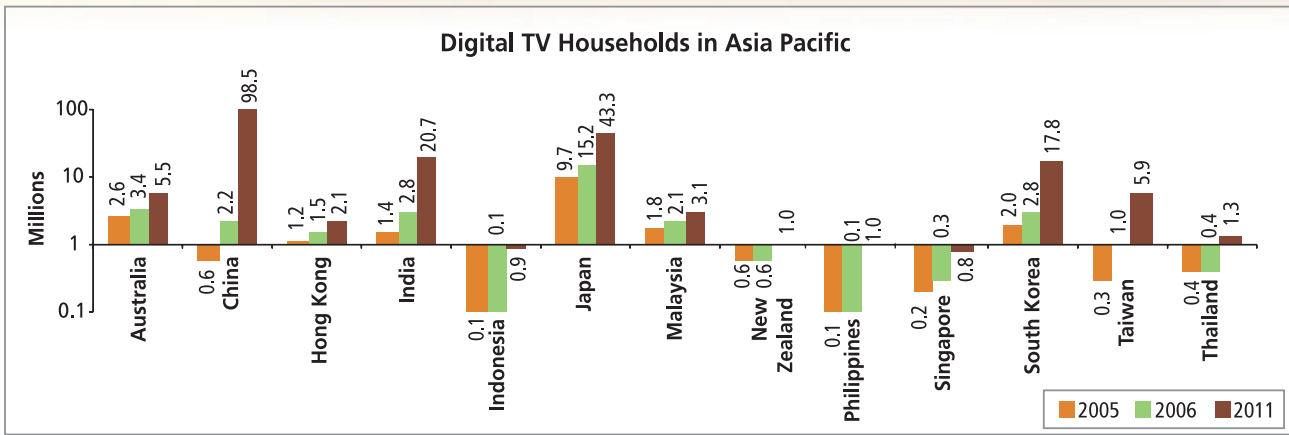
Source: Asia Pacific TV 10th Edition, Informa Telecoms & Media

Digital Convergence – Vision of the digital home
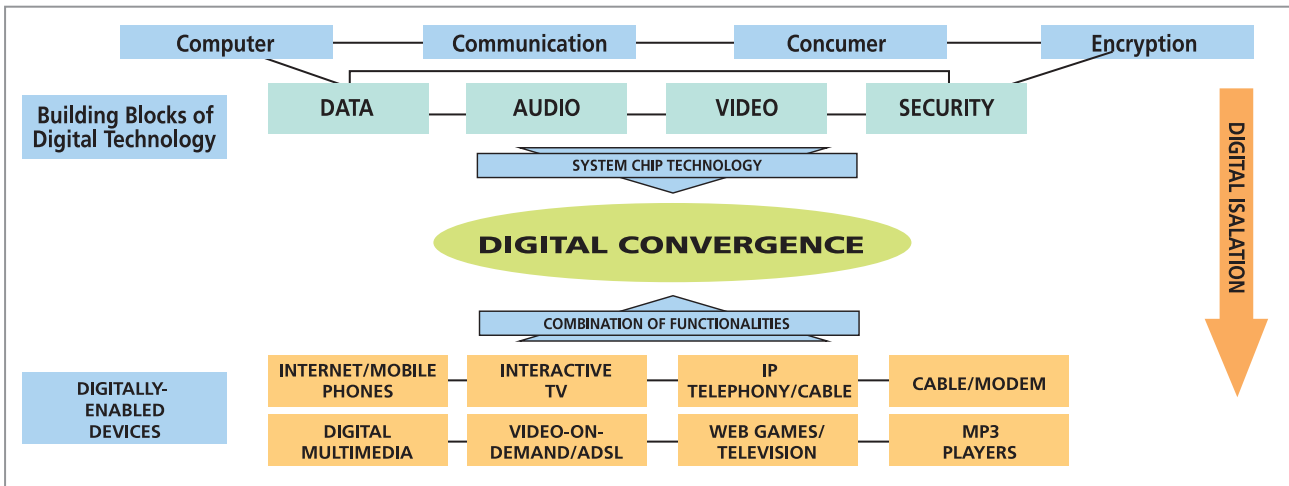
Source: Business Insight, The Future Digital Home

Netherlands Fully Digital Already

Netherlands has turned off its analogue TV transmissions on 11 December 2006 – the first country in the world to do so. The analogue switch-off was facilitated by the fact that nearly 98%[1] of Dutch households can access cable services, of which 93% rely on cable platform for their primary TV reception. That is, the Netherlands lesser dependence on terrestrial platform (5% of Dutch TV households) has made this transition easier.

Nonetheless, for the Dutch government, the process leading to analogue switch-off was not always easy. The initiative to switch-off in 2005 to enable a reduction of Euro11 million (USD13 million) per year in transmission fees was thwarted at least twice due to various reasons.

Netherlands	Million	Digital Transition	
Population	16.4	Pilot Trial	1998
TV households	6.7	Legislation	1999
Cable subscribers	6.2	Soft launch	Apr 2003
Digital TV coverage	2.7	Full launch	Nov 2003
DTT households	0.3	Analogue	11 Dec 2006
Digital cable household	0.1	switch off	
Digital satellite household	0.5		

Source: dvb.org, Internetworldstats.com

DTT services[2] have been available in the Netherlands since 2003 as a subscription service offering over 25 TV service programmes. This enabled 50% of the population to access DTT services. Full population coverage was possible only with analogue switch-off. In terms of alternatives services, there is minor but growing competition from satellite and more recently, TV via high-speed Internet connections with a service known as IPTV.

[1] The Digital Terrestrial Television Action Group (DigiTAG)
[2] DigiTag: Analogue switch-off – strategies to end analogue terrestrial TV in Europe, 2006

DIGITAL DELIVERY ALTERNATIVES
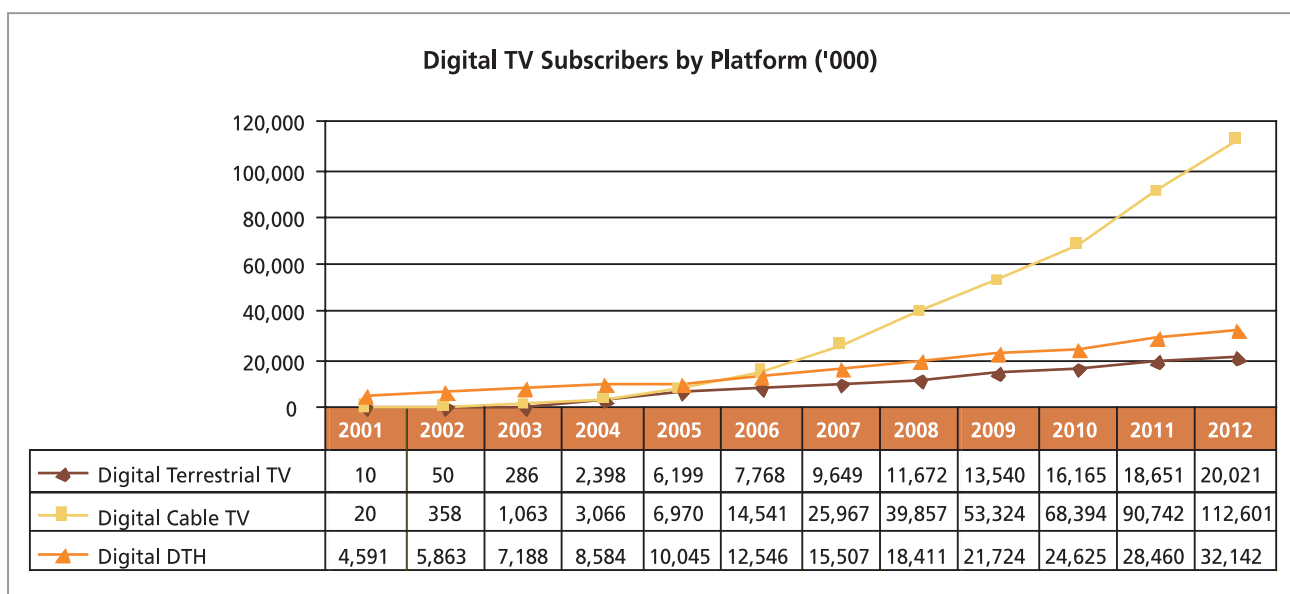
Digital Broadcast Modes

While the digital movement is accelerating relentless changes in the way broadcast content is produced, transmitted and consumed, we can concur that analogue broadcast TV industry is a successful market in its own right. The FTA TV business model works, that is, essentially free content, with advertisements as the revenue source. FTA TV model in digital format will still have its popularity amongst viewers, but those who want more channels and constantly myriad programmes and are willing to pay for it can again opt for the pay-TV model. It is this pay-TV sector in the digital arena that appears to be hype or promise more variety of choice for users. Service providers and advertisers alike may prefer this option to exploit the increasing capability of technology facilitation of the trend of increased "personalisation" in the communications services industry. For example, one-to-one offers of video, games, other types of product sales promotion and viewing over the mobile handset such as broadcast mobile TV and global positioning system (GPS) related services.

Asia continues to have the highest rate of TV penetration in the world. Industry forecast that the entire region will exceed 660 million TV households by 2010, of which an estimated 45% will subscribe to cable, 9% to digital DTH packages and 23% will receive DTT signals[3]. Nowadays, these countries are beginning to shift from analogue to digital. For example, paving the way for Malaysia's national digitalisation drive, RTM leads trials on implementation of digital terrestrial television broadcasting (DTTB). With this, we can expect more varied TV offerings such as multi-channel broadcast with improved quality of picture and sound, even HDTV; and interactive programming that will provide added services such as electronic programme guides (EPG) and data casting.

Overall, for Asia Pacific region, DTT service is off on slow start. However, by end 2012, this region is forecast to have more than 20 million subscribers (2007: 9.6 million).

Digital TV Subscribers by Platform ('000)

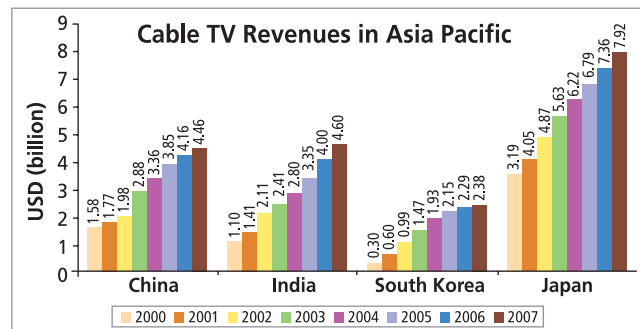|	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Digital Terrestrial TV	10	50	286	2,398	6,199	7,768	9,649	11,672	13,540	16,165	18,651	20,021
Digital Cable TV	20	358	1,063	3,066	6,970	14,541	25,967	39,857	53,324	68,394	90,742	112,601
Digital DTH	4,591	5,863	7,188	8,584	10,045	12,546	15,507	18,411	21,724	24,625	28,460	32,142

Source: Informa Telecoms & Media

[3] *Global – Broadcasting – Cable TV, Paul Budde Communication Pty Ltd*

Cable & Satellite Broadcast

Cable TV became popular in the 1970s in the US where the consumer was able to choose what programs they wanted to buy and watch. Between 2001 and 2005, there was strong growth in the cable TV markets in China, India and South Korea. Japan has continued to remain the largest market in the region in revenue terms.

Cable TV Revenues in Asia Pacific

USD (billion)

China: 1.58, 1.77, 1.98, 2.88, 3.36, 3.85, 4.16, 4.46
India: 1.10, 1.41, 2.11, 2.41, 2.80, 3.35, 4.00, 4.60
South Korea: 0.30, 0.60, 0.99, 1.47, 1.93, 2.15, 2.29, 2.38
Japan: 3.19, 4.05, 4.87, 5.63, 6.22, 6.79, 7.36, 7.92

2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007

Source: Informa Telecoms & Media

Digital Broadcasting Services Launched – International Comparison

Country	Satellite TV	Terrestrial TV	Cable TV
US	1994 (DIREC TV, others)	1998	1997 (TCI, others)
UK	1998 (BSkyB)	1998 (BBC, others)	1999 (CWC, others)
Germany	1996 (DFI, others)	2002 (ARD, others)	1997 (Deutsche Telecom)
France	1996 (Canal Satellite, others)	Scheduled from 2003	1996
Sweden	1998 (Canal Digital)	1999	1997 (Telia)
Japan	Digital broadcasting via CS – June 1996 Digital broadcasting via BS – Dec 2000	Dec 2003	Dec 2000

Source: Digital Terrestrial Broadcasting in Japan, British Embassy in Tokyo

Digital Cable TV

The issue of countries with low penetration rates due to high piracy or a lack of infrastructure investments is expected to be tackled over time. Between 2006 and 2012[4], the Asia Pacific region is expected to add more than 59 million analogue and digital cable subscribers pushing penetration up from 43% to 49%. In 2002, Asia Pacific had only 358,000 digital cable homes. In 2007, the number of subscribers has grown by 14,541 to 25,967. With the cable sector now expanding more steadily as infrastructure is built out, the region's total is expected to rise to around 112.6 million subscribers by 2012.

Digital Satellite DTH TV

There were 12.5 million digital DTH subscribers in the region (2.2% penetration rate) at end 2006. Penetration varies from country to country. Generally, the highest cable will have the lowest digital DTH penetration. For example, DTH growth is not expected to be strong in Singapore due to a viable cable market. Higher DTH penetration is in Malaysia and New Zealand where cable build-out is limited. Nevertheless, South Korea bucks the trend, with significant progress in both digital cable and reasonable DTH penetration. Industry forecast is that in 2012, South Korea will have 2.63 million subscribers or 14% penetration rate.

Broadband Delivery of Video Content

Cinema goers have enjoyed decades of successful movie screening along with the introduction of TV then or FTA TV. Cinema is still a successful entertainment mode today, albeit going digital as well. The terrestrial FTA TV situation in the context of change to digital is still expected to enjoy revenue through advertisements. However, there is expected some loss of revenue same as cinema had to DVDs which provided the option to bring cinema to those who wanted to watch in the comfort of their homes. In a similar way, broadcast TV – usually the realm of traditonal broadcasters, is expected to see such traditional broadcasters losing some revenue as broadcast TV goes out of the home through the handset; accompanying its viewer wherever he or she goes in a world that is increasingly going mobile. In this respect, broadcasters need to be alert of changes in their business which is increasingly fraying at the seams to accommodate new forms of delivery of video content.

[4] *Informa Telecoms & Media*

Importance of Broadband

Broadband or high speed Internet is expected to be a versatile mode of delivering content or more specifically video content to viewers. Broadband Internet availability is increasing considering technological improvements in many facets of such delivery that includes delivery platforms of fixed line, fixed wireless, cable, or mobile modes; customer premise equipment; consumer products; requisite software; not to mention private sector investments to retain or gain market share and government activities on infrastructure built out.

Typically, in the fixed line arena, broadband is available through the digital subscriber line (DSL) or via cable. In contrast to a cable line network, DSL is a family of technologies that provide digital data transmission over the wires of a local telephone network. For content, broadband is an ideal transport service. With the Internet, content reaches the masses. With broadband Internet, video-web-based applications are expected to thrive.

Broadband allows for triple play business models, delivering voice, data and video services. Broadband TV is said to be an emerging disruptive technology, in the form of not just video streaming but in the form of a total service that can suit consumer fancies in many ways.

Video Streaming Developments	
1999	Two main media streaming standardsdeveloped by RealNetworks & Microsoft
2003	Narrowband video streaming not up to customer expectations
Late 2000	Cable operators offering video streaming to takeoff on back of broadband service

Source: Paul Budde Communication Pty Ltd

For example, file sharing features of the Internet created the multi-billion earners of YouTube and MySpace. P2P file-sharing is a key to personalisation of video content consumption. More specifically, multimedia file-sharing is deemed part of web-casting applications where streaming data-audio-video and VoD are examples. With higher bandwidth available in the future, e.g., broadband via fibre (e.g, in Japan where fibre is fast replacing ADSL), broadband TV or IPTV could well become one of mainstay TV offerings.

IPTV

IPTV of late is seen as not just offering original model (TV channels via telecom networks), but one that combines digital TV and broadband – facilitated by dual mode set-top boxes. In this way, TV service delivery has incremental value. IPTV has capability to offer truly tailored TV services to lone viewer or community viewing. Nevertheless, IPTV is seen in its infancy. Infonetics Research says service providers worldwide spent USD304 million on IPTV related service infrastructure in 2004, with this to grow to USD4.5 billion in 2009. IPTV take-up is expected fast especially in Asia Pacific via VDSL and ADSL2/2+ that is stimulating user growth. Service providers look to IPTV success in the long run - Infonetics Research a year ago forecasts worldwide IPTV revenue to hit over USD44 billion in 2009. In Europe, IPTV is expected to remain niche due to competition from cable, satellite and digital TV. Reports see France,

DSL Revenues in Asia Pacific

Source: Informa Media Group

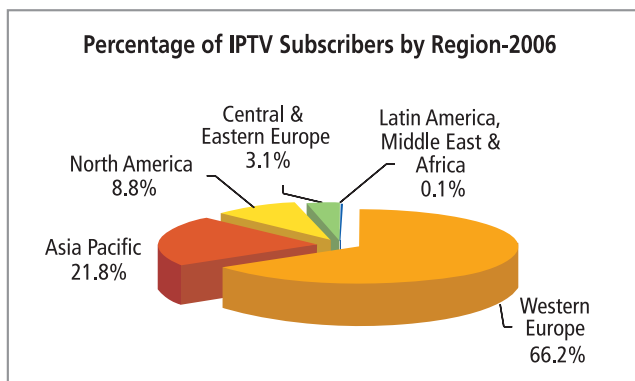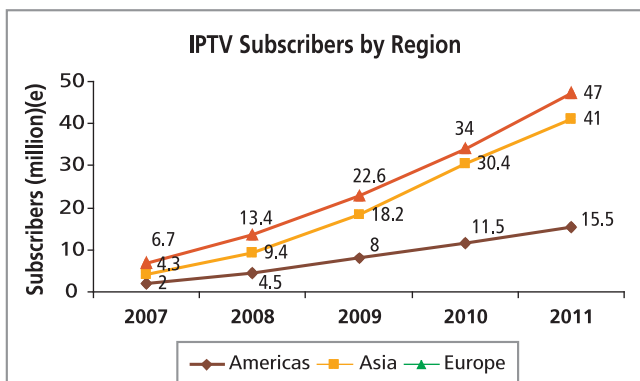| Advantages of IPTV	
Low cost	Broadband supporting 100,000 potential viewers require a fraction of the production costs for traditional broadcast.
Niche audience	Broadband is also cost effective for small audiences with wide geographic reach.
Media diversity	Broadband can support data, text, audio, video and multimedia streams providing a total experience for the audience.
Content diversity	There is no barrier to create a huge variety of programs.
Archiving	Easy to make broadband available online.

Source: Paul Budde Communication Pty Ltd

Top 5 IPTV Providers Worldwide – 2007

Rank	Service provider	Country	No. of subscribers	Launch
1	PCCW	Hong Kong	833,000	2003
2	France Telecom	France	768,000	2003
3	Free Telecom	France	680,000	2005
4	Telefonica	Spain	268,000	2004
5	FastWeb	Italy	245,000	2001

Source: www.variety.com, www.lightreading.com

Percentage of IPTV Subscribers by Region-2006

Central & Eastern Europe 3.1%
Latin America, Middle East & Africa 0.1%
North America 8.8%
Asia Pacific 21.8%
Western Europe 66.2%

Source: Paul Budde Communication Pty Ltd

IPTV Subscribers by Region

Americas — Asia — Europe

Source: Paul Budde Communication Pty Ltd   e - estimated

Italy and Spain as the largest IPTV markets in Europe, with over 60% market share. In North America, billions are now spent building fibre networks as Verizon and AT&T enters the market.

Video on Demand

VoD[5] is the transmission of video programming to a niche audience, often through relatively inexpensive means like streaming video over high-speed connections. By this means, programming what would not generate enough interest or revenue for broadcast can be made available to a small but highly dedicated audience of viewers. In Japan, Sony and Microsoft are developing systems for VoD and other applications over high capacity communications networks. The systems will be compatible with cable, telephone and home PCs and central computer terminals.

Open IPTV Forum: Formed early 2007	
Purpose	To set a single global standard so that all systems will work together
Founding companies	Ericsson, Matsushita's Panasonic, Philips, Samsung Electronics, Siemens, Sony, AT&T, Telecom Italia, France Telecom
Dateline	To hammer out tech requirements by Sep 2007 & first set of tech specs by end 2007

Source: Reuters

Interactive TV (iTV)

In a digital mode, iTV is expected to be given a whole new leash of life. There is potential for many customer value propositions that are yet to innovatively appear in time. There are currently three definitions of iTV as indicated by Paul Budde Communications Pty Ltd, which is interacting with TV content (e.g. Quiz shows); choose and control TV programming (e.g., VoD); and high speed Internet access (e.g. cable modems, datacasting).

[5] *Tech Target*

Other Forms of VoD	
Near Video on Demand (NVoD)	Program or movie is advertised to start regular intervals over a particular channel. Viewers pay electronically and select time and day to watch service. A small portion of the program/movie may be sent and stored on your DVR/set-top box buffer or hard drive; most of the program or movie is viewed from the server of the network operator offering the NVoD service.
Subscription Video on Demand (SVoD)	Generally movie/programming packages are scheduled events; SVoD allows for a fixed fee for subscribers to have unlimited access to movies/programming during a specific time period, such as a month. The opposite would be Free Video on Demand (FVoD) where a subscriber pays no special fee for the programming.

Source: Paul Budde Communication Pty Ltd

VoD/NVoD Revenues by Region (2005-2010)
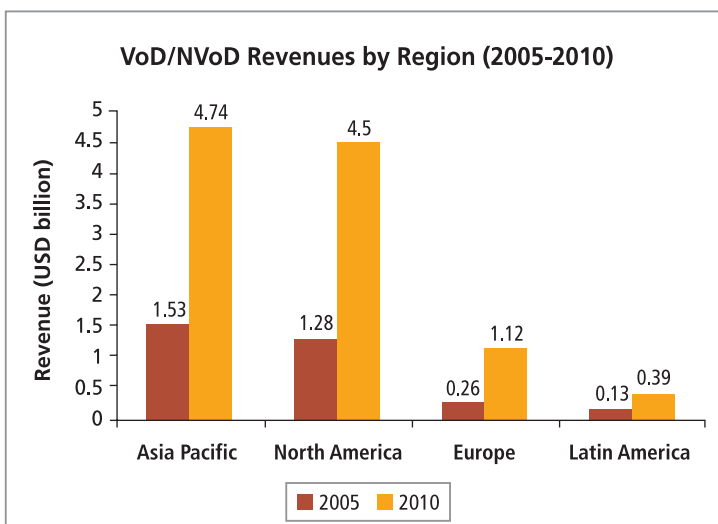
Source: Paul Budde Communication Pty Ltd

Portable Digital Media TV [6]

PC: Sling Box is a TV streaming device enabling consumers to remotely view their cable, satellite, or personal video recorder (PVR) programming from an Internet-enabled computer with broadband Internet. It can redirect up to four live TV streams from a cable box, satellite receiver, or DVR to the viewer's PC located anywhere in the home or, when using a broadband Internet connection, anywhere in the world. The Sling box connects a standard-definition TV source (via coaxial cable, S-video, or composite cabling) to an existing Internet connection (Sling box Pro supports HDTV). Digital video recorders and cable or satellite set top boxes can be controlled through a separate infrared connection that lets users change channels from the remote location. Software on a user's PC connects to the Sling box and provides the user interface for viewing the video stream and changing channels.

Mobile Broadcast TV

The mobile phone is far from merely a phone, it is also a camera and MP3 player. It may even evolve into an all-in-one multimedia device, with mobile TV, remote control capabilities and even pay our bills. There are already various standards to broadcast TV over the mobile phone. Technology, service orientations and progress is being made with full service launches in Italy and UK in Europe, and earlier version launches in South Korea.

High-Definition TV (HDTV) [7]

HDTV is a television display technology that provides picture quality similar to 35 mm movies with sound quality similar to that of today's compact disc. Some television stations in Japan have begun transmitting HDTV broadcasts to users on a limited number of channels. HDTV generally uses digital rather than analog signal transmission.

In 2005, digital TV penetration was 5% in Asia Pacific, versus 52% in North America and 32% in Europe. In Feb 2007, StarHub became the first operator in South East Asia to launch HDTV commercially; offering Discovery and National Geographic channels on the S$299 (USD194) HDTV box.

[6] *Slingmedia.com*
[7] *Total Content + Media, March 2007*

NEW TV RECEIVERS

Digital technology is more efficient in delivering television programmes than analogue. Digital signals can be received by standard aerials, satellite dishes or via cable. Decoding requires a separate set-top box, or a decoder built into your TV (an integrated digital TV set/iDTV) or a PC fitted with TV. To date, a vibrant market for over-the-air (OTA) receivers exists due to digital switch-over and its accompanying service offerings.

Silicon Receivers

Classic applications[8] such as TV, PVR and STB are just beginning to see migration from traditional tuners to silicon tuners, which are a digital receiver component. With silicon tuners, both the tuner and the demodulator (another digital receiver component) can be implemented on the same die, thus reducing cost, form factor, and power. Some companies are developing a combined tuner and demodulator silicon solution for handset applications, but this is still a new, e.g., DiCom approach with one of its DVB-H solutions.

Tuner functions amongst others to receive the radio frequency signal from the air. Digital tuners have many advantages over analogue ones, including smaller physical form factor that allows it to be integrated into smaller devices, easy assembly, lower failure rates and lower-power; they have more robust, high quality signaling chain.

Device Connectivity Map for Digital Video Delivery

Mode	Device Support		
	Fixed	Portable	Mobile
Cable	X		
Satellite	X	X	X
Cellular		X	X
Telco	X		
Broadband	X	X	X
Terrestrial	X	X	X

Source: ABI Research

Market Opportunity for Over-The-Air (OTA) Receiver Silicon

Fixed	Portable	Mobile
Televisions	Televisions	Handsets
Set Top Box	Laptop	Auto entertainment systems
Digital Video Recorder	Ultra Mobile PC (UMPC)	
Desktop PC	Portable media player	
Networked Tuner	Portable DVD player	
Digital Media Adapters		

Source: ABI Research

DTT Consumer Electronics Market Segments

Segment	Description
Fixed DTT	SD and HD television sets
DTT STB	Consumer set top boxes including DTT STB receiving non-subscription service
Fixed CE equipment	Other "living room" CE equipment like a DVR (VCR)
Portable CE Devices	Portable devices such as portable media players (PMP) or portable TVs
PC TV Tuners	TV tuners integrated into computer or purchased at retail

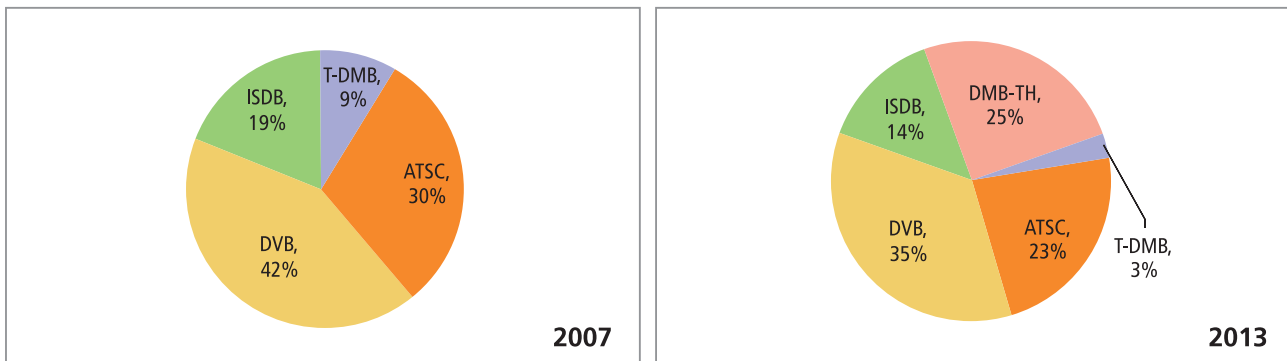*Source: ABI Research*

PC Tuners

Until recently TV tuners found in TV and VCRs[8] as a norm is also available in PC TV tuner cards. Today, DTT Receivers are also in PC TV tuner applications. Devices such as USB tuners or SDIO tuners could be used with other portable consumer electronics devices such as portable DVD players and PMPs, and even fixed equipment.
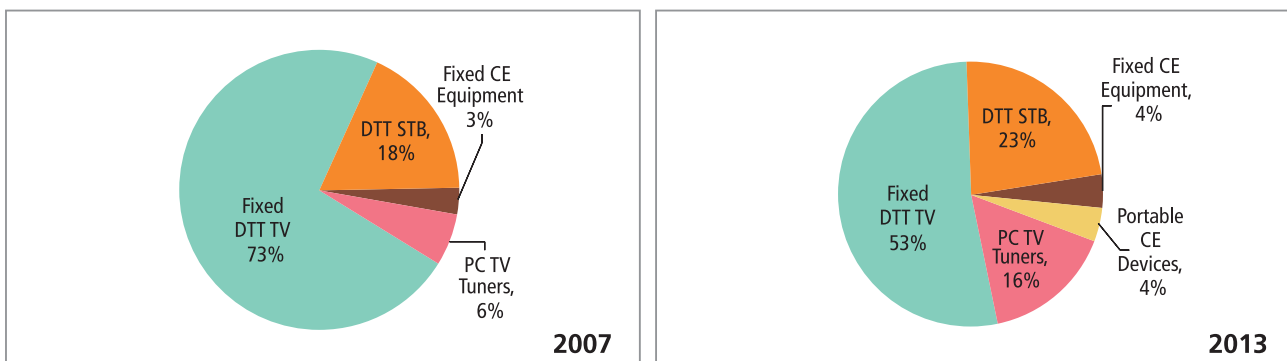
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[8] *Source: ABI Research*

Worldwide DTT Market by Receiver Type (2007 and 2013 Forecast Market Share)

Source: ABI Research

Worldwide DTT Market by CE Application (2007 and 2013 Forecast Market Share)

Source: ABI Research

ADVERTISING: TO ADOPT DIGITAL BUSINESS MODELS EARLY

In many markets, broadcasting remains the most important media for adex. For example in Malaysia, FTA TV adex is worth USD416.3[9] million in 2006 and pay-TV operator ASTRO's advertising revenue is USD40.2[10] million for the financial year ended 2007. Although other advertising medium in online and mobile are not yet accountable in Malaysia, it is however very much captured in international markets such as the US and Europe.

As digital technologies progresses, advertisers are expected to continue shifting ad dollars out of traditional media and into digital alternatives. Overall, analysts predict that global advertising spending will grow this year to 5.4% from USD435.0 billion in 2006 to USD458.6 billion. The fastest growth continues to be in digital, with Internet spending to take 7% of global ad spend in 2007 at USD31.3 billion (2006: 5.8%; USD24.4 billion) which will overtake two long-established media, cinema and outdoor.

According to media researchers, Zenith and GroupM, mainstream advertisers have not switched branding budgets directly from TV and print media to Internet search companies such as Google. The alternatives, however, have increased the pricing power of advertisers. They expect increase in brand advertising on the Internet, driven by broadband access supporting use of video ads on the web. The role of advertising is changing in the digital age. Studies show that the faster-growing Internet ad space is expected to command USD43 billion globally in 2009 from USD24.4 billion today, fueled by expanding broadband subscriber base comprising 70% in most mature markets.

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[9] *Source: Nielsen Media Research Service*
[10] *Source: Nielsen Media Research Service*

Worldwide Forecast Market Share of Total Adspend by Medium 2007

Medium	Share	Value
TV	37.5%	(USD167.1 billion)
Newspapers	28.5%	(USD127.1 billion)
Magazines	12.8%	(USD57.0 billion)
Radio	8.2%	(USD36.5 billion)
Internet	7.0%	(USD31.3 billion)
Outdoor	5.6%	(USD25.2 billion)
Cinema	0.4%	(USD1.9 billion)
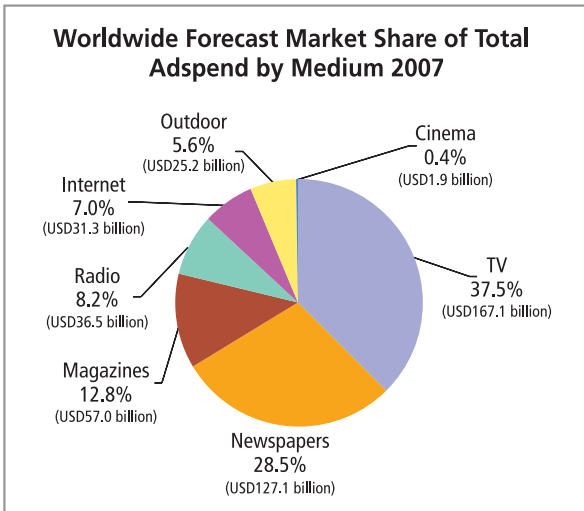
Source: Zenith Optimedia

2007 Forecast	Zenith Optimedia	GroupM	Universal McCann
Global media advertising revenues	5.4%	5.0%	5.3%
Internet advertising	28.2%	27.0%	n.a.

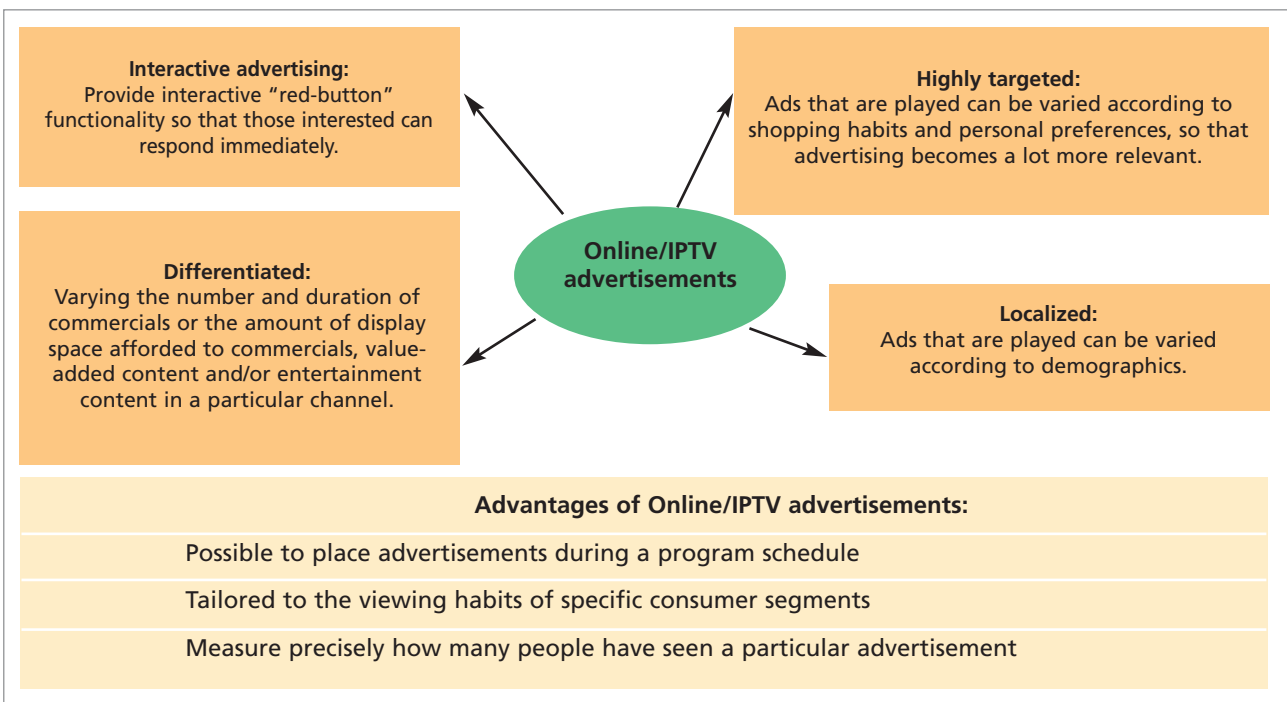*Source: "Newspapers expect to lose ads to Internet", 4 December 2006, The Financial Times Limited 2007*

Industry experts are forecasting the Asia Pacific, Central and Eastern Europe and the Middle East regions to be the driver for the global advertising growth in 2007. Asia Pacific contribution is much expected due to the run-up to the Beijing Olympic Games in 2008. The fastest growing is Central and Eastern Europe, where experts see the ad markets in this region rushing towards maturity whereas Middle East region growth was fuelled by spikes in oil prices and the proliferation of Middle Eastern media.

IPTV advertising

With the shift from analogue to digital broadcasting, the number of TV channels has multiplied and audiences are becoming more fragmented in terms of target markets. With IPTV being on the Internet platform, advertisements can be personalized and even localized based on consumer location. Some of the IPTV operators already piloting targeted advertising are Tiscali TV, Verizon's FIOS IPTV service and AT&T U-Verse IPTV service.

Online/IPTV advertisements

Interactive advertising:
Provide interactive "red-button" functionality so that those interested can respond immediately.

Highly targeted:
Ads that are played can be varied according to shopping habits and personal preferences, so that advertising becomes a lot more relevant.

Online/IPTV advertisements

Differentiated:
Varying the number and duration of commercials or the amount of display space afforded to commercials, value-added content and/or entertainment content in a particular channel.

Localized:
Ads that are played can be varied according to demographics.

Advantages of Online/IPTV advertisements:

Possible to place advertisements during a program schedule

Tailored to the viewing habits of specific consumer segments

Measure precisely how many people have seen a particular advertisement

Source: "A new channel for advertising", 19 March 2007, Total Content & Media

Mobile TV advertising

With nearly 3 billion mobile phone users in the world, it is clear that mobile advertising represents a huge opportunity. Experts predict that worldwide spend of mobile advertising will be worth USD11.35 billion in 2011, with mobile TV expected to capture the highest ad revenue. As to what Internet advertising is doing, mobile advertising must also be able to target specific individuals, i.e. with relevant offers, interesting to the audience and most importantly must be able to identify the device type to render content appropriately. Operators should provide incentives for mobile users in watching ads.

Global Mobile Advertising Revenue
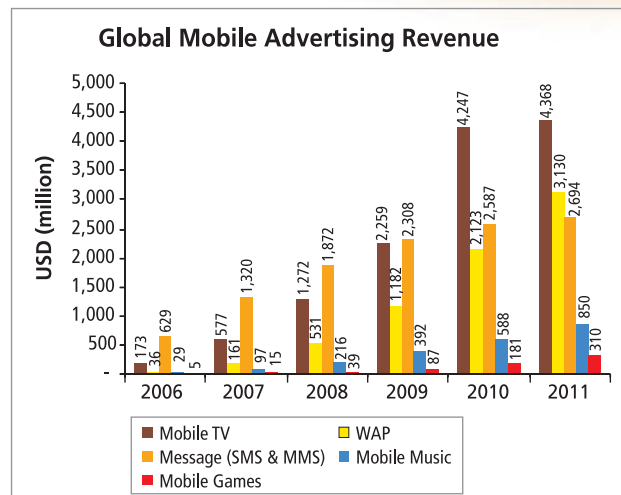
Source: Informa Telecoms & Media

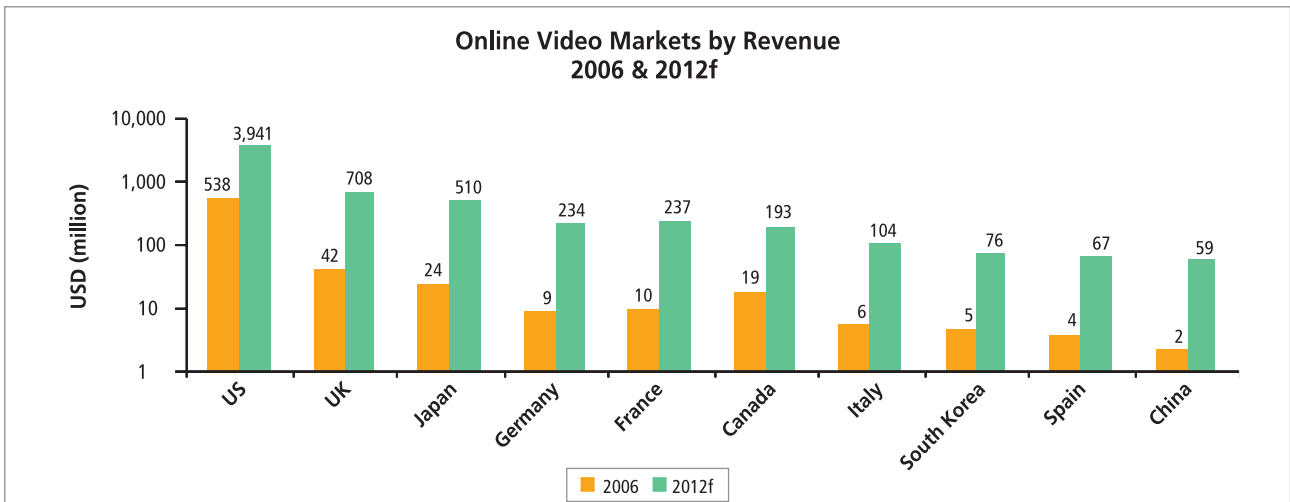| Operators	Mobile ads
Virgin Mobile US	Introduced a programme called Sugar Mama in 2006. It compensates its phone users with free calling minutes for watching commercials, reading advertiser text messages and taking surveys for brands.
EMI Music & T - Mobile	Joined forces in 2006 to pilot ad-supported mobile videos in UK.
Orange, France	– Launched a commercial advertising trial with ad-funding company, Amobee. – Orange customers interested in playing games will be offered for free, or at a reduced rate, if they first agree to watch an advertisement.
3 UK	Launched in April a service supported by personalized advertising to provide free content for its users.
Vodafone and Yahoo	Aim to launch a mobile advertising business in the first half of 2007. Customers who accept carefully targeted display advertisements can expect to enjoy savings on certain Vodafone services, including Vodafone live! portal, games, TV and picture messaging services.

Source: "A new channel for advertising", 19 March 2007, Total Content & Media

Online and wireless video games, online film rental subscriptions, licensed digital distribution of music, and the rapid adoption of ring tones and mobile music downloads are becoming critical components of the industry and driving significant revenues across all regions.

USER GENERATED CONTENT (UGC): BROADBAND VIDEO/TV

The exploitation of technology couple with the Internet has enabled users or viewers to create their own media content. This is in contrast to traditional media producers, licensed broadcasters and production companies. Accessible to general public, UGC arise through various new media content production circles, such as YouTube, MySpace, Flickr, Outloud.TV and many others. The business model is basically a sharing website where users can upload, view, and share video clips, personal blogs and photographs. Because US dominates online video portals and content development, analysts predict that web-based video revenues are expected to grow from USD538 million in 2006 to USD3.9 billion in 2012, followed by UK and Japan, growing to USD708 million and USD510 million respectively in 2012.

**Online Video Markets by Revenue
2006 & 2012f**

USD (million)		

US: 538 / 3,941
UK: 42 / 708
Japan: 24 / 510
Germany: 9 / 234
France: 10 / 237
Canada: 19 / 193
Italy: 6 / 104
South Korea: 5 / 76
Spain: 4 / 67
China: 2 / 59

Legend: 2006 2012f

Source: Informa Telecoms & Media

In US, YouTube and MySpace takes up more than half of the market share of the web-based UGC and social networking services respectively. YouTube accounts for 60% of video sites, while MySpace reigned in market share of Internet visits at 80% of social networking sites.

**Market Share of Internet Visits Top 10 Social
Networking Sites (April 2007)**

- 0.8%
- 0.9%
- 1.0%
- 1.3%
- 11.5%
- 0.7%
- 0.7%
- 0.6%
- 2.8%
- 79.7%

Legend:
- MySpace
- Facebook
- Bebo
- iMeem
- BlackPlanet.com
- Tagged
- Yahoo! 360
- Xanga
- hi5
- Others

Source: Hitwise

Year	UGC Sites Propelled by Industry's Blue Chip Players Acquisitions
2003	Google acquired Blogger, specifically to accelerate the rise of UGC
2005	– News Corp. purchased MySpace – Yahoo acquired photo-sharing site Flickr
2006	– Viacom bought Atom Films – Sony acquired peer-to-peer specialist Grouper – Google bought YouTube and took the deal-making to a new level

With UGC growing phenomenal rate, mobile operators are also vying for such potential revenues for their data services. Mobile UGC and social networking services allow users to access Internet while they are on the move and mobile operators see this as a growing and personalized service and with the current state that more people own mobile phones than a PC creates a mobile social community. However, the community is within those users who subscribe the service and are within the same network as compared to the Internet which captures global audiences. To view this, operators need to seek partnerships with existing web-based social networking vendors because they have a familiar brand name. For example, Vodafone's tie-up with Yahoo and MySpace has quickly built up the community.

Country/ Operator	Service/ Launch	Subscribers	Features	Pricing Model
Hong Kong/ CSL	freeBlog/ September 2006	3.6 million page view in April 2007	Blogging (text, MMS and video)	Free of charge to customers using a service branded as *One2Free*
Hong Kong/ PCCW	Snaap/ March 2007	–	– PCCW customers can upload and view videos/photos across fixed line, TV, broadband and mobile – Free viewing for PCCW customers	– Free of charge for subscribers of two PCCW services, with 100MB storage capacity – HK$38 per month for 5GB storage capacity and 20 free photo prints
Singapore/M1	MeTV/ March 2007	40,000 customers in three months of launch	User-generated video sharing	– User gets paid S$0.05 for each video downloaded by other M1 customer – S$0.21 to download video clip – Upload fee of S$0.21 for each video clip (started July 2007)
Taiwan/ Taiwan Cellular	Video Cellular/ April 2007	–	User-generated video sharing	Similar revenue sharing model as M1

Source: telecomasia.net, 14 June 2007, Telecom Asia and operators

Another growing trend is that broadcasters are experimenting with UGC as well. TV executives are looking to use UGC for broadcast TV services, that is, transferring UGC content from the Internet and mobile phones to the mainstream broadcast market.

Country	Operator	Service
UK	Trouble (Pay TV channel owned by Virgin Media)	My Shout for 15-24 year olds; shown for $3\frac{1}{2}$ hours. Increased to $\frac{1}{2}$ hour weekly programmes showcasing the best video clips.
	BBC Two	Blast Web site for 13-19 year olds
US	Amp'd Mobile	Lil' Bush for 18-35 year olds

Source: Total Content + Media, May 2007

Web 2.0 Introduction

Web 2.0 refers to a perceived second generation of web-based communities and hosted services such as social-networking sites, wikis and folksonomies which facilitate collaboration and sharing between users. Although the term suggests a new version of the World Wide Web, it does not refer to an update to Web technical specifications, but to changes in the ways systems developers and end users have used the web platform.

In alluding to the version-numbers that commonly designate software upgrades, Web 2.0 may hint at an improved form of the World Wide Web. Advocates of the concept suggest that technologies such as weblogs, social bookmarking, wikis, podcasts, RSS feeds (and other forms of many-to-many publishing), social software, Web APIs, Web standards and online Web services imply a significant change in web usage. In Malaysia, UGC type service is observed in respect of weblogs.

Comparison between Web 1.0 and Web 2.0

Web 1.0	Web 2.0	Web 2.0 Supporters Perceptions of the Service
DoubleClick	Google AdSense	The transition of web sites from isolated information silos to sources of content and functionality, thus becoming computing platforms serving web applications to end-users.
Ofoto	Flickr	
Akamai	BitTorent	
mp3.com	Napster	
Britiannica	Wikipedia	
Personal website	Blogging	A social phenomenon embracing an approach to generating and distributing Web content itself, characterized by open communication, decentralization of authority, freedom to share and re-use, and "the market as a conversation".
Evite	Upcoming.org and EVDB	
Domain name speculation	Search engine optimization	
Page views	Page per click	
Screen scraping	Web services	
Publishing	Participation	
Content management system	Wikis	Enhanced organization and categorization of content, emphasizing deep linking.
Directories (taxonomy)	Tagging ('folksonomy')	
Stickiness	Syndication	A rise in the economic value of the Web.

Source: www.orellynet.com

DIGITAL ENTERTAINMENT HUB AT HOME

The digital home environment is the application of digital technologies to the home, whether that applies to entertainment, communications, control or security. Broadband user sharing will be the major driver behind the concept of home networking. As consumers continue to store more digital content on their PCs, they will include PC for digital entertainment as well. Improving interoperability between PC and Consumer Electronics (CE) devices will fuel this trend. Service providers are already trying to tap the entertainment networking arena, with IP-based systems allowing users to share and move content between multiple TVs around the home such as STB to STB.

Malaysian Digital Home

Basic Components	High Speed Broadband Connectivity Consumers are able to access digital content from any device, anytime and anywhere, both inside and outside the home	Home Gateway A device that • provides interface for broadband connectivity to the home; • delivers services to the home environment and to the different devices and interfaces that makes up the home environment

Source: SKMM, Malaysian Digital Home, 2007

Home networks distributing Internet access around the house is available today, especially in developed countries. It is expected to take-off as broadband goes pervasive, adding on triple play services. Experts predict that after 2010, media centers would distribute these services, with computer servers replacing current audio and video and computer equipment. The centralised server accessing external network through cable, wireless or BPL, will distribute services to the screens (plasma, LCD), PCs, telephones, security and a range of other consumer appliances in the home.

Source: Samsung Electronics, 4th ASEAN Digital Broadcasting Meeting, 29 March 2007

Home Network Penetration		
Year	**Regions (%)**		
	US, Canada	**Western Europe**	**Asia***
2005	15	2	3
2010	30	15	35
2015	50	35	55

Source: Paul Budde Communications forecasts *Japan, Korea, Taiwan, Hong Kong, Singapore, Australia, New Zealand

Home Network Penetration in Selected Countries (%)		
Country	**2004**	**2010**
US	17	42
Japan	16	76
UK	10	62
South Korea	2	90
Germany	2	38

Industry analysts see US and Canada home network penetration to double in 2010. This is notably linked to growth of households with two or more computers, broadband access connections, and greater availability plus lower cost network equipment. While South Korea has highest broadband penetration in the world, digital home networking is yet to take off.

Along with home networks, the development of IT connections between computers and peripheral devices are growing fast as well, including triple play offerings, wireless connection standards (Bluetooth and WiFi), diversification and enhancements in TV sets, MP3 players, webcams, games consoles, photo printers, telephones and other such home or user gadgets.

Broadband Home	
Home Office	Cable broadband supports telecommuting through latest broadband videophones, videoconferencing and VoIP service. Home media gateways to extend broadband services throughout the home.
Home Health	Optimised by broadband, computer-controlled fitness equipment with video displays and interactive training programs make exercise an interactive, connected experience. Residents' vital sign can also be connected real time with healthcare professionals.
Recreation Room	HDTV and online gaming via broadband, allowing real-time interaction with players across the room or across the country. Interactive TV applications let the family personalise their viewing experiences.
Living Room	Ultimate home HDTV theatre equipped with high-end media components; on-demand and time shifting technologies allow for customisable viewing.
Learning Centre	A cable-powered resource centre demonstrates how cable's content and technology supports, encourages and enhances learning.
Bedrooms/ Bathrooms	TV viewing continuing from room to room including the bathroom; taking advantage of multi-room digital video recording and HD on demand.
Garage or DIY room	A fully equipped work area for the do-it-yourselfer, featuring a seemingly endless supply of tools and 'how to' content for the TV or PC, highlights this area.
Deck or Garden	Complete with grill and a full complement of telephone, Internet and video outlets.

Source: NCTA, Broadband Home Exhibition, Paul Budde Communications

The digital homes provide avenues for business opportunities in entertainment and introduction of functionalities through automation. Automation of the home is considered a long-term goal. It is in the field of distributing digital entertainment to all the different corners of the home that is seeing much developmental action. The idea is to "reunite control" not just the TV on/off but other CEs in the home as well. Players in the digital home market are as diverse as the services and products they offer.

The overall trend is towards convergence and all service providers and vendors want a piece of it. PC makers want their products as the digital entertainment hub. Consumer electronics and game console makers envisage their products playing that role. Software providers are pursuing the main interface of the same hub. As connectivity in the digital home is most likely IP-based, telcos and cable companies want their services as backbone of in a digital home while content providers and Internet firms eye selling their services and products. In supplying this jewel in the crown, different industries and new entrants alike have been competing, cooperating or even merging. For instance, Intel and Microsoft, the two traditional partners in manufacturing PCs, have found new partners in Yahoo! and Time Warner, to ensure their products and services contain attractive digital content. Network equipment company, Cisco, acquired a TV set-top box maker. TiVo, a hard-drive recording devices manufacturer, is developing its own software. Apple, a PC maker and software provider, is now moving into consumer electronics with iPod.

Players in the digital home
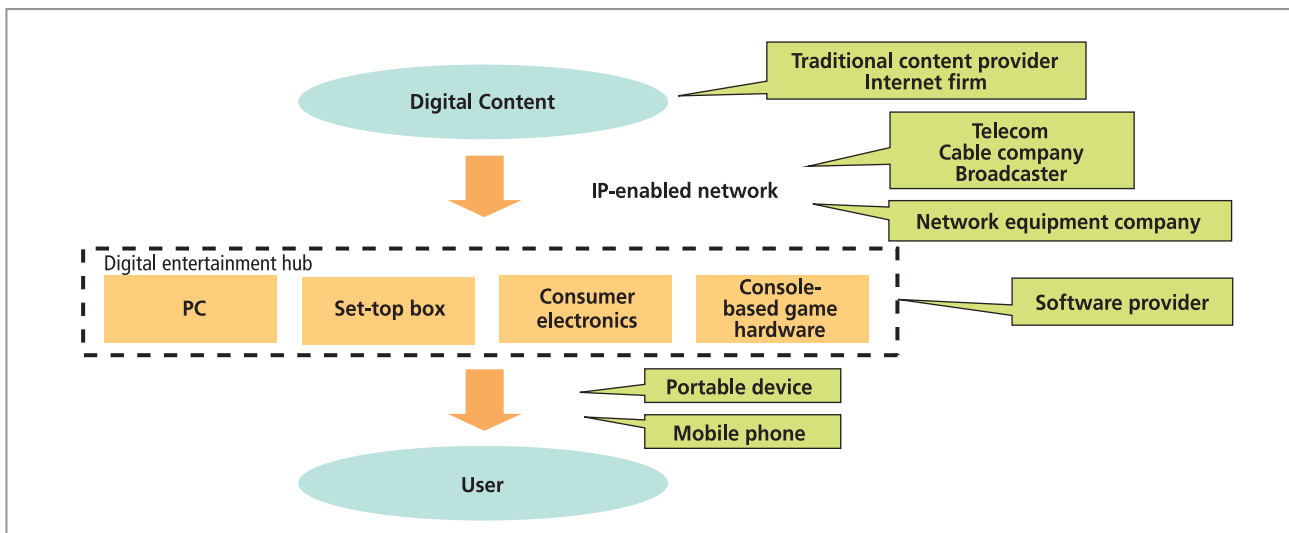
Recommended with the kind permission of ITU, ITU Telecom World 2006

Standardisation and Interoperability

The term "Multiple Play" is sometimes used to describe the network side of convergence. Telcos, cable companies, broadcasters, and mobile network operators are increasingly offering multiple services. The Digital Living Network Alliance (DLNA) is trying to harmonize standards operated by different devices. In Korea, coordination between the Ministry of Information and Communications (MIC) and network operators SKT and KT are taking a lead in establishing two digital home consortia. Each consortium comprises many industry players such as telcos, broadcasters, construction companies, consumer electronics and network infrastructure providers, and content providers.

The European standards body DVB under The DVB Project, created Multimedia Home Platform (MHP), an open middleware system with Java-based environment that defines a generic interface between interactive digital applications and the terminals on which those applications execute. The interface decouples different providers' applications from the specific hardware and software details of the terminals on which they run. It enables digital content providers to address all types of terminals ranging from low-end to high-end set top boxes, integrated digital TV sets and multimedia PCs. Any DVB open standards in transmission networks such as satellite, cable, terrestrial and microwave systems for broadcast and interactive services is able to adopt MHP. Countries adopting the DVB-MHP are Italy, South Korea, Belgium, Finland, Germany, Spain, Austria, Sweden and Hungary.

ULTIMATE DRIVER: THE CONSUMER

As the media landscape changes, consumers have increasing convenience of choice of devices and services; basically shifting away from traditional entertainment sources. Now that the transition from analogue to digital is paving way in many countries, there is a need for each consumer to know what happens in this transition and what they need to do. A successful completion of the digital transition requires simultaneous consumer education. In the US, a multi-industry digital TV transition coalition is formed. Members include Consumer Electronics Association (CEA), National Association of Broadcasters (NAB), Association of Public Television Stations (APTS), National Cable & Telecommunications Association (NCTA), Consumer Electronics Retailers Coalition, LG Electronics, Association for Maximum Service Television (MSTV), broadcast networks and the Leadership Conference on Civil Rights. The coalition is engaged to increase public awareness of transition to digital and efforts are made through online information and resources.

Identification of Issues to Educate Consumers*
• Consumers not aware of the transition, not sure what to do about it, heard of digital TV but do not know if it is available in the area and did not know that analogue services would eventually be switched off
• Consumers awareness of the positive values of digital TV, its benefits and features including the number and types of digital channels; picture and reception quality and the degree of improvement
• Knowledge of equipment costs, requirements including aerials, compatibility with old TV and one-time investment in a set-top box to receive new channels and also educate on parental blocking technology.
• In US, consumers are not aware of the coupon programme or the mechanics of it.
Countries such as the US, UK and Australia have put up dedicated websites for consumers to learn thorough details on the transition to digital TV and their options as consumers.

Source: www.dtvtransition.org, Digital Action Plan, Australia, www.digital.co.uk

Apart from FTA TV programmes over digital TV platforms, broadcasters are also increasing the use of VoD. This method of pay-per-view is empowering consumers personalizing their TV or video preferences. However, threats from other platforms are increasing too, specifically in areas of viewer created content, which generally brings us to online platforms.

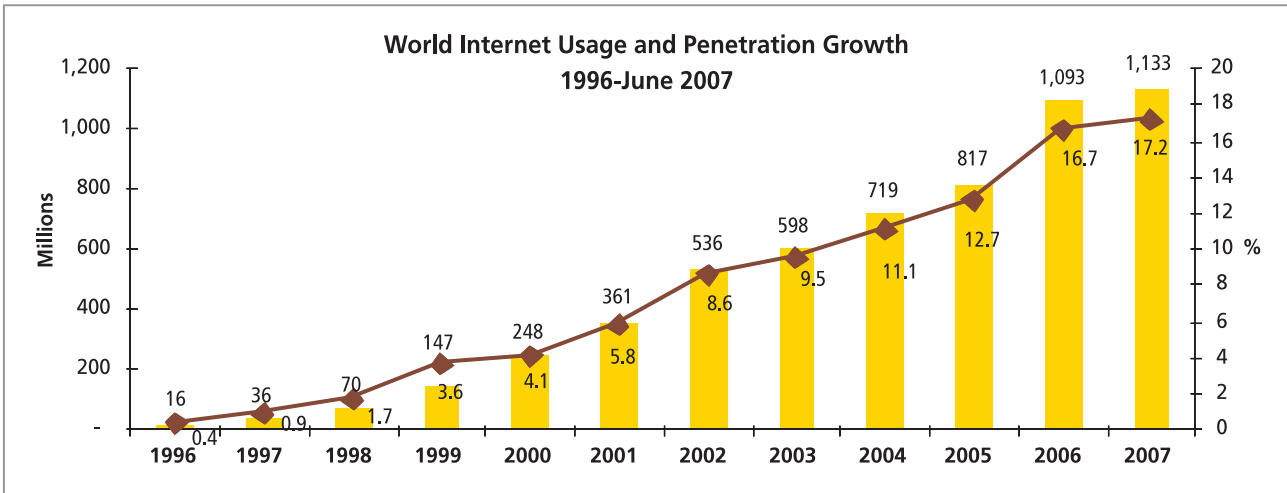| Country	Digital STB Cost	Remarks
US	Expected to cost between USD50-USD70	Available for purchase in 2008. Beginning on 1 January, 2008, US households can request up to two coupons valued at USD40 each. Each coupon can go toward the purchase of a single set-top converter box that will allow consumers to continue watching FTA TV on an analogue set.
UK	GBP40	For a one-off cost of digital box.
Australia	Under A$100	A standard FTA digital STB

OPTIONS FOR CONSUMERS	a) Purchase a digital-to-analogue converter box/STB that plugs into an existing TV	b) Subscribe to a cable, satellite or telecommunications service provider if all desired local broadcast stations are carried by that service	c) Purchase a new TV set with a built in digital tuner

Source: www.dtvtransition.org, Digital Action Plan, Australia, www.digital.co.uk

With rising Internet penetration, consumers have easy access to online content. There is a tendency for increased risk of a syndrome called Internet addiction, specifically with online gaming. Users can misuse and become obsess with games. As the highest broadband penetration in the world at 89% in 2006 and dubbed the world's most wired country, South Korea faces online gaming addiction problems which in majority of cases concern young users who neglect school, job, food and in serious cases even leading to death. The government has formed an addiction group centre called Centre for Internet Addiction Prevention and Counseling, assisting users to control their usage of gaming and avoid the dangers of game addiction.

World Internet Usage and Penetration Growth 1996-June 2007

Year	Millions	%
1996	16	0.4
1997	36	0.9
1998	70	1.7
1999	147	3.6
2000	248	4.1
2001	361	5.8
2002	536	8.6
2003	598	9.5
2004	719	11.1
2005	817	12.7
2006	1,093	16.7
2007	1,133	17.2

Source: www.internetworldstats.com

MANAGING CONTENT TO BE KING

Content is demanded in every facet of entertainment in all service delivery platforms. Not only just content viewing availability, but also its modes of distribution across many platforms and control of content in various services environment, be it fixed or mobile. As we move from analogue to the open digital TV, broadcasters are taking greater control on content protection. The European standard DVB-T has adopted new specifications for an easier way to control content on digital TV. One specification that works under DVB-T is the content protection and copy management (CPCM) system from The DVB Project. It places restrictions on recording, playing back or copying programmes and also on the lifecycle of stored TV content. The DVB-CPCM manages the content in accordance with rights granted by the content providers or distributor.

| Types of Content Management Systems	
Conditional Access (CA)	Provides secure addressable distribution and access to content (subscription, pay-per-view, VoD) but does not necessarily control subsequent storage and distribution.
Digital Rights Management (DRM)	A generic term for over-all rights management (business models beyond just copy protection) – grown out of Internet vernacular.
DVB-CPCM	Can interact with other content management systems such that rights delivered with the content are preserved, providing convenient interoperability for the consumer. Will function with or without a CA system. CA system may be used to deliver content to the consumer.

Source: www.dvb.org

DVB-CPCM Features	
Purpose of DVB-CPCM	To provide an interoperable, end-to-end, open standard system. Result of consensus amongst many industry organizations, it will solve the problem of interconnecting devices implementing varying content protection mechanisms by developing appropriate interfaces. Such approach is beneficial to consumers, preventing unnecessary intervention of third parties, and protects privacy.
Usage	DVB-CPCM system authorises usage of content described by Usage State Information that is available on purchase and conveyed in the content licence. However, mapping of content usage from outside the Authorised Domain (AD) to that inside is beyond the scope of the DVB.
Secure content	The DVB-CPCM specification defines security tools such as a Local Scrambling Algorithm (LSA) and a standardised external digital interface between DVB-CPCM compliant devices such that content can be securely exchanged between two or more DVB-CPCM devices.
Content management in consumer device	Only films, TV and other forms of commercial content as directed by content owners, broadcasters and other distributors toward a content protection system such as CPCM will be managed by DVB-CPCM. A consumer's device with home video recordings or other user generated content will not be managed by CPCM.
Private content copying	DVB-CPCM is intended to protect commercial content and will only apply to content that is identifiable as being DVB-CPCM protected. Non-commercial content may also be present on a CPCM-compliant device, however will never enter the DVB-CPCM system.
DVB-CPCM change for traditional FTA TV	Content protection remains completely unnoticed by most FTA TV viewers. Always possible to view, copy and move content, including on removable medias. Only restriction applies to certain content (premium content such as films or live sport events) restricted to redistribution or remotely accessed from the Internet. Yet, this allowed between devices recognised by CPCM as belonging to the same household. In other words, this would not affect the private copying of FTA content.

Source: www.dvb.org

Scope of CPCM

All content moves through the system with a well-defined usage offer described through appropriate signaling. All relevant devices will interact with the content accordingly. Content is acquired into the CPCM system. It might be stored and processed during its stay and it leaves the CPCM system when

CPCM in the Home
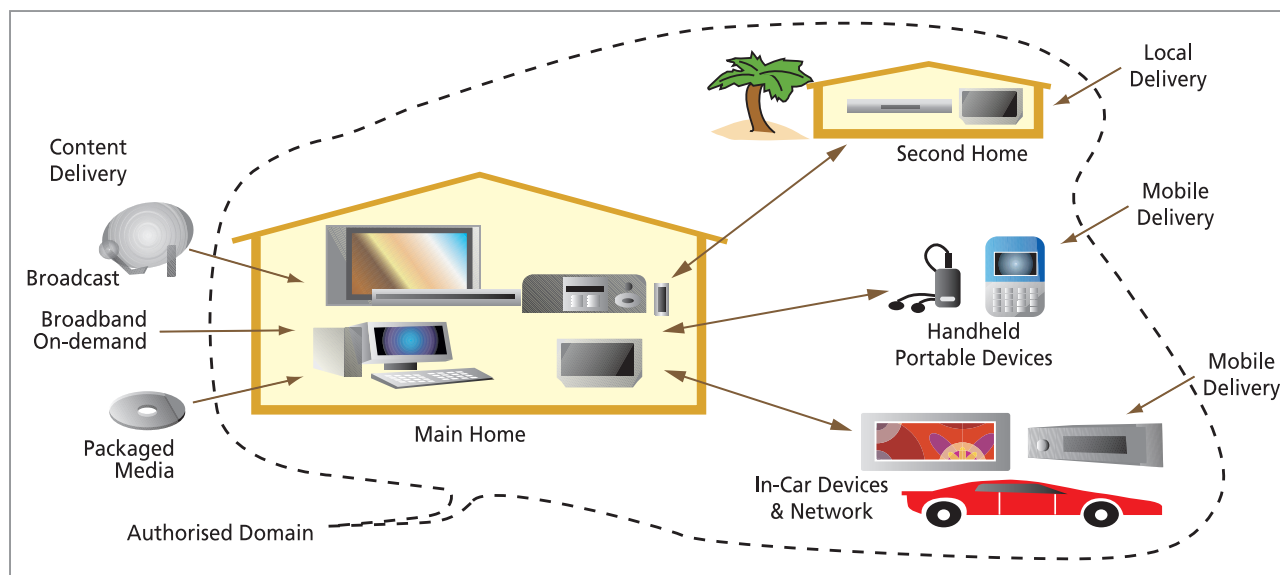
Source: www.dvb.org

consumed or exported to another content protection system. CPCM also enables analogue outputs to support legacy displays and audio equipment.

As traditional media players are outshined by the growing number of peer-to-peer network, social networking sites, UGC and blogs which all offer TV content, many media portals are faced again with issues of content ownership. This year alone, YouTube faced various legal charges from Viacom, boxing promoter, in which secured live Internet rights were given to the promoter's website but somehow got to YouTube's portal seen by over 250,000 people for free and NBC Universal, asking YouTube to remove 1,000 items per month. On the Viacom case, Google has defended itself on the basis of the Digital Millennium Copyright Act (DMCA), which provides defence for sites hosting content made available by users.

Google is currently working to legitimate the use of copyrighted content; to enable YouTube to identify protected content when it is uploaded. Google is building a tool called Claim Your Content, which allows publishers to somewhat automate the takedown process. It is not a filtering system as the technology does not block uploads. It makes it more effective and quick to download, essentially to enable Google to remove inappropriately uploaded content. The tool is compliant with DMCA, and Google believes that it will address many of the operational complaints made about the workload that the DMCA has put on them. For the industry, it all boils down to how content benefits consumers and how revenues can generate further for media companies. If broadcasters and content suppliers can improve TV ratings by showing free clips on online videos such as YouTube, then the potential to change business strategy is required. Wide range of business models, partnerships, acquisitions leading to mega deal transactions and identifying opportunities are all issues emerging to be discussed and exploited.

In May this year, Apple's iTunes Store began selling DRM-free songs or unprotected songs from record label EMI. This is an experiment for Apple to test the music industry as it has never sold songs without attaching anti-piracy software, like the DRM (software that prevents owners from copying or freely using a digital file across multiple devices). According to Apple, shoppers have the option to purchase either a 256 Kbps Advanced Audio Coding (AAC)-encoded DRM-free song for USD1.29 via iTunes Plus, or the usual 128 Kbps AAC-encoded DRM version for 99 US cents. For the first time, consumers can play music from Apple's iTunes on digital players other than the iPod. However, this move by Apple has posed questions to the music industry on how it is pursing its digital music strategy. Analysts suggests the music industry start worrying less about fighting piracy and more about profiting from downloads.

Digital Asset Management (DAM)

More and more organisations today recognize the growing need to create, store, retrieve and manage rich media files under the DAM system due to multiple users accessing frequently to images, graphics, photos, logos, ads, templates, and other digital assets. DAM effectively refers to the protocol for downloading, renaming, backing up, rating, grouping, archiving, optimizing, maintaining, thinning, and exporting files and is rapidly gaining recognition as a key component of an enterprise content management strategy.

Experts identified that effective implementation of a DAM system should reduce the time and cost of content production, maximize return on investment (ROI) from media assets, bring new products and services to market faster and streamline compliance. Industry experts noted that DAM software market posted double-digit growth in 2006 and expects continued strong growth in this market as organisations seek to manage, share, and monetize their rich media assets.

Types of DAM	
Production DAM	Quick search, archive, and retrieval of files with little labor overhead. Typical use is cataloging jobs or projects in a creative, publishing, or prepress environment. Provides a common workspace and review, approval and version management for creators and contributors working with materials in progress.
Distribution system	Often administered by marketing, it distributes final art like a PDF to content consumers outside the creative or production workgroup.
Marketing asset management	Lets creative services, advertising, and promotions departments control branded content. As marketing material is developed, only approved and properly branded logos, taglines, and imagery make their way to market. This centralized marketing asset management solution automatically indexes and organizes creative content for the firm with version control, contract expiration management, tiered download permissions, and other controls.

Source: "Digital Asset Management: Your Control Central", Jan 2007, Digital Publishing Solutions

TV GOING FORWARD

Digital Dividend to Spur a Vibrant Communications Services Market

The technical benefit of digitisation is freeing spectrum occupied by analogue services, due to efficient compression ability of digital systems. In the broadcasting context, this means the use of compression coding techniques that allow relatively highs sounds and picture quality to be accommodated in a much smaller channel bandwidth.[11] A related benefit is the ability to trade between quality (the degree of compression) and spectral occupancy.

With many countries working towards the switch-over to digital terrestrial, UK is debating on how to use the available spectrum efficiently. They initiated Digital Dividend Review (DDR), a project under Ofcom to examine the options. Many other countries going digital is expected to do likewise, that is, go into consultation to find optimal alternative use.

Digital Dividend : Range of Purposes for the Freed Spectrum
• Increasing number of digitised TV service (e.g. designed for reception rooftop antennas on or STB top boxes.
• Improving coverage of digital TV transmissions (e.g. increase population coverage and/or providing higher field strengths to deliver more reliable services for mobile access or STB antenna.
• Digital TV service designed for reception on handheld receivers (e.g. DVB-H).
• High-definition TV (as in US, Japan, Korea and Australia).
• Non-broadcast service such as 3G, mobile phones, WiMAX, and the like.
• Other services yet to be defined.

Source: EBU Technical Review on The Digital Dividend, No. 308 (October 2006)

[11] *"The Transition from Analogue to Digital Television, "Alfredo Magenta, www.itu.int/itunews*

Ofcom Digital Dividend Review

The UK's analogue TV signal will be switched off, region by region, between 2008 and 2012. UK has identified its attractive spectrum lies between 200MHz and 1GHz. With the right combination of range and capacity it can deliver high-quality, cost-effective services on a nationwide basis. Today, nearly half of this spectrum (368MHz) is used to broadcast analogue TV. The UK Government has already decided that 256MHz of spectrum will be used for DTT from Digital Switchover (DSO). The remaining 112MHz of spectrum will be released at DSO for new uses. Two adjacent 8MHz blocks of spectrum also have the potential to be cleared and released at or around the same time as the rest of the spectrum. These are channel 36 (currently used for airport radar) and channel 69 (used for programme-making and special events). The two channels and the DSO cleared spectrum provide a total of 128MHz of spectrum that will ultimately be available on a nationwide basis. This is the digital dividend. How it should be awarded and for what uses are important issues together with the responsibilities of regulation to prevent spectrum interference to ensure effective competition.

Key Issues addressed in response to the DDR consultation

Timing of the award was a key issue for many respondents. Some argued for the award to be brought forward. Others suggested delay. One example was the request from mobile network operators (MNOs) and others interested in providing mobile TV services for channel 36 to be released ahead of the rest of the digital dividend.

There was significant support for a market-led approach from a number of respondents, but there were also significant numbers calling for intervention (in various forms and for different reasons and services).

There was significant concern about how social value could be secured within the market-led approach, with issues raised in particular about HD services on the DTT platform.

Source: Ofcom DDR Summary of Consultation Responses and Revised Timetable, 29 May 2007

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