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Visual networking: Australia's media landscape

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Abstract

Australia is in the midst of a massive transformation of its communication infrastructure. The AUD43 billion Australian National Broadband Network (NBN) to be set up by the wholly Federal government-owned NBNCo Limited (NBNCo), is the largest infrastructure project ever proposed in Australia (NBN, 2010). It has the capacity to combine features and technologies that were once separate, but now have converged, including computing, telephony, free-to-air (FTA) television, direct-to-home satellite broadcasting, radio and the internet. This means that current thinking about these media technologies, developed through the process of convergence as well as regulation, requires review. Future services for digital television are going to be more akin to app-based functions currently available on mobiles and tablets but accessed via the television screen rather than the PC. Against such a background, this article examines the Australian 'televisual' space, arguing that faster broadband and internet-enabled televisions for movies, shows, communication and more, when it suits the audience, are the keys to television's survival through visually networked possibilities.

Introduction

The 20th century has seen rapid technological developments that have resulted in the media becoming prevalent in almost all aspects of daily life. The launch of social network sites such as Twitter and Facebook have revolutionised the way we communicate both in our professional and personal lives. Wireless touchscreen devices such as the iPad and iPhone allow us the convenience to work, communicate and be entertained on the go, anytime, anywhere. We can watch TV and YouTube clips, upload our own pictures or stories, stay in touch with family and friends and network with colleagues around the globe.

Advancing Australia's connectivity is the AUD43 billion Australian National Broadband Network (NBN) to be set up by the wholly Federal government-owned NBNCo Limited (NBNCo). It is arguably the largest infrastructure project ever proposed in Australia (NBN, 2010). It has the capacity to combine features and technologies that were once separate, but now have converged to include computing, telephony, Free-to-Air (FTA) television, direct-to-home satellite broadcasting, radio and the internet. [1] Until fairly recently, the media (and what we do with it) was clearly defined and consisted of five key media industries including: (1) print (encompassing books, newspapers, magazines); (2) broadcasting (initially by radio and then television); (3) music (recordings on tape or vinyl), and; (5) the cinema. It is now quite clear in countries with highly developed media systems that all these industries – from print, radio, television broadcasting, music and film – have undergone profound change, primarily in terms of delivery (from analogue to digital means), method (from hardcopy to virtual copy in the case of print, the radio frequency spectrum, satellites and cables for broadcasting), content and program schedules, with resulting economic, social and political implications. These events have led to technical, regulatory and conceptual transformations. This means that current thinking about these media technologies developed through the process of convergence as well as regulation, requires review as the nexus between content and place is dissolved. [2] This task is currently being undertaken by the Department of Communications, Broadband and the Digital Economy's (DCBDE) Convergence Review because converged media technologies have the capacity to radically change perceptions of traditional broadcasting (among other media and entertainment forms) through the additional and interactive services that are possible via the one unit. [3]

The term *converged media* comprises content that is created, stored, or retrieved in digital form ranging from text, still pictures, audio and video. Specific examples include digital television and the internet. The converged media could each technically offer audiences access to video and audio on demand as well as interactivity and connection to the internet with 3D services being considered (ACMA, 2010). In Australia, however, radio via the FM frequency in good reception areas has already had sound quality close to that offered by digital for many years and is not currently providing truly new services. Digital television for its part – in Australia at least – has been restricted to the provision of digital high-definition pictures with better sound quality and multi-channelling services. The multi-channelling services offer a diversity of additional program content that

expands aspects of the broadcasters' activities, but does not provide truly new services that are considerably different from those of traditional broadcasting. Moreover, television as a viewing preference faces considerable competition, especially from mobile phones which continue to consistently trend upwards in reach. The audience for television largely remains children and older audiences used to the televisual format (see for example Levinson, 2009 and Tapscot, 2009).

Technologies that could allow broadcasters to remain competitive and establish the future of television program content delivery to a broader Australian audience are Internet Protocol Television (IPTV) where IP programming is delivered to the home set-top-box via a high-speed broadband network such as the NBN, or Internet enabled television (ITV) over the public internet. This is because future services, or 'surfaces', for digital television are likely to be more akin to app-based functions that are currently available on mobiles and tablets but on the television screen rather than the PC. An example is the customized room-sized desktop or 'surface' that hosts not only a traditional widescreen TV image, but also windows for digital app-like functions (Bonnington, 2012). Here content via the internet might provide an extra dimension to televisual viewing whereby viewers watching a program can simultaneously interact in the program's forum or access internal and external hyperlinks to gain further information on topics under discussion. The Australian Broadcasting Corporation (ABC) as one broadcasting exemplar, aims to continue the appeal of its traditional media while simultaneously creating and delivering new content and services over wireless and mobile platforms through its *iview* service. ABC's *iview* allows audiences to catch up on ABC TV in full screen at a time that is most convenient to them rather than in the static timeslots offered by broadcast models. ABC programs such as *Media Watch*, offer extra material not screened on air as well as discussion forums via the program's message board. These functions are in addition to the vast increase in choice that audiences can have accessing IPTV.

Clearly, the ability to access the television via the internet (or the internet via the television as the case may be), might appeal to many consumers who would rather not to run a computer and a television at the same time. Indeed, it is too early to call the death of traditional media because there is a body of evidence demonstrating continuity in the mass audience (see for example von Hasebrink, 1997; Krotz and von Hasebrink, 1998 and Cinque, 2009 in relation to Australia's public broadcasters). Media theorist, Dennis McQuail (2005: 450), has argued that:

> [a]t the present time … it is too early to conclude that the mass audience will fade away. But it is in decline for particular age groups as this paper will argue and more obviously in countries like the United States (US) which has long had a strong cable television industry operating in competition to traditional networked television. Traditional television still exists, albeit in somewhat new forms, and the mass media industries have shown a remarkable capacity to survive in familiar forms'.

Given the capacity for rapid technological development and that audience expectations and media use alter – sometimes quickly as early adopters; more frequently over time – the mass audience for traditional television is not, therefore, ascertain as media academics Croteau, Hoynes and Milan (2012: 57) make clear:

> Although these networks [ABC, CBS, NBC, and Fox] still play an important role in the U.S. television market, the audience size for their programs is small in comparison to that of the 1970s or 1980s. Not only have TV viewers turned to cable, but many former viewers now turn to the Internet for news and entertainment, resulting in fewer television viewers.

Where traditional television is available via "the set" alongside cable and IPTV, it is reasonable then to consider here that new services such as IPTV need not necessarily compete with existing free-to-air broadcasting (initially at least) but might act as further incentive for audiences to invest in new equipment.

A simple definition of IPTV has been provided by the International Telecommunication Union's Focus Group on IPTV as being: "multimedia services such as television/video/ audio/text/graphics/data delivered over IP based networks managed to provide the required level of QoS/QoE [Quality of Service/ Quality of Experience], security, interactivity and reliability" (International telecommunication Union, 2006). Here QoS is where some types of communications need different types of bandwidth services. For example, video and phone calls perform better when they are prioritised over other data traffic on the home network, such as music downloads (Internet Society of Australia, 2011). Related to this notion but differing in meaning is the term Quality of Experience (QoE). This is the users' perception of how satisfied they are with the service provider's delivery of the service (IneoQuest, n.d). A J.P Morgan study (2010: 4) of future Australian media and telecommunications found that developments in IPTV/Internet (Cloud) TV in Australia are indeed accelerating. They argued that:

> After years of inertia, the IPTV landscape in Australia is rapidly evolving. Over the past month, both iiNet (fetchTV) and Telstra (T-Box) launched an IPTV service, with other ISPs likely to follow … Globally, telcos using IPTV have shown they can be reasonably disruptive …

And with regard to competing delivery platforms for the viewer's education/entertainment experience, the J.P Morgan study (2010: 4) stated:

> Digital TV and Satellite are without a doubt the most efficient broadcast technologies (reach, cost etc.). However, both technology platforms remain structurally incapacitated when it comes to offering internet connectivity with their only solution being to partner with ISPs, resulting in a non-integrated solution. By contrast, both Cable (upgrade) and IPTV over xDSL/Fibre network can offer an integrated TV/ internet solution for consumers. The main shortfall of these technologies today is their limited population reach in Australia (30% for cable, 50% for IPTV). If executed on plan, the NBN is likely to address this issue over time.

The broad definition above of IPTV provided by the IPTV Focus Group could be applied to a very broad range of very different

services via the fixed or wireless networks. The definition also avoids limiting itself to specific content or network circumstances (ACMA, 2008). Such new IPTV services need not be simply for digital entertainment but could provide additional means by which the public broadcasters for example fulfill their public service remit and a sense of nationhood is created; educational and information programming for children and adults is available; access to new services such as the internet and online education are made easily and cheaply obtainable for communities in rural and urban areas. That is, the consumer would buy either a set-top box or an integrated television without needing to also buy a computer and modem for internet connection. Moreover, these services need not necessarily compete with existing free-to-air broadcasting services but could act as further incentive for audiences to invest in new equipment. Noting that the vast majority of popular and academic opinion constructs an essentially optimistic vision of "the life-changing power of digital technology". Selwyn (2011: 21, 31) contends in one of the latest studies in the area that "we should not be seduced by promises of digital technology changing everything for the better" neither for incumbent players such as the broadcasters nor audiences. With these arguments in mind, this article examines the Australian media landscape through the lens of television usage patterns to argue that the new media offer broadcasters unique opportunities in the 'televisual' space.

Australian media consumption

Early data compiled by ACMA provided evidence that consumers needed greater incentive other than the threat of analogue services ceasing or the often prohibitive cost of equipment and access fees to take up new equipment (ACMA, 2007). In the 2007 ACMA report entitled *Digital Media in Australian Homes 2007*, only 41.8 percent of households surveyed indicated that they received digital Free-to-Air television. The report stated that "many non-adopter households are simply not interested in television, are deterred by cost issues and/or are unaware of any compelling need to change (with analogue switch-off not understood by many)" (ACMA, 2007: 5). This figure rose to 95 percent nationally in the fourth quarter of 2011 with more people reporting that they are aware of the imminent switch-over and understanding the implications of the change from analogue to digital broadcasting. It is reasonable to speculate that this change is however, driven by the increase in the availability of cheap integrated flat screen televisions now on the market than by real satisfaction with an additional ten (up from five) channels (more of the same). Pixilation of fast moving images, especially during sports broadcasts, or complete loss of transmission in cases of bad weather specifically high winds, are still issues with the technology. The considerable marketing strategy promoting the new technology by LG and Samsung for example is a factor here. Samsung launched its campaign in April 2011 and took a different user experience approach by showing how smart the TV is itself (see: http://www.techguide.com.au/menu-news-by-categories/televisions/325-samsung-smart-tvs-go-on-sale-in-australia and http://www.campaignbrief.com/2011/06/samsung-brings-projection-mapp.html). LG invested a lot in their campaign too, but have a different focus to Samsung; LG is more about lifestyle integration and bringing the TV to life through the user (see: http://between0and1.org/2011/06/19/lg-smart-tv/). Interestingly, in the second quarter of 2011, Sydney was lagging behind the national figure (perhaps not yet persuaded as to the advertised benefits) at 78 percent take-up as are Regional and Remote Western Australia and Remote Central and Eastern Australia at 67 percent and 66 percent take-up rates respectively.

Opinions and research varies as to whether Australian audiences for television content using the TV set are decreasing as is the case in the US or actually increasing. In Australia for example, FreeTV Australia cites OzTam official ratings data for the first six months of 2011 indicating an increase in the average time (some) Australians are spending watching traditional TV. They argue that there is a 7.9 percent increase in the number of FTA viewers in metropolitan areas now watching television per week. Moreover, there is an 18.3 percent increase in television viewing by regional viewers (see table 1 below).

Table 1: Free TV average audience increases - 2011 vs 2010 - January to June

		Metro Free TV	Regional Free TV
2am - 2am	Total Ppl	7.9%	18.3%
	Ppl 16-24	2.4%	12.6%
	Ppl 25-39	5.3%	22.4%
	Ppl 40-54	8.1%	17.9%

	Ppl 55+	11.6%	17.5%
6pm - Midnight	Total Ppl	8.3%	19.9%
	Ppl 16-24	4.5%	14.3%
	Ppl 25-39	5.9%	24.3%
	Ppl 40-54	8.0%	18.1%
	Ppl 55+	12.8%	20.5%

Source: Free TV Media Release July 14, 2011.

For commercial FTA broadcasters, the aggregated figures mean that "over 14.3 million Australians" are turning on the television set over the ratings gathering period (2 am-2 am). Given that Australia's population is around 22 million, this means that a large number (7.5 million) is not tuning in at all. Indeed, while Julie Flynn, CEO, Free TV Australia, firmly states that Australian and global television audiences are increasing rather than declining she concedes that viewers are, however, multitasking (personal communication 2011).

According to internet measurement company, Nielsen Online, Australian internet use took over television viewing for the first time in 2008 (Nielsen Online, 2008). Interestingly, 58 percent of respondents said that they had watched TV *while* online. More recent findings came from the Neilson's *Internet and Technology Report* (2009) that indicated that the internet was still the most used media in Australian homes (16.1 hours per week compared to 12.9 hours per week consuming TV) (Barrow, 2009). A Cisco commissioned study found similar results, although using a sample of 850 people who were already broadband users, reporting that where an average of 14 hours was spent viewing television, 22 hours were spent on the internet (Hendry, 2008). In an article recently published in *The Washington Post*, Melissa Bell (2011) cited a recent Nielsen study that found that for the first time in 20 years, the number of (US) households that own television sets dropped from 98.9 percent to 96.7 percent. One reason cited for the drop the recession. The Neilson study also noted that young people are growing more comfortable getting their television fix online (Bell, 2011). In Australia, the Australian Bureau of Statistics (ABS) reported that in June 2008 internet use in Australian homes was considerable (ABS, 2008). Of Australia's 8.3 million households , a significant 6.21 million households were active internet subscribers. At the end of December 2010, the figure had increased to 10.4 million active internet subscribers in Australia (excluding Internet connections through mobile handsets). This represents annual growth of 16.7 percent and an increase of 9.9 percent since the end of June 2010 (ABS, 2010).

Surprisingly, in the Australian context, Nielsen's *2010 Internet & Technology Report* found that the increases in general internet usage have *not* seen a corresponding drop in individuals' consumption of other media, with time spent watching television actually up 30 minutes amongst internet users, the report's authors attributing the increase in media consumption to the 49 percent of internet users who *multi-task* television and the internet at the same time. According to the Managing Director of Nielsen's online business in Australia, Matt Bruce, this shift to media multi-tasking behaviour is a result of the increasing variety and number of media choices now available and that:

> Changes to the Australian media landscape in recent years such as the introduction of Freeview TV, digital radio and PVR/DVRs (personal video recorder/digital video recorder) mean consumers have more options and flexibility in their media choices than ever before (Nielsen Online, 26 July, 2010).

This comment is of course only part of a much larger issue whereby the internet through the likes of Cloud TV via Netflix, Apple TV, ABC's *iview*, Twitter, social media sites, blogs, newspapers online that embed television-like broadcasts and actually provide much greater diversity "to the Australian media landscape" than the media forms cited above.

However, further data from Roy Morgan in 2009 suggested that TV remained "the most-used medium, with Australians spending on average 21.5 hours per week in front of their televisions [is this the same as watching one wonders] … while the Internet comes third [after radio] with an average of 10.7 hours per week". Supporting Roy Morgan Research, the Director of Media Services, William Burlace (2009), argued that because Neilson's data was collected from an online panel their results were skewed because their sample over-represented heavy internet users. Roy Morgan (2009: 1) push the point that the 'only'

group not watching TV in favour of the internet was the 14 to 24 year old 'heavy' internet users and those under 35 who watch no commercial TV. But the relevance of the 14 to 24 year old age group should not to be down-played because this group particularly is being steeped in Web 2.0, mobiles and PDAs (iPhones and iPads if you look to the branding). This new generation multitasks like none before them. They watch DVDs while simultaneously searching for information on the web (with a number of windows open at the same time), sending texts to their friends, doing homework and holding face-to-face conversation. Further, recent data compiled by OzTAM, Regional TAM and Nielsen outline that the monthly time spent accessing the internet on a PC had increased by 1.5 hours per month (3 percent increase) in Q4 2011 on the previous quarter (OzTAM, Regional TAM and Nielsen (2012). Similarly, watching online video had increased by approximately 13 percent on the previous quarter. In relation to youth and new technologies OzTAM, Regional TAM and Nielsen (2012: 3) found that:

> Technology ownership in the home is also advancing through tablet devices offering easy, mobile and flexible online access with specific applications available to facilitate online video consumption. An estimated 10% of Metro households surveyed during Q4 2011 claim to own at least one tablet device. According to Nielsen's Australian Online Consumer report, watching any viewing video content on tablets grew from just 2% of the total online population at the end of 2010, to 5% by the end of 2011. Ownership of smartphones is a similarly dynamic category, with an estimated 49% of the National population aged 14 years or over owning such a device. Video usage on mobile phones is largely dictated by available services and associated service costs.

With further reference to television, the report also found evidence for a strong positive relationship with screen size, with viewers demonstrating a preference for watching content on the largest screen available. It appears that 2011 saw a swing back to television viewing (for some) where the monthly time spent viewing video content on traditional TV increased since the beginning of 2011. People 18-24 in particular exhibited a large increase during the course of 2011. This increase was with the exception of people 25-34 (OzTAM, Regional TAM and Nielsen, 2012: 5). For television in Australia, it might be too early to call the death of 'the mass audience' but it is probably not far off.

Accommodating IPTV in the traditional broadcasting service model

Television program content in Australia has to date had rigid legislative standards, albeit that television broadcasters have regularly called for the deregulation of their industry. [5] The Australian Communications and Media Authority (ACMA) continues the role played by the Australian Broadcasting Authority (ABA) which includes maintaining certain programming standards in terms of remaining alert to sensitive, offensive and possibly defamatory content, the protection of minors, as well as placing limits and ratings on violent and sexually explicit material in programming schedules. In September 2012, the Communications Minister, Stephen Conroy (2011), called for an inquiry into media powers confirming on the ABC that a single media regulator (probably ACMA) overseeing all print, online and broadcast media could be one of the changes to flow from the inquiry (see also Kerr, 2011). Other established responsibilities include allocating services to the broadcasting spectrum, licensing broadcasters, collecting licensing fees and conducting research on community attitudes toward programs (see: www.acma.gov.au). The recently created Department of Broadband, Communications and the Digital Economy (DBCDE) focuses on transforming the structure of Australian telecommunications, managing the phased switch-over to digital television and promoting Australia as a digital economy with the goal to allow all Australians to communicate.

In parallel to the changing roles of relevant government departments, the *Broadcasting Services Act 1992* (Cth) has had multiple amendments to try and keep up with the converged media/IT/telecommunications landscape. In 1992 the *Broadcasting Services Act 1992* was about 100 pages and this has now expanded to some 1000 pages. Underpinning technological convergence is interconnectivity. Fundamental to this is the advent of an agreed world standard for the storage and transmission of the digital encoding of moving pictures and sound. Since 1988, the Motion Pictures Experts Group (MPEG) [6] has been working to establish a common language that will provide the means for different producers in numerous and increasingly interrelated industries of telecommunications, computing and television to offer services that are able to communicate with each other across differing platforms, the most recent of which is MPEG Layer 4 Advanced Audio Coding (MPEG4-AAC). Other standards include Digital Video Broadcasting Multi-Home Platform (DVB-MHP) and Hypertext Mark-Up Language (HTML) as used for the internet. The issue for broadcasters in today's converged media environment is that content via broadcast means is regulated whereas the very same content streamed over the internet is not.

The present legislative restrictions on broadcasting and the cost of producing material mean that some form of incentive is needed for incumbent broadcasters to develop local content in a converged media environment. To take the case of public broadcasting as an example, according to section 4 (2) of the Broadcasting Services Act 1992 (Cth) (p 2321), the Australian Broadcasting Corporation and Special Broadcasting Service as public broadcasters remain to be regulated by ACMA as corporate bodies such that:

> Broadcasting services [and datacasting services–an inclusion of Schedule 1 (1) and (3) of the Broadcasting Services Amendment (Digital Television and Datacasting) Act 2000] in Australia be regulated in a manner that, in the opinion of the ABA [now ACMA]:
>
>   a. enables public interest considerations to be addressed in a way that does not impose unnecessary financial and administrative burdens on providers of broadcasting services; and
>   b. will readily accommodate technological change; and
>   c. encourages:
>   i. the development of broadcasting technologies and their applications; and
>   ii. the provision of service made practicable by those technologies to the Australian community.

Section 4 (2) (a) allows the ABC and SBS to address public interest considerations in their broadcasting services according to the regulatory infrastructure, only so far as doing so does not unnecessarily financially burden the public broadcasters. This does not mean, however, that they can do whatever they like if it is financially expedient. As such, creating and/or commissioning extra content to fulfill additional services might be beyond the public broadcasters according to section (a) of this Act. This section alone, depending on the interpretation of "unnecessary financial burden" might, now or in the future, limit the scope for the public broadcasters to meet their obligations via new technologies despite sections (b) and (c) calling for the "accommodation of 'technical change' and 'the development of broadcasting technologies and their applications' ".

Conclusions and projections for the future

The onset of converged media in the forms of IPTV via the "smart tv" and so on comes with implications for incumbent broadcasters and the public. In the first instance, broadcasters are obliged to fund the provision of additional services and the public will have to bear the cost for new equipment. New forms of content creation, delivery and financing mean that present forms of broadcasting and interactive services (either via cable, satellite or the internet), now run in parallel, and, in some instances, in direct competition to free-to-air broadcasting. Legislation needs to be reviewed and updated periodically as the technologies and audience expectations change.

While telecommunications companies among others are racing to offer content over their networks it is the incumbents that are leveraging off their longstanding 'brands' to now offer channel diversity through their multi-channelling capabilities. The ABC, for example, through the likes of its catch-up service *iview* demonstrates how it is embracing new technologies such as the internet (indeed they have had a long standing relationship with multi media; see for example: Cinque, 2007a and 2007b for analysis of the public broadcasters' initiatives online). Offering their educative and entertaining content via the internet provides an extra dimension to televisual viewing whereby viewers watching a program can simultaneously interact in the program's forum or access internal and external hyperlinks to gain further information on topics under discussion. Overall, the manufacturers are anticipating and playing on the notion of a converged information and media environment.

The NBN will increase transmission capacity especially in rural and regional Australia, and IPTV might well become a common viewing option. Issues have arisen, however, over how to ensure local content in a globally interconnected media world where protection is diminishing. Future strategies might include a tax or levy offset as an incentive to the players to provide local 'vibrant' content. A point for consideration here will be if user generated content online but available via the television counts as local content. In terms of regulation it is reasonable to speculate whether ACMA will simply allocate spectrum for X amount of time and all other policies and regulations become redundant. As a result, there will be greater emphasis on self-regulation as we move forward. Broadcasting faces a transformative moment, content is coming from new sources and whether the likes of Samsung and LG are accurate or inaccurate as to how television will be used or integrated into the future home as "a screen for other things" remains to be seen. Ultimately, there is no best practice to follow and as a result the best course of action will vary according to the player or market at hand.

Notes

1 The interim regulatory framework for the National Broadband Network Company (NBN Co) is contained in two separate bills. The first is the *National Broadband Network Companies Bill 2010* which establishes NBN Co. ownership, governance and sale arrangements. The second bill is the *Telecommunications Legislation Amendment Bill 2010* that deals with access arrangements based on NBN Co's wholesale-only status.

2 New media offers additional methods of broadcasting and communicating. At the macro level in Australia, the Broadband Services Experts Group (BSEG) argued over a decade ago that rather than seeing the communications network as a system that connects us to phones, televisions and computers, we should understand it as a varied and interwoven range of social, business and community activity (BSEG, 1994). It is this belief that has lead to policy documents such as *Towards an Australian Strategy for the Information Economy* (1998) and *Australia's Strategic Framework for the Information Economy 2004–2006: Opportunities and Challenges for the Information Age* from the National Office for the Information Economy (NOIE). NOIE has now been replaced by the Australian Government Information Management Office (AGIMO)

3 New equipment will be necessary as set out under the Television Broadcasting Services (Digital Conversion) Act 2000 (Cth), before the planned switch-off of analogue broadcasts at the end of 2013. The Australian government expected digital transmissions to begin in metropolitan areas on 1 January 2001, with regional areas gaining transmissions sometime between 1 January 2001 and 1 January 2004, with completion by 2008. Currently mandates for digital broadcasting in Australia come primarily under the Television Broadcasting Services (Digital Conversion) Act 2000 (Cth) and the Broadcasting Services Amendment (Digital Television and Datacasting) Act 2000 (Cth) and the Broadcasting Legislation Amendment (Digital Television) Act 2006 (Cth). These Acts amended the Broadcasting Services Act 1992 (Cth) and the Radiocommunications Act 1992 (Cth) in order to prepare for the phased conversion from analogue to digital broadcasting.

4 The figure of 8 million households in Australia is a projected figure and comes from the 1301.0 - Year Book Australia, 2005, p 3. The number of active internet subscribers does not include business or government subscribers.

5 The most recent call comes from Free TV Australia. See 'Networks want more deregulation' <http://www.tvtonight.com.au/2011/01/networks-want-more-deregulation.html> Date accessed September 19, 2011.

6 The Moving Picture Experts Group or MPEG is a working group of the International Organization for Standardization (ISO)/International Electrotechnical Commission (IEC) charged with the development of video and audio encoding standards. MPEG's official title is ISO/IEC JTC1/SC29 WG11.

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