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The poor Quality of Service experienced by almost 200,000 consumers using Australian telecommunications services over the past year was starkly highlighted shortly before this November 2011 edition of TJA was 'put to press'.

The Telecommunications Industry Ombudsman's 2011 Annual Report, released on 7 November, revealed that the TIO had received 197,662 new customer complaints in 2010-11 – an astonishing 18% more than in the previous, equally shocking, year.

The TIO Report 'attributes the rise to mobile phone service faults and increased smart phones use. […] More than half the new complaints received by the TIO (over 112,000) were about mobile phone services, an increase of 51 per cent from the previous year. […] The most common mobile phone complaint issue was about service faults, with 56,475 new complaints made to the TIO, a 180 per cent increase. Consumers were most concerned about poor mobile coverage and service drop-outs.'

Looking back, in response to the horror statistics in the TIO's previous Annual Report (2010), Teresa Corbin of the Australian Communications Consumer Action Network (ACCAN) had called on the Australian Communications and Media Authority (ACMA) to impose penalties on telecommunications companies with poor customer service. That was in February 2011.

In response to the 2010 TIO Report, the industry's supply-side peak body, the Communications Alliance, worked for 12 months and on 25 October 2011 released a draft Telecommunications Consumer Protection (TCP) code that the industry organisation says 'will reduce bill shock and provide better information to consumers'. This code aims to avoid in future the more generic abuses of pricing, billing and advertising highlighted in the TIO's 2010 Report, but does not address the network service faults that have grown significantly during the same period.

On 8 September ACMA released its 'Reconnecting the Customer' report, the result of an 18 month inquiry into ways of dealing with telecommunications customer complaints. It concentrates on 'five substantive changes to make buying and using a mobile phone or Internet service much simpler', and its strategy was to formally invite 'the industry' to incorporate the following changes to its Telecommunications Consumer Protection (TCP) code by February 2012:

1. Clearer pricing information in advertisements, allowing consumers to more easily compare services
2. Improved and more consistent pre-sale information about plans
3. Developing meaningful performance metrics which allow consumers to compare providers
4. Tools for consumers to monitor usage and expenditure
5. Better complaints-handling by providers
It is noteworthy that none of these recommendations deal explicitly with poor network quality of service (QoS) issues, i.e. the service faults that feature heavily in the 2011 TIO Report.

The big stick in the ACMA Report is its threat to mandate changes through regulation if 'the industry' does not rewrite the TCP code adequately by February 2012 to address ACMA's concerns. However ACMA's concerns do not relate explicitly to the network QoS issues identified in the TIO reports.

THE FUNDAMENTAL STRUCTURAL WEAKNESS WITH ACMA'S APPROACH

I have deliberately been referring to 'the industry' in inverted commas because we no longer have a telecommunications industry body that represents the whole industry. The current industry peak bodies, when operating in isolation to produce industry codes, are simply not structurally capable of resolving technically complex, generic network service problems that require intensive collaboration between the demand side (the potential victims) and the technically more sophisticated supply side (the service providers).

On the supply side we have the Australian Mobile Telecommunications Association (AMTA) and the Communications Alliance (CommsAlliance). Both bodies claim to be peak industry bodies, but their websites make it clear that their membership is restricted to the supply side:

- 'AMTA members include mobile Carriage Service Providers (CSPs), handset manufacturers, retail outlets, network equipment suppliers and other suppliers to the industry.'
- 'Membership of Communications Alliance is drawn from a wide cross-section of the communications industry, including service providers, vendors, consultants and suppliers.'

Notice anyone missing?

Historically CommsAlliance's predecessor ACIF, the Australian Communications Industry Forum, deliberately included key demand-side representatives as well as the major suppliers amongst its membership in order to develop industry self-regulatory codes, and was given recognition for this role under the 1997 Telecommunications Act. However as a result of unilateral actions taken by some members of the supply side, we no longer have such a broad-based telecommunications self-regulatory industry body in Australia.

On the demand side we have only the Commonwealth-funded ACCAN, 'the peak body that represents all consumers on communications issues'. Sadly ATUG, the sole peak body representing the business user group, closed its doors in August.

The consequence is a fundamental structural weakness: any exclusively supply-side body, asked to solve a set of demand-side problems of any complexity, is simply unlikely to provide the necessary level of consultation and collaboration with user representatives that is essential to getting closure on the problems.

Not even with the threat of court-enforceable standards being imposed by ACMA with a fine of $250,000 per breach! To avoid the imposition of regulation with such 'teeth', the supply-side bodies will undoubtedly do their best to come up with an improved TCP code. But without the necessary involvement of the directly affected consumer groups, the revised Telecommunications Consumer Protection Code is unlikely to be either well-targeted or effective.

THE SAME PROBLEM WITH NBN TECHNICAL REGULATION

The same structural flaw applies to ACMA's approach to technical regulation of QoS for NBN-based services delivered by multiple service providers – an issue raised in TJA's May edition on NBN Policy Gaps, and in the ACS NBN Policy Forums in June 2011 (whose
outcomes were published in TJA's August edition, and again by this author in the 2011 Communications Policy & Research Forum's Record of Proceedings in November).

Upon being alerted to potential worst-case conditions arising for Australian consumers using the NBN, the official ACMA response was:

'consistent with the current practice, the ACMA expects that the development of QoS technical specifications and other supporting documentation will occur through existing industry-based processes. The ACMA understands that Communications Alliance is reviewing its existing QoS documents to assess the relevance of these documents for the medium and longer-term communications environment, including the NBN roll-out.'

'The ACMA will continue to work with Communications Alliance on QoS issues, including participating in any relevant Communications Alliance processes as they relate to QoS,' added the spokesman.

'The ACMA will consider the need for regulatory intervention based on the progress of the Communications Alliance activity.' (CommsDay, 8 November)

ACMA clearly does not understand the fundamental problem of expecting an exclusively supply-side industry body to put resources into avoiding a QoS outcome potentially adversely affecting consumers, when no consumer representatives are actively involved in the process of developing the industry code. CommsAlliance has done an excellent job in producing technical codes essential for the supply side, such as interoperability with the NBN. However it is too big an ask to expect such a supply-side body to incorporate the needs and priorities of those end users having little clout or purchasing power.

THE NEED FOR THE REGULATOR TO BE PRO-ACTIVE

ACMA also does not seem to appreciate the need for the industry's Technical Regulator to adopt a pro-active stance for the implementation of reasonable and cost-effective network performance standards, along with effective monitoring and enforcement, in a market place where short-term profit-seeking can take precedence over customer service.

ACMA's predecessors as Technical Regulators, AUSTEL (1989-1997) and the Australian Communications Authority (1997-2003), took pro-active roles on many issues, including the need to ensure that Australian network service providers adopted and equitably shared the International Telecommunications Union's network performance quota recommendations.

The damning statistics in the 2011 TIO's Report make it absolutely clear that for some carriers, short-term profit-seeking absolutely took precedence over good customer service last year. The old principle of 'a stitch in time saves nine' remains pertinent to ACMA, to avoid similar statistics on consumer frustration arising over future retail services delivered via the NBN.

Convergence is everywhere now, it seems. On Monday evenings ABC television offers ‘Q&A’, hosted by Tony Jones, with carefully selected guest panellists who generally widely disagree about the issues that face the nation in that week. This programme is offered live on broadcast television, is also simulcast on ABC radio, and also offers sometimes witty though occasionally annoying tweets, which enable viewers a new form of participation as their contributions are scrolled across the bottom of the screen. Viewers who miss an edition of live ‘Q&A’ can catch up later via the ABC’s iview web site, either viewed on a computer, or on an iPad. The experience is a far cry from its old predecessor, ‘Monday Conference’(1971-78), shown in that same scheduled ABC Monday night time slot hosted by Robert Moore, but only ever offered as a broadcast.

The enhancement of platform choices and participation for end users comes with a host of relatively new and complex issues about corporate strategies, new business models, investment practices, appropriate spectrum allocation for the digital economy, copyright and downloading, forms of advertising, affordability of new media, and the many complexities related to the forthcoming enhanced broadband space. Understandably, the Australian government has recognised that ‘regulations designed for the analogue era’ need to be reviewed, and it has responded by commissioning The Convergence Review, being conducted by Glen Boreham, Malcolm Long and Louise McElvogue. Senator Conroy, the Minister for Broadband, Communications and the Digital Economy, released draft terms of reference in December 2010 for which 72 submissions were received, followed by the final terms of reference released on 2 March 2011. Later the Convergence Committee issued a framing paper which resulted in another 65 submissions from the public. These documents provide a rich repository of diverse views and can be viewed at: http://www.dbcde.gov.au/digital_economy/convergence_review. The Convergence Review is expected to present its final report early in 2012.

Whilst this edition of the Journal was not initially planned around the Convergence Review, many articles have a bearing on the vexed issues facing that investigation. There are many important practical issues and problems facing that Review, with its special emphasis on re-examination of regulation, but more critically there are also many questions about the design of communications policy for the future of the Australian economy, and for society at large. For example, some papers are set within the context of the widening recognition of the significance of innovation policy and creativity within the Australian media content industries, and their overall contribution to the nation’s gross domestic product, level of employment, and valuable export base.

Legal complexities related to alleged piracy and breaches of copyright, and the institutional responsibilities of key players, are canvassed from different stances (Hutley and Perrier). What appears to be emerging now is some measure of agreement that prior proposed legal sanctions related to the alleged illegal downloading of material on the web, so strongly advocated in some quarters, may not constitute the best way forward. There is movement among the key stakeholders towards recognising the need for greater co-operation by all parties involved to finding better ways for end users to access authorised digital video content, while at the same time find legitimate ways to reward the creators and copyright
holders. The outcome of the current appeal brought by the Australian Federation Against Copyright Theft (AFACT) against the Internet service provider iiNet, expected to be heard by the High Court in December 2011, is clearly crucial to finding long-term solutions.

The future of the National Broadband Network (NBN) presents an institutional conundrum between the many possible new opportunities likely to arise for service providers, but on the other hand, will have the likely effect of disrupting well-established players. An instance of this is demonstrated by what is currently happening with Internet television in the USA (Barr). There is currently remarkable experimentation with new Internet television services offered by four American based corporations, each of which is relatively new to television; the popular Netflix movie downloading aggregation site, Apple TV’s extension of its iPhone walled garden business model for television, Google TV, where convergence for television will be ‘free’, as well as first release movies now available on Facebook. These experiments, rapidly growing in popularity with American consumers, appear to have attracted only limited attention in Australia to date. It will be interesting to see how, in the context of the NBN, the development of the Internet downloadable television services in Australia, together with the likely simultaneous introduction of new IPTV services, might come to compete, or co-exist with each other.

Many major sporting bodies face difficult strategic decisions about whether to maintain the status quo with of well established allocation of broadcast rights, or whether the time has come for them to experiment with splitting their rights across multiple new platforms. Contrast, for instance, the decisions made during this year between two major sporting bodies – those responsible for Test cricket and those involved with management of Australian Rules football. Cricket Australia has apparently decided to ensure that the bulk of its income is derived from its entrenched television rights, largely earned during the relatively short Australian summer (Beltrame). The dilemma here is the wisdom of undertaking experimentation with new distribution platforms, across the whole of the calendar year, and whether this might this risk killing the television goose that always seems to lay golden eggs.

One might wonder about particular judgements related to the record agreed future payments for the AFL rights in the $1.25 billion deal for all Australian Rules matches allocated to the Seven Network, Foxtel and Austar, and Telstra, for the period 2012 to 2016. Given the overall audience shift towards online viewing by sports fans, it may be anomalies that the present published ratio of the cost of rights – of over a billion dollars offered by the broadcaster and Foxtel, contrasted with the Internet rights at a cost of $155 million to Telstra – could eventually become an inversion of risk investment. A generic case study in this edition of TJA (Hutchins) deals with market shifts and the allocation of future sporting rights, and in conclusion implies that that commercial television networks will face an ‘altered market place’ as the role of traditional broadcasting is likely to be challenged by changes that will come with broadband.

A growing body of largely academic research to date focuses on the scope and contribution that the creative industries make towards more dynamic innovation systems in society. Researchers here prefer to situate their investigations within the ‘cultural economy’ space as they explore cultural experiences and practices in preference to working within the more established framework of the ‘political economy’. Large urban screens are taken as an example of emerging imaginative applications that may flower using high capacity broadband to foster new modes of civic engagement (McQuire). Three models for the creative use of these large screens are outlined - those for public space broadcasting, those for civic partnership, and for the creative use of video art. Also here the evolving cultural practices of television consumption in Australia are examined in a case study (Wilken et al.) about the history and application of a proprietary personal video recording device- the TiVo in Australia.

User-based research is also featured in this edition. One of the most remarkable aspects of the ‘wireless revolution’ is that so little primary research has been conducted into many major questions related to the users’ experiences – such as why do users choose particular forms of mobility, how do they connect, what they do with their mobiles, and what preferences they
have for applications. An original research paper here (Rickard) explores the experiences of ‘triple connectors’, those who connect to the Internet using three types of wireless broadband - mobile broadband, mobile Internet, and public Wi-Fi.

This edition of TJA scopes some of the most challenging and interesting aspects of unravelling the complexities of convergence and relates them to prospects for the development of broadband. Might broadband convergence be a theme for the ABC to explore in a Q&A program some time during 2012?

Are there any TJA readers and authors offering to be prospective panellists?

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Scott Lorson was appointed in September 2009 as the chief executive officer of FetchTV Pty Ltd, a start-up wholesaler that has designed a pay TV platform business for Internet service providers to deliver free and pay TV channels, movies on demand, and other interactive content to their broadband customers.

FetchTV is 55 percent owned by management including the executive director, Simon Cathcart, one of the two Australian founders, and 45 percent by Astro Holdings, a Malaysian media and communications investment company.

Lorson, a dual Australian/US citizen, has more than 20 years of management experience. In Australia, he started in consumer finance at Avco (1996-1999), became general manager of Thorn Australia’s consumer division (1999-2001), and then joined Optus where he moved from marketing director and managing director of the Consumer & Multimedia division to founding managing director of the Small & Medium Enterprise division (2001-2006).

From Optus, he joined PBL Media in 2006 as chief executive of the Ticketek business and chairman of the Olympic Park stadium. In July 2007, he was appointed as chief executive of ACP Magazines until a management restructure abolished his position in September 2008.

Lorson holds a Bachelor of Science from the University of California at Berkeley and an MBA from the Graduate School of International Management.

Freelance communications journalist, Liz Fell, interviewed Lorson for the TJA in mid-October at the FetchTV offices in Milsons Point, NSW.
TJA: What triggered your interest in taking on the challenge of a pay TV start-up such as FetchTV?

Lorson: The business model. Having worked in telco and media, I saw what I believed was a very significant void in the market. When I met the founders of FetchTV, they had identified the same void and had a nascent model that I thought was perfectly designed to fill that gap.

TJA: Apologies for use of the much maligned term pay TV which Australians use widely though it was unacceptable when I wrote for international publications!

Lorson: We take no offence at pay TV. I think anything that people recognise what we’re talking about is instructive and valuable.

TJA: I assume the acronym IPTV, at this stage anyway, is only really understood fully by techies. Is that what you have found?

Lorson: IPTV is one of the least understood and most often confused of words. Generally, when people refer to IPTV they’re referring to web TV, which is the ability to download everything from YouTube to iView to a movie over the Internet. IPTV is actually a delivery mechanism for a true subscription TV service and the technology is actually quite distinct, but that distinction is often lost on the user.

TJA: What term do you prefer to use?

Lorson: We’re very happy to describe ourselves as pay TV and the delivery mechanic is less relevant. We simply want the consumer to know that it’s broadcast quality standard and high definition video in real time.

TJA: You said recently that FetchTV has two ‘missions’. The first is to penetrate the Australia/New Zealand/ South Pacific market where you hope to have 500,000 subscribers in roughly five years. I know you have really only just started, but isn’t that figure very optimistic?

Lorson: I’ll take a step backwards to answer that question. In terms of our charter, first and foremost, in Australia/New Zealand/ Pacific Islands, we are a pay TV platform. We happen to be a wholesale platform, but it’s very much set up as a platform business. In other markets, particularly in the Asian market, our aspiration is to be the wholesale partner for every major ISP in the region, bar Telstra.

TJA: Bar Telstra (laughter)?

Lorson: And the reason I say ‘bar Telstra’ is that because of Telstra’s ownership in Foxtel they are well sorted in this category.

TJA: I assume that Telstra is the major competitor in Australia, but not in the Asian region surely?

Lorson: True. We have recognised that it’s the rest of the market seeking to compete with Telstra in Australia where the opportunity exists.

TJA: In terms of your second mission, I understand FetchTV’s role is to support other members of the Astro media and comms group in Asia. What is your partnering strategy in Malaysia, for instance?

Lorson: I’ll just take a step back. We have sister companies throughout Asia that tend to be satellite-delivered pay TV platforms or mobile carriers, and both of those groups are now looking to IPTV as a future product offering. We intend to partner with our sister companies for the delivery of the technology for them to deploy IPTV services. So we see FetchTV very much as a platform business in Australia and very much as a technology partner for our sister companies where we have an incumbent situation already.

TJA: Is Maxis, Malaysia’s major mobile telco, a sister company?

Lorson: Yes. Should Maxis seek to implement IPTV, which they have announced an intention to do, we would expect to partner with them to assist them with their deployment. Actively, Maxis are an ISP on the back of the fibre networks that have been deployed.
TJA: Which carriers have deployed major fibre networks in Malaysia? I think Time dotCom had recently deployed some broadband fibre.

Lorson: Maxis has deployed some fibre as has Telekom Malaysia. In most markets there is either private or public fibre being deployed, so the opportunity exists for mobile carriers, Internet Service Providers and pay TV platforms to migrate to those fibre networks to deliver new and richer services.

TJA: And does this partnership opportunity extend to sister companies in India, Sri Lanka and other markets?

Lorson: Correct. An analogous situation in Australia would be Vodafone which is currently a mobile phone operator but, on the back of the NBN, could certainly offer a fuller suite of services to their customers.

TJA: Is Vodafone one of the potential partners you’re talking with in Australia?

Lorson: We’ve made no announcements.

TJA: I was just wondering whether you’re talking to them?

Lorson: We talk to everyone in the market!

TJA: Going back to Maxis...

Lorson: Yes. With 14 million subscribers, as the fibre gets rolled out, Maxis can offer a broadband pay TV solution on that fibre.

TJA: Triple play!

Lorson: Yes.

TJA: And Astro’s direct broadcast satellite services could also be moved onto fibre in Malaysia and other Asian markets?

Lorson: Yes. Astro’s satellite is also owned by the group.

TJA: Looking at the ownership and corporate structure of the sister companies, is Usaha Tegas, the holding company?

Lorson: Yes. Usaha Tegas is the higher-level entity. One of the subsidiaries is Astro All Asia Networks, which has the shareholding in FetchTV. Maxis is part of a different subsidiary but we see them all under the UT group as sister companies.

TJA: And at the top of UT is Tatparanandam Ananda Krishnan, known as TAK these days I believe?

Lorson: Yes, he’s often referred to as TAK.

TJA: I met him many years ago when he was at the university here and I believe he now has a horse stud in the Hunter Valley. Have you met or visited him?

Larson: Off the record...

TJA: There’s no off the record in these interviews! Sorry.

Lorson: Well, these are very private individuals so I prefer not to speak publicly about them. I think the group maintains very strong affinity to the Australian market. I just prefer not to speak publicly.

TJA: I recently saw a very public photo of Krish at the annual Allen & Company media and tech executive conference in Sun Valley. Did you go to that?

Lorson: No.

TJA: However, is it right to say the sister companies are funding Fetch TV’s development of the pay TV customer equipment?

Lorson: That’s right. It’s fair to say the research and development of FetchTV Australia will be amortised across our various markets as we strike partnerships with our sister companies.
TJA: Aren’t there sister companies that have pay TV offerings already such as the Astro satellite service?

Lorson: We’re in discussions with several of our sister companies about deploying the FetchTV service in other markets.

TJA: Was the international aspect of the business a reason for you to join FetchTV initially?

Lorson: Absolutely. We have brought on a Head of International for the FetchTV group so, as we expand, we’re also going to be expanding the personnel and overseas office environment. We currently have an office in Malaysia.

TJA: Can we turn briefly to your previous career? It’s sometimes hard for Australians to understand why Americans would want to come to here!

Lorson: (Laughter) As I am fond of saying, I have an Australian wife, Australian kids, an Australian mortgage, Australian citizenship, and I still have a very strong American accent! I very much believe this is the ‘chosen land’ and am very proud to call myself an Aussie.

TJA: What was your first position here when you landed?

Lorson: I worked for Avco, which had recently acquired Household Finance and was subsequently acquired by GE Capital, so when I arrived in Australia I was working in consumer finance. Then I moved over to Thorn Australia and from there to Optus.

TJA: Was Thorn involved with digital TV set-top boxes in those days?

Lorson: Yes, at Thorn we launched the first digital terrestrial set top box into Australia.

TJA: That must have been fun.

Lorson: It certainly was. We used a Harry Seidler apartment at Milsons Point to unveil digital television to Australia. Unfortunately, when I went to turn the signal on to demonstrate to the press the glory of a digital 16 X 9 broadcast, Channel Ten was airing the Bert Newton show that had an American rock star as a guest but they were showing a clip that just happened to be in black and white and in 4 X 3 so it was quite an anti-climactic moment. That’s when I learned not to work with technology, children or animals!

TJA: Your next step was Optus, which once had its own Optus Vision pay TV service on its own cable. What was happening while you were there from 2001-06?

Lorson: In the mid-2000s, in addition to having Optus TV, we were piloting and planning to be the first in Australia to launch digital pay TV into the market. We completed a very extensive trial with over 3000 users during an extended period of time, but a decision was made not to deploy that service and the facilities were eventually sold on to Foxtel.

TJA: Sold to its competitor! What happened to the programs Optus had developed?

Lorson: As part of a separate transaction, Optus did a wholesaling agreement with Foxtel and, rather than source content directly as Optus, we became a reseller of the Foxtel service and we continued to produce a series of channels including MTV and Ovation.

TJA: You must have learned quite a lot about digital television and telecommunications at that stage?

Lorson: Certainly I think Optus is one of the great big breeding grounds for telco and media executives given the diversity of the portfolio.

TJA: Meanwhile, Chris Anderson, who was chief executive at Optus for part of the time when you were there, was appointed to a top job at PBL Media. Was that why you moved there too?

Lorson: There were a series of executives that left Optus around the same time: Chris Anderson, Pat O’Sullivan and Martin Dalgleish all went over to work for James Packer. I am often referred to as part of that ‘Optus Mafia’ who left around the same time.
TJA: Did you enjoy that period with PBL Media including as chairman of the Acer stadium at Olympic Park?

Lorson: Yes, a fascinating time, and one that I will always look back very fondly on.

TJA: Then you were moved over to ACP Magazines where your job was to ‘streamline’ the publishing business, which involved closing down magazines such as The Bulletin and sacking staff. Was that an experience you regard ‘fondly’?

Lorson: The time at ACP was fascinating, and certainly broadened my experience, but I think anyone who ran a magazine business through the GFC would be fairly well battle-tested!

TJA: And ‘battle tested’, your next appointment was as the first CEO of FetchTV. Can we talk about the technology, in particular, the set top box you have designed that is provided free to customers by your ISP partners? Indeed, I note that you refer to these partners as ‘a coalition’.

Lorson: Each of them individually is a partner but the group collectively is a coalition.

TJA: I understand the set top box contains a digital video recorder with a one terabyte hard disk and three digital tuners?

Lorson: We’re extremely proud of what we’ve brought to market, not because of what goes into the technology but what the technology allows people to do.

TJA: It sounds quite complex. Is it easy for a customer to understand?

Lorson: Look, the wonderful thing is that as technology advances, the need to understand it becomes less when it’s done well. Things should simply work, and this is a plug-and-play solution that allows you to do very complex things but in a very simple and intuitive way.

TJA: And recalling Steve Jobs and his Apple designs, have you designed the FetchTV box so it’s slick and beautiful?

Lorson: I think we wouldn’t be the first that uses Apple as inspiration from a design perspective and, if we draw comparisons, we would see that as a very favourable outcome.

TJA: I noticed that there is another Fetch in the UK.

Lorson: No relation.

TJA: No, but I was amazed that you adopted the brand name FetchTV given the UK consumer buys their set-top box from retail shops and then, presumably, hopes it can be made to work!

Lorson: There’s still quite a few kilometres between the two ventures!

TJA: Yes, but a Google search can make it appear as if Fetch in the UK is a local offering! I assume you are trying to keep FetchTV here quite separate.

Lorson: We’re certainly a very separate entity. We have very large aspirations in this part of the world and I’m sure the other FetchTV does in Europe. In terms of how the box is distributed, I think the way that people will increasingly become used to acquiring pay TV services is simply as a bundled offering from the telco.

TJA: Triple play?

Lorson: Absolutely.

TJA: Back to the technology, I see that the FetchTV box is designed to include all the ‘bells and whistles’ such as open source and webkit, and I assume you are thinking of access by other devices such as mobiles?

Lorson: Absolutely. From a set top box perspective, our intention was to make it as compatible as possible with not only traditional subscription delivery but also the Internet, and to allow users to experience things like YouTube on the big screen. We’ve certainly done that, and now we’ve moved on to tablets and smart phones, and we’ll be deploying the FetchTV service via what we refer to as ‘companion devices’.
TJA: Mobiles! Do you still use the term set top boxes?
Lorson: Certainly, we still call the main piece of kit a set top box, and we refer to the experience as a three-screen experience: the 10 foot experience as it relates to the TV, the two foot relates to the tablet, and the one foot relates to the smart phone.
TJA: In terms of the pay TV deal you negotiate, is it correct that your ISP partners give away the box to their customers and they are the ones called upon to help with fixing it if it doesn’t work?
Lorson: Well, the box is a plug-and-play and is provided at no up-front cost. Should the box ever fail, for whatever reason, the relationship with the customer to replace that box is with the ISP but we certainly work with the ISP in the background.
TJA: Does that mean FetchTV provides training?
Lorson: We provide them with a range of tools, training being one of the critical ones.
TJA: I think you have signed up five or six partners so far who, with the exception of Optus, are often referred to as second tier ISPs. Is that correct?
Lorson: Yes, but I think the way that we would describe our partnership is that we are targeting nine of the top ten ISPs and we are well progressed in securing all of them.
TJA: Approximately how many FetchTV customers are signed up? Is 5000 a fair total?
Lorson: Through our soft-launch phase we are at approximately 10,000, but we have yet to commence marketing the service.
TJA: Can we move to content or what the pay TV customers can see on their TV screens and mobiles...
Lorson: We have enabled a web browser, and we are making available all of the key Internet content that we feel is particularly relevant to a living room experience so things like YouTube, Facebook, Twitter, Weather, Wikipedia and athletics are all available.
TJA: Is it correct that in Australia you’re mainly aggregating rather than generating local content for the service unlike in Malaysia?
Lorson: Yes. In Malaysia we certainly originate, and the group as a whole produces a considerable amount of content. However, in Australia our focus has been on content partnerships and the aggregation rather than the production of content.
TJA: Can I assume that you have gained access to the Hollywood movie studio rights?
Lorson: You’re absolutely correct that we have all the Hollywood studios on board, but I would suggest that it’s far more difficult than one might expect. The types of content we secure are movies, which are a high priority, quality subscription TV channels and things like National Geographic, MTV, Discovery sciences etcetera.
TJA: You have also added a huge range of non-English language channel packages which should attract an unserved market. Are these channels the same as those offered by sister companies in Malaysia, India, Saudi Arabia, the Philippines etcetera?
Lorson: It’s certainly helpful to have the group represented in all those markets. One of the facts that’s not fully appreciated is that there are 1.5 million homes in Australia where the families do not speak English at dinner. So we have put together each of the bouquets especially for an Australian foreign-born or foreign language-speaking audience.
TJA: The Astro group also has a valuable collection of classic Chinese films. Are these available here?
Lorson: Yes, we source one of our Mandarin channels from the Celestial Movie Channel. However, we source another 26 channels directly from mainland China, and we have an alternative pack that focuses on content from Singapore and Taiwan. All those content assets were sourced directly by FetchTV.
TJA: Do you bring those channels here by Measat, the group satellite system?

Lorson: We downlink from our own satellite, but we don’t uplink any channels currently.

TJA: Still, there’s easy distribution as part of the group’s regional reach...

Lorson: Off the record...

TJA: No. I’m afraid that doesn’t work in these interviews!

Lorson: To a large extent we find out which satellite the service is available on, be it Measat or others, and we have three downlink facilities that give us access to all the satellites visible in this part of the world.

TJA: Could Measat eventually be used to service remote areas where there will be no access to the NBN?

Lorson: I believe those satellites have already been awarded.

TJA: Really? I thought the NBN Co wanted to build its own satellite! But moving back to content, do you have concerns about the file sharing of copyright material and content piracy, which I read, is now a ‘global epidemic’?

Lorson: I think that all of the content providers that we hold discussions with are very encouraged by the fact that we’re introducing a very legitimate and very legal way to access premium content. Ultimately, its services like FetchTV that will assist in reducing the piracy issues, which are principally demand driven.

TJA: Do you think the US movie studios need to rethink their old business models?

Lorson: I think what motivates the consumer is not what can be done but what can be done easily. While some people are prepared to illegally download, the ability to transition to that as your principal experience is not only illegal, it’s also very cumbersome, very time-consuming. Legitimate services like FetchTV are a far easier and compelling way to access a service.

TJA: Are you pleased to see the shrinking or closing up of the various release windows for movies so you can offer them much more quickly?

Lorson: I think it’s exciting. Most of the changes in the industry regarding ‘windowing’ favour digital delivery and, as a business built around the digital delivery, what we’re seeing is that we’re getting more content, better content and we’re getting that content earlier.

TJA: Are you happy with the DSL access speeds used by your ISP partners?

Lorson: In the metro markets, we’re finding that approximately 85 to 90 percent of households live close enough to an ADSL2+ enabled exchange to get the FetchTV service delivered in standard definition, and about two thirds of households live close enough to receive high definition services as well.

TJA: So there’s a speed issue there?

Lorson: Correct.

TJA: Is the speed tested before the service is switched on?

Lorson: Our suppliers conduct a pre-qualification check to ensure that consumers have adequate speeds to receive the service.

TJA: And that allows FetchTV to talk about ‘quality of service”?

Lorson: Correct.

TJA: Is most access via DSL on copper?

Lorson: We are hybrid in the sense that the set top box comes with three terrestrial tuners so that with respect to the free to air broadcasters we are receiving the terrestrial signals. With respect to the subscription channels, we are delivering them over a broadband network, both ADSL2+ and HFC.
TJA: Not Telstra’s HFC?

Lorson: No, Optus.

TJA: Which raises the question of the competition from Telstra and perhaps Foxtel/Telstra?

Lorson: I think the most analogous competitor to Fetch would be the Telstra T-Box. It is sold by Telstra as part of a triple play bundle.

TJA: What about Telstra’s content, which includes exclusive rights to some Australian sports?

Lorson: We’re very proud of any comparison between the content offering for FetchTV and that which is offered by our competitor.

TJA: Telstra?

Lorson: Yes.

TJA: You don’t see Foxtel as a competitor at all?

Lorson: No, we think the traditional Foxtel model is very much a different market. After over 15 years, we now have approximately 25 percent of homes with subscription television services, that’s 2.4 million homes. We estimate that there are 9.4 million homes in Australia, so we see the other 75 percent of homes as the opportunity.

TJA: And that market share of 25 percent includes both Foxtel and Austar?

Lorson: Yes.

TJA: Have you been engaged in making submissions on the future NBN and its multicast capability?

Lorson: We tend not to engage actively in the regulatory debates. We’re very much focused as a wholesaler on supporting our partners, and they have very strong and well-entrenched views in these areas. I think it’s most appropriate to leave the heavy lifting on these regulatory issues to those who are closest to the changes.

TJA: What about any new rules that would require FetchTV to generate a certain amount of Australian content in its service?

Lorson: We have 79 ACMA broadcasting licences so we’re regulated as a pay TV organisation. And whilst we all have views on what the ultimate regulation should be, our only concern is that there should be a level playing field.

TJA: Have you expressed those views?

Lorson: We certainly share our views when asked, but we tend to make most of our commentary on a private basis.

TJA: Since you are classified by ACMA as a broadcaster, what about streaming?

Lorson: We technically don’t stream. We’re a one-to-many broadcaster. Most people associate streaming with a one-to-one delivery over the Internet. The way we deliver our content is via a multicast one-to-many delivery over a closed network which actually never touches the open Internet.

TJA: With your sister companies helping to finance you, is it correct to say you are actually serving as a test case for other members of the Astro group?

Lorson: We’re an incubation business.

TJA: And aside from Asia, you’ve talked about extending your technology or platform to Europe and South America.

Lorson: One thing we have been pleasantly surprised by is the amount of demand around the world for the solution that we offer in Australia. Telcos everywhere are looking for a one-stop shop to source their IPTV hardware, software and content, someone who will provide them
with that turnkey, best-in-class IPTV solution. As we have rolled out the service in Australia we have had considerable interest not only within the group but also outside the group.

**TJA**: What does that mean in terms of your career? You have just appointed a head of international. Will you stay in Australia?

**Lorson**: (Laughter) I think the business will continue to be domiciled in Australia and we will look to open offices where and when the opportunity justifies.

**TJA**: Thank you very much, and good luck with your plans.
Online copyright enforcement impacts the Internet industry as a whole, including different types of rights holders, ISPs, other content providers, technology providers and users. All these parties should be engaged in the discussion, which in turn needs to be broadened to include how access to authorised digital content is being improved via distribution, monetisation and enforcement models that are better suited to emerging technologies and market expectations.

**INNOVATION AND BALANCE**

It is becoming increasingly difficult to remember that it was only in the 1990s that we began to harness the commercial potential of the Internet, and only 2002 when Web 2.0 became a reality. Online engagement is now pervasive\(^1\) and perhaps even ‘indispensable’ (Brown 2009).

Up until this point, society has generally understood the boundaries (both in scope and geography) of the law and of acceptable behaviour. However the Internet is challenging not only the norms of communication, but also of these safeguards. In addition, it is fuelling a proliferation of devices which allow for immediate, uncensored and global interaction in a context that doesn’t always identify the individual or their purpose. Anonymity can be absolute – the ultimate freedom to do and say anything, or at least to potentially get away with it.

Against this backdrop, established causes of action are struggling for application and intellectual property laws in particular appear to be out of step with a diffusion of new, and convergence of old, technologies. Regulatory and business models which have to date successfully controlled access to (and the price of) information and content, are now being openly questioned and challenged. As a result, ‘…the Internet – has been the place where intellectual property has been least respected’ (O’Reilly & Koman 2001, 6). Which is not to say that this disrespect should be ignored, but neither is it to say that practices and rules which were developed in an entirely different context and time should not be reviewed.

The Internet is a compelling and creative channel to market in which online scale, distribution and cost models do not necessarily translate from long established offline ones. However innovation should drive innovation, to stimulate positive collaborative outcomes for all participants. The challenge is to find a balance which respects the rights and wants of individuals, while sustaining and growing new technologies and rewarding commercial and creative endeavour.

**2005 – DISCONNECTION**

Since the 2005 amendments to the *Copyright Act 1968 (Cth)\(^2\)*, there has been a consistent campaign by rights holders to compel Australian ISPs to apply sanctions against those of their customers alleged to be engaged in copyright infringement, most recently via peer-to-peer (P2P) file sharing protocols. The rights holders’ campaign seems, at least in part, to be based
on a misguided belief that ISPs (and not for example, Australian courts, or other legislatively appointed bodies) are the ‘gatekeepers’ or ‘police’ of the Internet and by extension of user activities and communications.

At the centre of the rights holders’ campaign has been a complex ‘three strikes’ or ‘graduated response’ scheme. Such a scheme essentially involves the sending of notices by a rights holder, via an Australian ISP, to the ISP’s customer, alleging that the customer is infringing copyright. The customer’s failure to stop the alleged conduct after three notices would result in the ISP suspending or disconnecting the customer from the Internet. There is no judicial or other independent oversight of the scheme.

Australian (and overseas) ISPs have strongly resisted the proposal, on the basis that it is not effective, enforceable or proportionate and it raises serious questions about fairness and equity. For example, the rights holders’ proposal has never specified:

- why the presumption of innocence and onus of proof should be reversed for online copyright infringement
- what happens to a terminated customer (e.g., are they banned from the Internet for life, for a defined period, or can they simply churn to a new ISP)
- what happens when a terminated Internet account is being used by a group of people (e.g., a school, small business or share-house)
- what happens when a terminated Internet account is part of a bundled service offering
- what is the customer’s right of reply and who would listen
- how is the scheme’s effectiveness to be measured
- what steps would be taken to review and modify the scheme in the future, particularly in the context of emerging technologies and other user practices.

Rights holders have never offered to indemnify ISPs in circumstances, for example, where a customer is disconnected in error, or where disconnection causes other harm. Funding for the scheme also remains unclear. Rights holders have not offered to reimburse ISPs for assisting them to enforce their rights, which is contrary to other instances when ISPs are required to work with third parties. Likely costs include:

- reviewing multiple notices against a specified criteria
- matching a customer to an IP Address, which may be static or dynamic
- sending multiple notices to customers and corresponding with rights holders
- establishing and maintaining a database and supporting processes, to ‘track’ correspondence and flag the number of notices
- disconnecting customers’ Internet accounts (and any subsequent reconnections)
- handling customer complaints, concerns and queries (including from any resulting churn)
- training front of house and call centre staff, as well as staff dedicated to implementing and managing the three strikes scheme.

Some Australian ISPs currently receive an enormous volume (hundreds, sometimes thousands) of emails from Australian and overseas third parties, alleging that their networks are being used to infringe copyright. In almost all instances the material resides on P2P networks, over which the ISP has no control. How would these volumes of emails translate into a three strikes notice and disconnection scheme?

The 2005 copyright amendments were based on the pre-P2P US Digital Millennium Copyright Act 1998 and followed directly from the Australia-US Free Trade Agreement. They introduced a take down scheme, under which rights holders can send ISPs prescribed notices alleging that an ISP’s customer is dealing with copyright infringing material, on a website controlled by the ISP. Upon receipt of a notice, the ISP must take the identified website down and notify its customer. If the ISP receives a prescribed counter-notice from its
customer, it must notify the rights holder. The rights holder then has 10 days to initiate Federal Court proceedings for copyright infringement, failing which the ISP must restore the suspended website. Key features of the scheme include:

- the ISP’s technical ability to take down the specific content or website/s of concern; and
- a requirement that the rights holder must apply to an Australian court for resolution of a contested infringement allegation, within a specified time frame.

The 2005 take-down scheme has rarely if ever been used. Whether as a direct result of the legislative amendments, or for other reasons, there has subsequently been an increase in infringing activities via P2P protocols, such as BitTorrent. ISPs have no control over user content in a P2P context – in particular, they can’t take down specific content or websites. As users download files directly from other users’ computers and shared materials are stored on the users’ computers, not the ISP’s network, the ISP’s only involvement is to connect the user to the Internet.

If ISPs start disconnecting or suspending their customers from the Internet at the request of rights holders, will online copyright infringement stop, or will these actions simply encourage new behaviours via alternative technologies such as encryption, HTML illegal streaming or ‘one-click’ downloading, or cyberlockers? In ‘an arms race between encrypted, anonymised services and industry detection techniques’ (Karaganis 2011, 31) what will be the next, and the next, regulatory and enforcement measures that rights holders campaign for?

RESPONSIBILITIES & CONSEQUENCES

The benefits of intellectual property protection for an economy, and for its scientific and artistic growth and wealth, are not in question. However intellectual property, and copyright in particular, is a conditional statutory monopoly and the condition is balance. Inventors and artists are rewarded for a limited period, provided that they share their ideas in order to stimulate new ones.

The IP ecosystem also doesn’t operate in a vacuum. It is subject to a wide range of laws and practices including competition, privacy, free speech, indigenous rights, trade relations and health. Enforcement of intellectual property (including trade marks, patents, designs and copyright) is subject to legal and equitable checks and balances.

ISPs do not condone copyright infringement. In fact many of them have extensive intellectual property portfolios and are both licensors and licensees of digital content. While addressing online copyright infringement is important (particularly in the context of commercial scale infringement) the relevant questions are: how should it be addressed and by whom? More specifically, is a complex (and costly) three strikes scheme – or a six strikes scheme as was recently announced in the US (MPAA Press Release 2011) – administered via a commercial intermediary and including Internet termination without court oversight, the right (and only) way to go?

The Internet has the potential to facilitate range of illegal and dangerous behaviours such as child pornography, incitement to commit violence, hate speech, fraud, identity theft, hacking, phishing and defamation. All of these activities are subject to Australian law and independent adjudication. Natural justice is afforded to those alleged to have breached the law and sanctions are applied by the courts (or other legislatively appointed independent body) not by those alleged to have been wronged. Why should copyright enforcement be any different? There is no similar three strikes scheme for dealing with any other type of Internet content.

iiNET CASES

The premise for three strikes, (or graduated response), or is an argument that ISPs are authorising copyright infringement by their customers. The film and television industry’s decision to test Australian law on this point (in the Roadshow No. 2 and Roadshow No. 3...
cases) is well documented and we are currently waiting for the next round as the parties head to the High Court in late 2011.

The Full Federal Court’s conclusion that another ISP in different factual circumstances may be found to have authorised is not new. E-Talk was clearly found to have authorised copyright infringement on the facts of the Cooper case. However, defining the relevant factual circumstances remains the key difficulty, one which the Full Court in Roadshow No. 3 struggled to answer, although Emmett J attempted to provide some guidance when he suggested that the starting points are:

- ‘unequivocal and cogent’ evidence of primary infringement;
- reimbursement of iiNet’s reasonable costs; and
- an undertaking to indemnify iiNet in respect of liability reasonably incurred as a result of iiNet acting on the rights holders’ notices.

However there is no certainty that a judge hearing another online authorisation case involving an ISP will follow Emmett J’s reasoning, or won’t add additional matters. Even Jagot J, who was clearly less sympathetic to iiNet’s predicament, doesn’t shed any light on the factual circumstances question.

And what of Cowdroy J’s innovative approach to authorisation in Roadshow No. 2? While it has largely been ignored, his Honour’s focus on the technology that provided the means to allow copyright infringement has parallels with the Federal Court’s consideration of E-Talk’s conduct in Cooper, and would seem a more logical starting point to address the misappropriation of intellectual property rights.

‘With the evolution of digital communications, the means of reproducing and disseminating copyright works increasingly leave the control of copyright owners and commercial distribution intermediaries…we have new kinds of intermediaries, who do not themselves distribute copyrighted material, but give their customers the means to make works available to the public” (Ginsburg 2008, 2).

What should rights holders be doing in this context?

WHAT IS AN ISP?

Wikipedia defines an ISP in the following way - ‘An Internet service provider (ISP) is a company that provides access to the Internet’ (en.wikipedia.org/wiki/ISP, accessed on 24 July 2011). Should the additional words – ‘...who is also responsible for deciding whether its customers are behaving legally and if so, sanctions inappropriate behaviour at its discretion’ – be included in the definition?

An ISP connects a customer to infrastructure that has the potential to be used to access content from sources both legal and illegal. The ISP does not connect its customers with an intention or belief that they will engage in illegal activities. In fact via its contract, the ISP specifically requires its customers to comply with the law, including copyright. However, the ISP has no control over and does not (nor should it) monitor its customers’ behaviour. The decision to access illegal content, or engage in any other illegal online activity, is solely the customer’s.

Further, the question of whether or not a customer has in fact breached the law is not one an ISP can determine. It requires the oversight of a court, or other legislatively appointed body or instrument. The matters to be weighed, as in all civil disputes, are not without complexity and include:

- does the complainant have standing?
- has a breach of the law been established to the requisite standard of proof?
- does the alleged wrongdoer have a valid defence?
- are there any other circumstances that should be taken into account?
• what damage has the complainant suffered?
• what is an appropriate sanction/penalty to apply, in all the relevant circumstances?

While there is no question that an ISP must comply with an Australian court order (and its customer contract gives it the contractual ability to do so), ISPs are not qualified to adjudicate on the above matters. What other commercial entity is required to do so? It is the clear purpose of the Australian judicial system, or the legislature, to ensure that independent and equitable checks and balances are applied, in all the circumstances of an alleged wrongdoing.

ALTERNATIVES TO THREE STRIKES

The Copyright Act currently offers rights holders a range of remedies for infringement, including in appropriate circumstances, damages, account of profits, injunctions and court orders terminating an Internet account. The 2005 amendments also included a specific provision to deal with online infringement (following the Kazaa case) and criminal sanctions for commercial scale piracy.

In addition, Order 15A(3) of the Federal Court rules enables a rights holder to apply to the court (where there is a reasonable suspicion of infringement) for an order to identify an alleged infringer, so that formal infringement proceedings can be bought.

Rights holders have not availed themselves of any of these options in Australia. Their preference has been for a mechanism which avoids direct action against an infringer, in favour of indirect action via an intermediary, without independent oversight. While a desire to avoid potentially time consuming and costly court proceedings may be understandable, the Australian legal system does not condone vigilante action. Civil disputes are resolved by the courts, unless parliament directs otherwise.

There are a number of viable alternatives to three strikes, which would facilitate the rights holders’ ability to directly, quickly and more cheaply enforce their rights against alleged infringers, including:

• Modified O15A type process - An obvious difficulty faced by rights holders is their inability to identify an alleged infringer, other than by reference to an IP Address⁴. If rights holders were able to quickly and easily identify an alleged infringer, they would then be able to correspond directly with that person and ultimately, if required, decide what action should be taken if the alleged infringer ignores the correspondence. While the current O15A(3) process enables rights holders to do this, an expedited and cheaper version (perhaps akin to a subpoena process) would clearly assist rights holders to enforce their private property rights. For example, a pre-agreed protocol could allow for an uncontested application, using an affidavit template and description of documents, with pre-agreed consent orders in accordance with Order 35 Rule 10 of the Federal Court Rules). An alternative (and cheaper) forum to the Federal Court (along the lines of the Federal Magistrates’ Court) could also be utilised.

• Administrative process adjudicated by an authorised independent third party – iiNet advocated such a model in its paper ‘Encouraging legitimate use of online content’ (iiNet 2011), published after the Full Federal Court’s decision in its litigation with AFACT. Essentially, an Independent Body (presumably duly authorised by legislation) would decide whether a rights holder has the requisite evidence of primary infringement to warrant a notice. If that is the case, the Independent Body would ask the relevant ISP to identify the alleged infringer from its IP Address. The Body would then correspond with the alleged infringer and would also allow for any appeal or cross-complaint. Based on the circumstances, the Independent Body would decide on and impose any sanction.

• After three notices the rights holder applies to an appropriate court (or other legislatively appointed authority) for adjudication and resolution – It is not clear why ISP determined sanctions, including termination, are the logical end point for any
online copyright enforcement scheme. An alternative, in line with the 2005 notice and take down process, would be for rights holders to ask a court (or similar body) for an appropriate remedy/sanction, if the requisite notice process is ignored by the alleged wrongdoer. An independent and qualified body would review the matter and make any directions.

- **Addressing protocols that allow for the dissemination of unauthorised content** – If certain technologies are providing the means to access and disseminate unauthorised content, then as Cowdroy J suggested at first instance in *Roadshow No.2*, rights holders should be taking steps to bring those who facilitate access to, and who control the technologies to account.

Additional options may lie with the government, to consider extending the safe harbours to benefit all online providers; to revisit the exceptions to copyright infringement by way of a flexible fair use defence, or other specifically defined fair dealing exceptions; and to consider the relevance and application of authorisation in the context of technologies that were not in contemplation in 1968 (or even as recently as 2005).

**WHAT DO USERS WANT?**

While the obvious stakeholders – rights holders and intermediaries– have been forthright in advocating their positions, the Internet user has largely been unrepresented in the discussion about access to digital copyright. So what do users want?

- timely access to content – they don’t want to wait six months for their favourite TV series or movie, when they know that their overseas friends and family are watching them now
- ability to media shift on multiple platforms – they want to be able to move content around on the growing number of devices they are encouraged to purchase, so that they can access it when and where they want
- no double dipped royalties or rights slicing or splitting
- competitive access to legal content, at a cost that realistically takes into account the technologies involved in its production and distribution – they don’t want to pay $30 for a CD or DVD.

To date the rights holders have not directly linked the above to the online copyright enforcement discussion. If three strikes or another enforcement scheme were implemented, what will rights holders in turn do to improve the speed, price and accessibility of authorised content for Australians?

It has been argued that online copyright infringement is the result of a market failure, for example ‘a global pricing problem’ (*Karaganis 2011*, i). While this is not an excuse for infringement, these types of initiatives offer a positive opportunity for rights holders to better engage with users and to expand the online content market to the benefit of all.

**A TIME TO REBOOT**

The online copyright enforcement discussion has been (and continues to be) a difficult and overall negative one. Rights holders and ISPs are natural partners and online content users are clearly the beneficiaries of their collaboration.

ISP do not approve, condone or authorise anyone engaging in copyright infringement (or in any other illegal online behaviour). They also believe that rights holders have primary responsibility for enforcing their rights, in a context where an independent and authorised body (and not a commercial enterprise) has oversight of the parties’ conduct and responsibility for imposing sanctions.

Stricter enforcement measures with increasing regulation, draconian sanctions and greater administrative and cost burdens are not a positive or sustainable solution. While ISPs may
have a role to assist rights holders (eg, by identifying an alleged infringer from an IP Address in appropriate circumstances) rights holders must take the lead.

Online copyright enforcement impacts the Internet industry as a whole including different types of rights holders, ISPs, other content providers, technology providers and users. All these parties should be engaged in the discussion, which in turn needs to be broadened to include how access to authorised digital content is being improved via distribution, monetisation and enforcement models that are better suited to emerging technologies and market expectations.

The impact of the Internet on access to information and content may not have been foreseen in the 1990s or in 2002 or even in 2005, but we now know (or think we know). It’s time to reboot and move forward.

REFERENCES

JOURNAL AND NEWS ARTICLES

Brown, Gordon. 2009. ‘The Internet is as vital as water and gas’ TimesOnline June 16, 2009, accessed on 24 July 2011. Available from: http://www.timesonline.co.uk/tol/comment/columnists/guest_contributors/article6506136.ece


CASES AND LEGISLATION

Cooper v Universal Music Australia Pty Ltd [2006] FCAFC 187 (Cooper)

Copyright Act 1968 (Cth)

Copyright Regulations 1969 (Cth)

Order 15A(3) of the Federal Court rules

Roadshow Films Pty Ltd v iiNet Limited (includes summary) (No. 3) [2010] FCA 24 (4 February 2010) (Roadshow no.3)

Roadshow Films Pty Ltd v iiNet Ltd (No 2) [2011] FCAFC 82 (1 June 2011) (Roadshow no.2)

Telecommunications Act 1997 (Cth)

Universal Music Australia Pty Ltd v Sharman License Holdings Ltd FCA 1242 (5 September 2005) (Kazaa case)

PRESS RELEASES AND REPORTS

ENDNOTES

1. According to the Australian Bureau of Statistics at the end of December 2010, there were 10.4 million active Internet subscribers in Australia (excluding Internet connections through mobile devices). This represents an annual growth of 16.7% and an increase of 9.9% since the end of June 2010.

2. Division 2AA of Part V of the Copyright Act 1968 (Cth)

3. For example under Freedom of Information Act 1982, or where assistance is provided to law enforcement agencies under s314 of Part 14 of the Telecommunications Act 1997 (Cth)

4. An IP Address, or ‘Internet Protocol’ Address, is a series of numbers used to identify devices which connect to the internet. IP Addresses may be static or dynamic, which means that an IP Address may remain with the same user, or the same IP address may be allocated to different Internet users at different times.
Over the past decade Australia’s digital economy has become a key driver of national productivity, employment and social well-being. The online landscape is providing exciting new ways for Australians to connect with each other and for businesses to deliver new, more efficient and better services to consumers. Within this digital revolution, Australia’s copyright industries play a significant role in generating the content carried through the digital pipelines. These industries are at the forefront of innovation as they develop new content, new businesses and business models to deliver entertainment and information to Australian consumers. However, while the Internet, and particularly the promise of the National Broadband Network, brings with it great opportunity, it also carries many challenges. This paper discusses the challenge of online copyright theft to ongoing Australian innovation and culture and considers possible solutions that may materialise in the near future, particularly on the back of recent positive announcements in the United States.

THE BRAVE NEW NBN WORLD

The National Broadband Network (NBN) promises to provide a high-speed broadband network to more than 90 percent of Australian homes and provide “vital communications infrastructure to sustain our country for decades to come.” (NBN Co 2011) Described as an “essential service”, the NBN, it is claimed, will dramatically improve broadband services across the business, education, entertainment and health sectors. Accordingly, high speed broadband through the NBN has the capacity to benefit all Australians, not only as consumers, but also to enhance the growth of innovative industries and the people that work in them.

Australian content industries already comprise a significant segment of the national economy. Independent research commissioned by the Australian Copyright Council found that in 2006-2007 Australia’s copyright industries (PWC 2008):

- Employed 837,507 people (8 percent of the Australian workforce);
- Generated economic value equal to 10.3 percent of gross domestic product ($97.7 billion which was greater than the mining sector); and
- Generated $6.873 billion in exports (4.1 percent of total exports).

With the rollout of the NBN, it is fair to say the content industries are poised to play an even greater role in Australia’s productivity, as they generate the new entertainment and information products that will help drive demand for greater digital capacity. This is a future that many of them, including the Australian music industry, want to firmly embrace. Around the world there are more than 400 music services offering some 13 million tracks catering to different tastes and lifestyles – from a la carte downloads, streaming services, free-to-user services, Internet radio, subscription models and online video channels. Recent examples in Australia include Bandit.fm, Qriocity Music Unlimited, AAPT’s Music to Your Ears and Guvera.com, while popular longer standing services include iTunes and BigPondMusic.
close to 30 per cent of recorded music revenues now coming from digital channels, (IFPI 2011a) the Australian music industry wants to continue to break new ground in innovating, experimenting and engaging with consumers in exciting and new ways in the NBN-ed world.

**CHALLENGES TO OPTIMISING DIGITAL POTENTIAL**

While there is real potential for significant growth in the digital economy, there are also some significant challenges to innovation and investment in online content. In particular, the issue of illegal online copyright protection is of major concern to the many businesses and organisations involved in creating and providing content and delivering it to consumers via the Internet and has been for many years.

Peer-to-peer (P2P) file sharing networks, originally including Napster, Kazaa and Limewire, rapidly emerged over the last five to ten years as vehicles for, among other uses, inducing and facilitating mass infringement of copyright. In simple terms, these networks operate by distributing software among users (‘peers’) spread around the world which facilitates the sharing of copyright-protected content stored on individual users’ computers. The extent of P2P file sharing around the world is substantial and, due to the particular characteristics of music files (i.e. relatively small in size and often not incorporating DRM protection technology), the music industry in particular has been heavily impacted by this phenomenon. It is now clear, however, that with the spread of faster broadband services around the developed world, other forms of copyright material are being illegally shared in rapidly increasing volumes – for instance, software, books, games, television shows and films.

It is not surprising therefore, that in 2009 the Australian Government made the following policy commitment in Australia’s Digital Economy: Future Directions: “to facilitate development of an appropriate solution to the issue of unauthorised file sharing”. Speaking at the Copyright Freedom Conference May 2009, the Attorney General said:

The Government needs to reach a reasonable middle ground when interests have worked together to find a solution but genuinely cannot agree, and when the public interest is at risk. (McClelland 2009)

So what sort of challenge does illegal file-sharing and other forms of illegal access and distribution of content online really present to Australian content industries?

Last year, the ARC Centre for Excellence for Creative Industries in its paper entitled *CCi Digital Futures 2010: The Internet and Australia* (Cci 2010) found that 27.8 percent of Australian Internet users admitted to using file-sharing services like BitTorrent to access content, including music, illegally. This was up from 23.6 percent in 2008. The most prevalent reasons for using illegal file-sharing services were that they were free and simple. In July 2010, the University of Ballarat released research on the extent of copyright infringing content on BitTorrent networks in Australia (ICS 2010). Close to 90 percent of content was found to be infringing the rights of the creators. More recently, the 2011 Whirlpool online broadband survey found that 55 percent of respondents were driven to broadband to illegally download TV shows, movies and music (Whirlpool 2010).

The Australian Content Industry Group (ACIG) recently commissioned an economic study (undertaken by Sphere Analysis) on the impact of Internet piracy on Australian content industries. The Sphere Report (*Business Software Alliance 2011*) is based on the highly regarded international report into the economic impact of copyright theft undertaken in March 2010 by the independent Paris-based firm TERA Consultants for The International Chamber of Commerce. Using the TERA Report as a model, Sphere estimated that in 2010:

a) 4.7 million Australian Internet users accessed online content illegally.

b) The annual value of lost retail revenue to Australian core content industries (including music) was $900 million.

c) Over 8,000 jobs were lost in the core content industries sector as a result of Internet piracy.
The Sphere Report also estimates that by 2016, taking into account the potential impact of fast broadband:

d) 6.5 million Australian Internet users will access online content illegally.

e) The value of annual lost retail to the Australian core content industries sector will be $5.2 billion – a loss of $18 billion over the period 2010-2016.

f) A further 40,000 jobs could be lost in the core content industries sector as a result of Internet piracy.

IMPACT: UNDERMINING INCENTIVES TO INNOVATE

With an estimated 95 percent of music downloads on the Internet being illegal (IFPI 2009), it comes as little surprise that the incentive to invest in new artists, particularly Australian artists, is severely undermined as the music industry cannot capture the gains generated from their investments. As is stated in the Digital Britain, Digital Economy Bill Impact Assessments Report. (Digital Britain 2009, 95)

This is because the public good\(^2\) nature of file-sharing and the spillover effects\(^3\) which exist creates a free-riding problem whereby users may enjoy the benefits of file-sharing without paying the product’s price\(^4\). The disincentive to invest in artists as a result of free-riding is a particular problem in the music, film and videogames industries because they are characterised by large investment costs and a relatively high risk of failure.

Content companies spend vast amounts of money investing in the success of a product (e.g. film, song or videogame). These costs are typically in production, marketing and promotion of creating and selling content to the consumer (advance payment to artists, advertising costs, retail store positioning fees, press and public relations to the artist, television appearances and travel, publicity and Internet marketing). The industry is characterised by large fixed costs and low variable costs. The increasing trend for creative content to be traded digitally may have seen a change in the investment cost structure. Overall, some costs have remained high like marketing costs but distribution and production costs have decreased with an overall effect of increasing variable costs relative to fixed costs which may give small, relatively less known artists more room for manoeuvre.

In the recent Australian Government Report (Australian Government 2009a), innovation was recognised as one of the most effective ways to keep people in work today and generate jobs for the future. Many of the content industries take on considerable risks by investing in creativity and bringing the fruits of such creativity, to market. For example, there are a number of organisations in the music industry, including record labels, who are innovators. Such innovation is being increasingly applied to the emerging digital economy, in line with the Australian Government’s stated focus in this area (Australian Government 2009b).

THE CANARY IN THE COAL MINE: MUSIC

The International Federation of the Phonographic Industry (IFPI) Report entitled Investing in Music (the Investing in Music Report) (IFPI 2010a) highlights that labels invest about 30 per cent of their sales revenues in developing and marketing artists. Of this, an estimated 16 per cent is spent on artist and repertoire work (A&R). Given that only a third of Australian firms innovate at all, (ABS 2010) and that only 15 per cent of innovation-active businesses spend money on R&D, (ABS 2010) this is a considerable achievement. This far exceeds the research and development investment of most other industries. As a result, Australia has a vibrant and diverse music scene, with many of our artists being recognised internationally.

Innovation has also transformed the music industry – enabling it to operate in the digital economy, to deliver diversified products to Australian consumers and to enter new online...
markets. The recent IFPI – Recording Industry in Numbers report illustrates that while global recorded music revenues declined overall by 7 per cent in 2009, digital sales grew strongly in many territories, with digital channels now accounting for 25 per cent of all trade revenues to record companies worldwide. There are now more than 13 million tracks available from over 400 legal music services worldwide – in Australia they range from download stores such as iTunes to streaming subscription services such as via Bandit.fm. In February 2010, AAPT launched “Music to Your Ears” a 24/7 unlimited broadband bundle that enables Australian customers to stream over 1 million songs and download $50 worth of music per month. This was shortly followed by the launch of Guvera, an Australian ad supported download music service.

But innovation is more than just about “gathering evidence and new ideas” or creating music. It’s also about ensuring the sustainable commercialisation of those ideas. As the Investing in Music Report canvases, labels are the principal financial investors in musical talent, they are key in developing and promoting artists and they add value to artists throughout their careers. Artist advances, recording, marketing and promotional costs are the biggest items of record label spending.

It is also important to recognise that with innovation comes risk. Continually investing in new talent in the music industry is a hugely risky business, as only a minority of the artists developed by music labels will be commercially successful in a highly competitive market. Estimates on the commercial success ratio of artists vary between one in five and one in ten according to the Investing in Music Report. Typically less than 15 per cent of all sound recordings will break even and even fewer will return profits (Digital Britain 2009, 96). Ed St John, former president and chief executive of Warner Music Australia is quoted as saying in the Investing in Music Report:

   While Australia has a very vibrant A&R culture, and lots of records get made and released, it would be fair to say that few of them make money for the artist and the music company.

In short, music labels and artists have “shared fortunes” as have many content industries with their creators. Sadly, following the introduction of broadband services into Australia, the music industry’s revenues have almost halved between 2003 (approximately A$650 million wholesale) and 2010 (A$280 million wholesale). This means significantly less returns on investment for labels to use to find and nurture the next Angus and Julia Stone or Eskimo Joe.

While the music industry may have been impacted first, it’s reasonable to expect that online copyright theft is impacting or has the capacity to impact all creative industries. As Simon Renshaw, Los Angeles-based manager, states:

   The music industry was hit first, but now with increased broadband you have a situation where all the creative industries are at tipping point (IFPI 2010b).

Research conducted in 2011 by IPSOS suggests that one third of Australians engage in movie piracy (IPSOS 2011). Even eBook piracy is on the rise, in parallel to market penetration of e-reader devices (Project Factory 2011).

**IN THE END, WE ALL PAY THE PRICE...**

In an article in the Weekend Australian, journalist Ian Cuthbertson comments:

   But when people steal files from the big stars, it’s the emerging artists at the bottom of the tree who frequently pay the piper by not being signed – not being allowed to even exist. Everything may be free now, as Gillian Welch sings, but in the end we all pay the price (Cuthbertson 2010).

In Spain, where illegal file-sharing continues unabated at high rates due to weak legislation, music sales fell by around 17 per cent in 2009 and the market is about one-third of its level in 2001. In Spain, the victim has been investment in local acts. The number of local artist album sales fell by 65 per cent between 2004 and 2009 (IFPI 2010b, 6). Similarly in France, a
territory also adversely affected by high online piracy rates, the number of local repertoire album releases plummeted from 271 in the first half of 2003 to 107 in the same period of 2009 (IFPI 2010b). Finally in Brazil, a country where 70 per cent of music consumed is domestic repertoire, music sales fell by more than 40 per cent between 2005 and 2009. This had a disastrous impact on investment in local repertoire – in 2008 there were only 67 full priced local artist album releases by the five biggest music companies (IFPI 2010b, 19).

The following blurb was taken from the back cover of a single from up-coming Australian singer songwriter, Tim McArtney:

Please respect the value of music. Don’t burn/copy/peer share this – it’s illegal. It took me over a year and a lot of money from my own pocket to produce this form of art. Spread the word by all means, but I ask you – What would the world be without art?

This crystallises one of the key challenges facing all Australian creators, whether they be artists, songwriters, game or software developers or authors, how to get financially rewarded in the face of widespread distribution of digital content without permission? Undoubtedly this issue impacts on fundamental decisions of creators to even create their “art”.

In late 2010, the Australian Independent Records label association, AIR, conducted a number of interviews with individuals and organisations involved in the Australian independent music industry as part of a digital publicity and marketing campaign focussed on the Independent Music Awards. The interviewees were not approached because of their beliefs on piracy but rather their success in the business dealings and impact on the Australian music industry.

As part of those interviews, Lars Brandle, internationally renowned Brisbane based music journalist and analyst for Billboard and The Music Network confirmed that illegal file-sharing has clearly “punched holes in the industry” and as a result it’s “tough out there for everybody” [including independent labels and artists] (Brandle 2010). Nick Crocker, co-founder of the world first real-time music chart We Are Hunted, digital music strategist and now based in New York with leading digital video aggregator suggests that “even the worse case scenarios don’t quite capture just how far the music consuming public has moved away from paid product”. Illegal file-sharing, Nick argues, is “clearly not something that rewards artists or the team and around them” and as a result “something has to give”. Piracy, he concludes has “smashed everyone” (Crocker 2010).

When questioned on the biggest challenge faced by independent musicians, Australian record label owner and musician Ashley Anderson from the critically acclaimed group Space Invadas responded:

The age of torrent downloads, which kinda makes it hard to make music full time if no one buys it. So I’ve felt the last two years it has really made it more difficult. They [torrents] are really socially acceptable now (Anderson 2010).

Nick O’Byrne, the General Manager of AIR stated:

I have heard a million justifications for illegal downloading and at the end of the day, none of them justify the blatant theft of music. A piece of music has intrinsic value – every song took time to write, record, mix and master, not to mention the costs of getting to the point of release. In the long term, if we do not have a sustainable recording industry then music of a high quality simply will not get released because there is no return on investment (O’Byrne 2010).

Arguably, the theft of this valuable property on the Internet in the long term may reduce the quality and diversity of content that is available to Australian consumers online, not only for music, but across content industries.
SOLUTIONS TO CREATE A LEVEL ONLINE PLAYING FIELD

The content industries, in Australia and worldwide, are certainly not sitting idly. Through a mixture of legitimate commercial offerings, education, advocacy and enforcement, many are attempting to stem the tide.

On 20 November 2008, the film studios, together with the Seven Network, commenced legal action in the Federal Court of Australia against iiNet in what was described as a ‘landmark legal battle’ (Moses 2008). The basis of the claim was that iiNet, at that time Australia’s third largest Internet Service Provider (ISP) had “authorised” the illegal file-sharing of television shows and movies by subscribers on its networks. Justice Cowdroy dismissed the case at first instance, (Roadshow v iiNet 2010) holding that while an ISP may have knowledge of illegal file-sharers on its networks and takes no steps to stop these activities, this does not amount to authorisation of copyright infringement under the Copyright Act. This judgment was quickly appealed.

In February 2011, headlines around the world were quick to exclaim that “iiNet again slays Hollywood in landmark piracy case” (Moses 2011). However, in reality a closer review of the Full Federal Court’s decision (Roadshow & Ors v iiNet 2011) offered a level of comfort to creative industries in their attempts to abate widespread illegal file-sharing in Australia and indeed, worldwide. The appeal court clearly acknowledged that ISPs can be liable for illegal file-sharing on their networks and should not sit by idly.

The Full Federal Court decision signals an increasing role for ISPs that have appropriate knowledge of the illegal file-sharing of their users online and take no steps to stop these activities. Thus the case has significant ramifications for the role and responsibilities of ISPs in the online environment. As Associate Professor, David Brennan of the Melbourne Law School aptly points out:

Although iiNet won the appeal, this was simply because of the shortcomings in the way that the notices had been given. Copyright dependent industries now have guidance on how to give ISPs notices that will require ISPs to take reasonable steps to limit the notified infringing activity, or else be liable for authorising its continuance. ISP immunity from damages is now conditional upon ISPs adopting realistic repeat-infringer account termination policies.

The appeal court has provided sensible guidelines to copyright owners for their dealings with ISPs, and proper legal incentives for ISPs to co-operate with copyright owners in deterring infringements (Brennan 2011).

The need for ISPs to work in partnership with content industries to address online copyright theft is in step with developments that are occurring around the world. In France, the United Kingdom, New Zealand, South Korea and Taiwan legislation has been enacted or proposed to implement a “graduated response scheme”. Broadly these are schemes (from legislative to voluntary) where ISPs sent educational warning notices to their subscribers regarding illegal file-sharing based on notices sent by copyright owners.

On 7 July 2011, US movie, music, TV and broadband leaders entered into a landmark agreement on a common framework to deal with illegal file-sharing (RIAA 2011). Companies including Walt Disney, Paramount, Universal Music and Sony Music Entertainment have lined up with the US’ biggest ISPs including AT&T, Cablevision and Comcast to take a stand against the illegal file-sharing of content. This voluntary agreement signals a major shift in the relationship between content providers and ISPs and their preparedness to work together. In the words of U2’s manager Paul McGuiness, the “needle” in this debate is on the move (McGuiness 2011a).

The significance of the US copyright alert agreement cannot be overstated. Firstly, it has proven that even in a market as big and as complicated as the US, content industries and the ISPs can reach a voluntary agreement. It also demonstrates very clearly that ISPs and creative industries have a shared interest in seeing the playing field levelled for the creation and distribution of content. Put bluntly, as bandwidth continues to become commoditised, the
need for ISPs to differentiate their services through the provision of content offerings will increase.

The Australian Government has continued to encourage the parties to also reach an industry-led solution (McClelland 2011) and there are indications that such a solution is being explored by the parties:

a) Telstra’s submission to the Convergence Review noted that “Telstra believes that this issue is better dealt with by seeking an industry-led consensus between copyright owners and ISPs once the [iiNet] litigation is resolved” (Telstra 2011). More recently, a Telstra spokesperson was quoted as stating that:

Telstra remains open to discussing how we might assist copyright holders to enforce their private property rights. Given this is an industry wide issue Telstra has encouraged discussions to be facilitated by the Communications Alliance (Colley 2011).

b) Communications Alliance, which acts on behalf of a number of ISPs, stated in a press release that “Communications Alliance and some of Australia’s largest Internet service providers have been meeting with leading content owners in recent weeks to explore whether an industry-led solution can be found…” (Communications Alliance 2011).

c) The majority of the Australia’s content providers across music, books, video games and software came together in 2010 to form the Australian Content Industry Group (ACIG) to find a solution to the issue of online copyright theft.

d) iiNet put forward a proposed model for dealing with this issue in a paper entitled “Encouraging the legitimate use of online content” (iiNet 2011).

The Internet Industry Association announced in a press release its intention to begin developing an industry code of practice for Internet intermediaries (IIA 2011).

In Australia, many creative industries and ISPs already have partnerships to provide legitimate content to Australian consumers – Telstra’s BigPond Music is just one example. It is clear that creative industries and ISPs will increasingly be working together on more commercial opportunities to offer value-adds to their subscribers such as video on demand, subscription music offerings and the like. This will be even more so as the National Broadband Network progressively rolls out.

CONCLUSION: IS THE “AGE OF FREE” COMING TO AN END?

The ability of the creative industries to harness the great potential of the digital economy, particularly in a faster broadband world, will be based on mutually beneficial partnerships between consumers, creators and ISPs. In this context, creators and ISPs need to agree on a fair and transparent framework that will foster consumption of legitimate online content. A solution that is convenient, affordable and equitable will support the business and investment confidence that is needed to ensure the NBN is richly populated with creative content. The recent announcement of the landmark US copyright alert system should further encourage content providers in Australia and our local ISPs to continue talking and to work even harder to come up with a commercial, negotiated scheme to address illegal file-sharing of content.

As U2’s manager, Paul McGuiness, muses (McGuiness 2011b, 40) could the US agreement signal that the “age of free” is indeed coming to an end? If so, the rewards will seemingly extend to all of us – content creators, ISPs and, most importantly, consumers.
REFERENCES


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ENDNOTES


2. Public goods are those goods which are non-rival and non-excludable in consumption. Non-rival in consumption means that one person’s consumption of a good or service does not reduce the amount which can be consumed by another person, and non-excludable means that is not possible to prevent another person from consuming it.

3. Spillover effects arise when one person’s actions have an impact on a third party.

4. A similar case arises with Research and Development (R&D) whereby a company cannot capture all the benefits of its R&D activity because it cannot fully retain the knowledge that it creates. Knowledge spills over to other companies through various mechanisms, including personnel changing jobs or copying.


8. Statement on slick of single released by Australian artist, Tim mcArtney Less Games, More Love.

9. There were 34 applicants in the legal action, including companies such as Roadshow Films Pty Limited, Universal City Studios LLLP, Paramount Pictures Corporation, Warner Bros. Entertainment Inc, Disney Enterprises Inc, Columbia Pictures Industries Inc, and Twentieth Century Fox Film Corporation.

10. The Copyright Act 1968 (Cth).

11. The film and television studios' appeal to the High Court is set down for hearing on 1-2 December 2011.
Australians have adopted wireless broadband with fervor. People can be seen sitting over their morning coffee reading the screen on their mobile phone, or hunched over their laptop in cafes all around the country. This paper explores from a social perspective the behaviours of a particular group of end users who through their use of wireless broadband and mobile devices continue to work anytime and anywhere.

In contrast to the telecommuters of the early 1990s who worked from home, this group of end users known as Mobile Knowledge Workers or more generically as mobile workers continue to work away from the workplace but not necessarily in a fixed location such as home. Mobile Knowledge Workers continue to conduct work across a range of locations and rely on their wireless broadband to perform tasks and to keep connected with the office. The results of an online questionnaire demonstrated that through the use of wireless broadband and a range of mobile devices such as laptops, smart-phones, and tablets, Mobile Knowledge Workers continue to productively perform a range of tasks across a number of different locations.

INTRODUCTION

In June 2011, Australian subscriptions to wireless broadband (excluding mobile handsets) surpassed those of DSL subscriptions for the first time (ABS 2011). The increasing popularity of wireless broadband has provided the possibility of constant communication with the office when working away from the workplace. Mobile devices such as laptops, tablets and smart-phones combined with wireless broadband have hastened the transition to a new phase in working life for office workers. Office employees are now able to conduct work independently through their mobile devices, regardless of spatial and temporal constraints. Coffee shops, always the preferred location for subtle business networking and discussion (Treneman 2001), are now sites for proactive computer assisted work. There is an emerging culture of undertaking work in another location away from the workplace. The other location is often informal such as a café or airport lounge. In these locations people can be seen doing work with their heads bent over a computer screen, alone or together with a colleague. The additional benefit of wireless broadband is that it enables connection between the worker and their workplace and yet the worker can remain remote from the physical location of it. Work tools accessible through the cloud, or simply online, enable colleagues to collaborate and connect regardless of their individual physical locations.

This paper draws on data compiled from a larger study, Discovering Connectors: A Guide to the Australian Wireless End User, which investigates the ways in which Australian end users are adopting wireless broadband for individual use. The study is based on end-user perspectives and explores the possibility that Australians are moving towards a sense of multimodal connectedness (Schroeder 2010) by using multiple devices and multiple forms of Internet connectivity – in particular wireless – in order to do so. A Telstra study conducted in 2010 reported that more than half of all Melbourne homes have more than four Internet-enabled devices (Thom 2010). Australians are consumers of an increasing number of Internet-enabled devices ranging from laptops, tablets, eReaders, smart-phones, and in the home to...
net-connected big screen TVs, and videogame consoles (Thom 2010, para. 3). In Australia our uptake of wireless broadband and Internet-enabled smart phones is increasing every year. In 2010 our uptake of wireless broadband (excluding smart-phone handsets) increased 21.7% over the previous year (ABS 2011), and our uptake of smart phones increased by 67% from 2009 to 2010 (Mackay 2010), highlighting the increasing importance of understanding how Australians are moving towards multimodal connectedness.

Wireless broadband for many Australian end users takes the form of Mobile Broadband, Mobile Internet and WiFi. In the study, Mobile Broadband was defined as using a USB ‘dongle’ or datacard in computers to connect to the Internet; Mobile Internet as using a mobile phone or iPad/tablet to connect to the Internet (3G); and WiFi a wireless form of broadband provided from a fixed local area service and usually available in public spaces like cafés, airports, libraries, and places of study.

Technically there is little difference between Mobile Broadband and Mobile Internet as they both use 3G SIM cards, while WiFi generally relies on a fixed connection. However, to a non-technically savvy end-user, these three forms of broadband are ‘wireless’, simply because there is no cable connection between the device and the connection outlet as for a fixed service, and the end-user is not ‘fixed’ to a location but able to move around freely to continue their everyday activities. In this paper the term ‘wireless broadband’ is used to generically represent the three forms of connectivity.

Investigated in this paper are the work-related location results selected by a specific group of questionnaire respondents, the ‘Triple Connectors’. As 25.6% or 44 of all the respondents, the Triple Connectors make up the largest single group of end-users identified by the study. These Connectors connect to the Internet using the three types of wireless broadband: Mobile Broadband, Mobile Internet, and public Wi-Fi. The other two groups, ‘Single Connectors’ use one type of wireless broadband, and ‘Twin Connectors’ a combination of two.

Triple Connectors epitomise a form of ‘mobile worker’, as they are reliant on their devices and wireless connections in order to conduct work regardless of location. This paper contends that Triple Connectors may be more advanced users of broadband services than other connector groups. This is demonstrated by their high use of wireless broadband in their everyday life, and by their above average adoption of wireless technologies and leading edge services such as Voice over Internet Protocol (VoIP). As wireless broadband enables connection in any place at any time, the context for this article is to examine the study data in relation to task and location to investigate if there are any linkages between task, location, device and the form of connectivity. While wireless broadband enables mobility, what is not known is how end-users are creating an informal structure of work, if any, within that mobility. Do Triple Connectors prefer to undertake particular work tasks using their laptop, phone or iPad, and is this dependent on the location, or the form of connectivity? Or do they perform the tasks irrespective of location and device? The analysis is limited but provides valuable indications for further research. A typology of mobile workers, and work ‘tools’, especially communication and collaborative cloud based ones, will form part of follow-up investigations.

ABOUT THE STUDY

The data for the study was collected using an online questionnaire circulated in 2010. Participation in the online questionnaire was voluntary, and no incentives were offered for participation. Participants needed to be Australian residents of at least 18 years of age. The questionnaire took approximately 15 minutes to complete; however times varied depending on the number of different forms of Internet connectivity and devices used by respondents.

ABOUT THE RESPONDENTS

174 participants aged between 18 and 69 answered the online questionnaire. As a result of the small number of respondents, the conclusions drawn in this paper can only be indicative of
adoption and usage practice in Australia. The respondent group comprised 82 males aged between 22 and 69 years of age, and 92 females aged between 18 and 63. Respondents were residents of New South Wales (38.8%), Victoria (35.9%), Queensland (14.7%), Western Australia (4.1%), Australian Capital Territory (3.5%), South Australia (2.4%) and Tasmania (0.6%). Over half of the participants in the study were employed on a full time basis (54.7%), while part-time/casual employment and full-time study made up the majority of the rest of the participants at 22.7% and 27.9% respectively. Only 12 participants were stay-at-home parents (4.7%), retired (1.2%) or not currently employed (1.2%).

PROFILING THE TRIPLE CONNECTORS

The Triple Connectors are the respondents who connect to the Internet using all three forms of wireless broadband: Mobile Broadband, Mobile Internet and WiFi. The other two connector groups identified were the ‘Single Connectors’ who adopted a single form of wireless broadband: Mobile Broadband, Mobile Internet or Wi-Fi, and ‘Twin Connectors’ who adopted two forms: Mobile Broadband + Wi-Fi, or Mobile Internet + Wi-Fi, or Mobile Broadband + Mobile Internet. This paper focuses on discussing the Triple Connectors and the way they use wireless broadband in relation to work.

The Triple Connectors are the largest single group identified by the study, and make-up 25.6% or 44 of all the respondents. One third of the group is female, and two-thirds male. Male respondents were between 27 and 66 years of age, and the female respondents between 18 and 50 years of age. Most Triple Connectors are married and living with children (34.1%), however a high percentage is also single (25%). More than half of the Triple Connectors work full-time (65.9%). The next largest group is full-time students (22.7%), followed by those employed part-time or casually (15.9%).

A key result of the questionnaire was the recognition that the different connector groups had unique characteristics. A unique characteristic of the Triple Connectors is that they are the connector group most likely to use VoIP at home (86.3%). This suggests that Triple Connectors are more likely to be early adopters than the other connector groups, as VoIP, while becoming increasingly popular among Australians, is yet to be embraced by all. The Australian Communications and Media Authority (ACMA) reports that VoIP is experiencing rapid uptake in Australia; however the 16% adoption rate recorded in June 2010 falls significantly short of the 86.3% adoption rate of the Triple Connectors (ACMA 2010b). The high adoption rate of VoIP by Triple Connectors suggests that Triple Connectors are early adopters and possibly more advanced users of broadband services than the other connector groups. Some 29.5% of Triple Connectors have ISP subscriptions to VoIP, and 56.8% access it through an ISP-independent web-based branded service site such as Skype.

![Combined VoIP take-up](image-url)
ISP independent web-based services are often a lesser quality telephony service because of the variation in transmission, but it is at low cost to the end user. An ISP managed VoIP service is generally a higher quality service but comes at a cost that is often bundled into the fixed Internet service within the home (ACMA 2008, 8).

Triple Connectors are also more likely to be technologically savvy and to be more comfortable and knowledgeable about new products and services such as VoIP. In general statements completed by all respondents, Triple Connectors were people to whom their family and friends look for help with information and advice about technical things (77.3%), and they were also likely to buy the latest gadgets (65.9%).

TRIPLE CONNECTORS AS ‘MOBILE WORKERS’

The impetus for the original research was to profile the different connector groups emerging as a result of adopting wireless broadband, and focused on Schroeder’s contention that society is moving towards a sense of multimodal connectedness (Schroeder 2010). Multimodal connectedness includes a sense of location independence. People remain connected through their mobile devices such as laptops, smart-phones, and tablets, essentially remaining location-independent, now that devices are no longer fixed to a particular location. In the analysis, the Triple Connectors indicated that they use their devices for work-related tasks in locations that they associate with work, but outside the physical premises of work. Triple Connectors can be considered as part of group of employees who can be loosely defined as ‘mobile workers’ (Aguilera 2008; Drake et al 2010; O’Neill 2011; Venezia 2007; Yuan and Zheng 2009). The number of mobile workers within the Asia Pacific Region is expected to reach around 1.19 billion in 2013 (Drake et al 2010). As a result it is important that we begin to consider how mobile work impacts on Australian employees and businesses.

Mobile workers may comprise employees occupying professional, managerial and executive positions (Aguilera 2008; Venezia 2007), also known as ‘knowledge workers’ (Yuan and Zheng 2009). In early studies of knowledge workers working away from the office the focus was on work conducted from home. This particular group of mobile workers may in some instances have been referred to as telecommuters (Drake et al 2010) or ‘home-workers’ (Ward 2006).

Unlike knowledge workers who could be office-based, other mobile workers may also be identified as such simply because being geographically mobile is a function of their job (Cohen 2010; Yuan and Zheng 2009). This specific group of mobile workers may also be referred to as ‘Non-Office Based Mobile Workers’ (Drake et al 2010) or ‘Mobile Field Workers’ (Drake et al 2010; Yuan and Zheng 2009). It is expected that the Triple Connectors were all Mobile Knowledge Workers, as their responses indicated that they continued to ‘work while mobile’ rather than ‘mobility for work’ which is more typical of Mobile Field Workers (Cohen 2010). It is most likely that Triple Connectors span the group of office-based mobile workers comprising ‘Mobile Professionals’, ‘Occasionally Mobile’ and ‘Mobile Nontravelers’ (Drake et al 2010). When defined in terms of mobility, Mobile Professionals are office-based employees who are away from their workplace 20% or more of the time, Occasionally Mobile are obviously less so, perhaps venturing from the office a few times a year, or more frequently but less than Mobile Professionals (Drake et al 2010, 3). The last category Mobile Nontravelers are employees who are required to be mobile within their workplace in order to complete their duties. They may travel between individual offices or buildings that comprise their physical workplace (Drake et al 2010, 4).

TASKS

In the analysis, tasks were correlated with the devices used by Triple Connectors and the type of wireless broadband to see if specific tasks were undertaken on particular devices. In this paper the results of generic work-related tasks are analysed. Table 1 below shows the results of correlations between devices and generic work related tasks.2
<table>
<thead>
<tr>
<th>Task</th>
<th>MBB</th>
<th>Mobile Internet (3G)</th>
<th>WiFi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Checking emails</td>
<td>90.9%</td>
<td>75%</td>
<td>22.7%</td>
</tr>
<tr>
<td>Making travel arrangements</td>
<td>63.6%</td>
<td>27.3%</td>
<td>11.4%</td>
</tr>
<tr>
<td>Checking traffic/transport updates</td>
<td>45.5%</td>
<td>38.6%</td>
<td>9.1%</td>
</tr>
<tr>
<td>Reading online newspapers and magazines</td>
<td>65.9%</td>
<td>36.4%</td>
<td>15.9%</td>
</tr>
<tr>
<td>Reading blogs</td>
<td>45.5%</td>
<td>18.2%</td>
<td>9.1%</td>
</tr>
<tr>
<td>Posting to my work blog</td>
<td>11.4%</td>
<td>2.3%</td>
<td>2.3%</td>
</tr>
<tr>
<td>Just surfing the web</td>
<td>61.4%</td>
<td>31.8%</td>
<td>15.9%</td>
</tr>
<tr>
<td>Instant messaging or chat</td>
<td>52.3%</td>
<td>27.3%</td>
<td>11.4%</td>
</tr>
</tbody>
</table>

Table 1 – Triple Connectors correlations between devices and generic work related tasks

Triple Connectors perform the same tasks across all devices and all forms of wireless broadband. The tasks most often performed by Triple Connectors across all the Internet connections and device combinations were: ‘checking emails’, ‘checking weather updates’, ‘online banking’, and ‘reading local news’. This differs from the other Connector groups. (See Tables 2 and 3 below). In Table 2 and 3 are listed the top three tasks undertaken by the Connector group. It is interesting to note that while the group of iPad users among the respondents was very small, their preferred tasks were minimal. This may have been more a reflection of the limited iPad apps available around launch time. At this early stage in the adoption process this user group still preferred their phone for reading the news.

The Single Connectors performed different tasks depending on the type of wireless broadband connection.
### Table 2 – Single Connectors tasks

The Twin Connectors perform completely different tasks depending on the form of connection and device.

<table>
<thead>
<tr>
<th>C1 SINGLE CONNECTORS</th>
<th>Tasks</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile Broadband</td>
<td>Online Banking</td>
<td>91.7</td>
</tr>
<tr>
<td></td>
<td>Paying bills</td>
<td>91.7</td>
</tr>
<tr>
<td></td>
<td>Making travel arrangements</td>
<td>66.7</td>
</tr>
<tr>
<td>Mobile Internet</td>
<td>Checking emails</td>
<td>73.1</td>
</tr>
<tr>
<td></td>
<td>Weather updates</td>
<td>69.2</td>
</tr>
<tr>
<td></td>
<td>Reading local news</td>
<td>50</td>
</tr>
<tr>
<td>WiFi on mobile phone</td>
<td>Checking emails</td>
<td>38.5</td>
</tr>
<tr>
<td></td>
<td>Reading online newspapers and magazines</td>
<td>30.8</td>
</tr>
<tr>
<td></td>
<td>Reading local news</td>
<td>23.1</td>
</tr>
<tr>
<td>WiFi on laptop or netbook</td>
<td>Checking Face book</td>
<td>84.6</td>
</tr>
<tr>
<td></td>
<td>Just surfing the web</td>
<td>76.9</td>
</tr>
<tr>
<td></td>
<td>Reading blogs</td>
<td>69.2</td>
</tr>
</tbody>
</table>

### Table 3 – Twin Connectors tasks

In the workplace, an efficient worker may be one who uses multiple Internet-enabled devices. The different results from Connector groups suggest that there is room for further differentiation among Mobile Knowledge Workers based upon different access levels of wireless broadband connectivity. Task differentiation according to Internet connection and device may impede productivity for Single and Twin Connectors, whereas these results indicate that Triple Connectors may prove to be more flexible and productive mobile workers as they consistently perform a full range of tasks irrespective of device or connection type.

<table>
<thead>
<tr>
<th>C2 TWIN CONNECTORS</th>
<th>Tasks</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>MB + WF Using MB</td>
<td>Weather updates</td>
<td>77.3</td>
</tr>
<tr>
<td></td>
<td>Made travel arrangements</td>
<td>77.3</td>
</tr>
<tr>
<td></td>
<td>Read local news</td>
<td>68.2</td>
</tr>
<tr>
<td>MB + WF Using WF on phone</td>
<td>Checking emails</td>
<td>31.8</td>
</tr>
<tr>
<td></td>
<td>Reading local news</td>
<td>18.2</td>
</tr>
<tr>
<td></td>
<td>Weather updates</td>
<td>13.6</td>
</tr>
<tr>
<td>MI+WF Using MI on phone</td>
<td>Checking emails</td>
<td>78.1</td>
</tr>
<tr>
<td></td>
<td>Reading online newspapers and magazines</td>
<td>62.5</td>
</tr>
<tr>
<td></td>
<td>Reading local news</td>
<td>65.6</td>
</tr>
<tr>
<td>MI+WF Using iPad/Tablet</td>
<td>Reading blogs</td>
<td>12.5</td>
</tr>
<tr>
<td></td>
<td>Checking Facebook</td>
<td>12.5</td>
</tr>
<tr>
<td>MI+WF Using WF on phone</td>
<td>Checking emails</td>
<td>12.5</td>
</tr>
<tr>
<td></td>
<td>Checking Facebook</td>
<td>12.5</td>
</tr>
</tbody>
</table>
Encouraging Single and Twin Connector mobile workers to use multiple forms of Internet connectivity may improve productivity.

Tasks completed by most Triple Connectors were in relation to communication, such as ‘checking emails’, whereas those in relation to content creation such as ‘posting to my work blog’ were rated lowly, suggesting that Triple Connectors are great communicators but are less likely to be creating content. This was echoed in the general statements made by all respondents. Triple Connectors responded highly to having a social networking site (81.8%) but were less likely to post content such as videos online (54.4%). ACMA reports that communication-related activities – that is email, instant messaging and VoIP – are the dominant activities conducted by Australian end-users on their mobile phones and computers (ACMA 2010a, 15).

LOCATIONS

Mobile Knowledge Workers such as the Triple Connectors are likely to conduct work in a range of locations. Respondents were asked what devices and connection types they used in various locations. The results show that Triple Connectors clearly align location, device, and type of broadband more than they correlate task, device and type of broadband, indicating that for Triple Connectors the location can dictate the type of connection and device used, while they consistently perform a wide range of tasks irrespective of the device and type of broadband. This suggests that Triple Connectors will select their device depending on location rather than task, whereas the other connectors will select their device depending on the task.

<table>
<thead>
<tr>
<th>Type of broadband</th>
<th>MBB</th>
<th>Mobile Internet (3G)</th>
<th>WiFi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location Device</td>
<td>Laptop</td>
<td>Phone</td>
<td>iPad/Tablet</td>
</tr>
<tr>
<td>At a place of study</td>
<td>38.6%</td>
<td>25%</td>
<td>13.6%</td>
</tr>
<tr>
<td>In the workplace</td>
<td>20.5%</td>
<td>34.1%</td>
<td>13.6%</td>
</tr>
<tr>
<td>At work when away from my desk</td>
<td>29.5%</td>
<td>59.1%</td>
<td>15.9%</td>
</tr>
<tr>
<td>Business travel when away from home</td>
<td>59.1%</td>
<td>54.5%</td>
<td>20.5%</td>
</tr>
<tr>
<td>When travelling and WiFi connection is not available</td>
<td>59.1%</td>
<td>61.4%</td>
<td>20.5%</td>
</tr>
<tr>
<td>In the car travelling between work appointments</td>
<td>18.2%</td>
<td>43.2%</td>
<td>11.4%</td>
</tr>
<tr>
<td>At the airport</td>
<td>54.5%</td>
<td>NA</td>
<td>18.2%</td>
</tr>
<tr>
<td>At a conference/meeting</td>
<td>59.1%</td>
<td>45.5%</td>
<td>15.9%</td>
</tr>
</tbody>
</table>

Table 4 - Work related locations used by Triple Connectors by wireless connection and device

IN THE WORKPLACE

An unexpected result was the high use of 3G mobile broadband in the workplace. The combination of laptops and Mobile Broadband along with mobile phones and Mobile Internet use in the workplace was unexpected because WiFi is commonly available in most workplaces. Using WiFi in the workplace would also be at no cost to the end user, suggesting perhaps that for these two segments their Internet connections (Mobile Broadband and Mobile Internet) are paid for by their employers. Yet when data is analysed according to who pays for
the forms of Internet connection, this is not the case. As can be seen in Figure 2, the majority of Triple Connector respondents pay for their own wireless broadband.

![Figure 2 – Payment for wireless broadband](image)

Self-payment for wireless broadband is reflected across all the Connector categories. In the majority of cases the individual employee pays for their wireless broadband, not their employer. It is interesting to note that the majority of employees prefer to use their personally-paid wireless connection instead of the free WiFi supplied in the workplace. There could be a variety of reasons as to why end-users prefer to use their personal data plan and not the free WiFi in their workplace. One possible explanation is that some company IT policies restrict access to organisational Internet connections for non-company issued devices (Howarth 2011). A second relates to the digital media literacy level of the end-user. The end-user may prefer to use their personal connection rather than changing to the workplace WiFi connection because it is not a familiar, straightforward or easy process. The diversity of devices and forms of connection (wireless, fixed and mobile), along with the burgeoning numbers of communication applications such as social networking, and telephony applications such as Skype all place a greater emphasis on the end-user keeping up to date with how to use technology. Digital media literacy identifies the ‘participation gap’ among users (ACMA 2009, 2).

**MAKING TRAVEL TIME PRODUCTIVE**

As shown in Table 4, when travelling for business, rates for all levels of wireless broadband increase for Triple Connectors. An always-on mindset and greater access to mobile computing and broadband means that since the telecommuter revolution of the 1990s people work in locations other than at home or at the office. Wireless broadband means that Triple Connectors are always available to work, even while travelling (Bergman and Gustafson 2008). Whether it is short trips during everyday work life or longer business trips, people are working during what may have once been viewed as ‘unproductive’ periods such as in taxis, at airports (Breure and van Meel 2003; Julsrud 2005), at cafes (Julsrud 2005) in conferences and meetings, and in cars (Eost and Flyte 1998). Creating more productive time enables the mobile worker to reduce the amount of work brought home.

Mobile technologies such as the mobile phone are often viewed as responsible for the increase in an unbalanced work/life balance (Townsend and Batchelor 2008). Bergman and Gustafson (2008) reported in a study of three organisations that ‘frequent travelers were more likely than other employees to work overtime, to work unregulated hours, and to bring work home.’
Their findings are consistent with findings by Madden and Jones (2008, iv), who state that ‘those who are most tethered to work are more likely to say that their gadgets and connectivity have increased demands that they work more hours’ and they experience an increased level of ‘availability’ (Julsrud 2005, 96). The ubiquitous presence of the smartphone and its ability to support multiple tasks such as telephony, calendar, computing, and Internet connectivity increases the potential for work-related disruptions during personal time. The smartphone enables employees to easily bring work home and to take work away on holiday (Wajcman et. al 2010). The trend towards small portable computing devices such as the smartphone and tablets and away from larger computers will increase the possibility of the blurring between personal and work boundaries.

Boundaries are not always blurred in favour of work (Townsend and Batchelor 2008). Boundary management when away from work premises is essential. There are fewer symbolic boundaries to assist in time management, which can in turn make focusing on work more difficult (Ward 2006). Disruptions from family and friends during work hours are on the increase since mobile telephony, email and social networks became part of everyday communication practice and not simply work practice (Townsend and Batchelor 2008). Smart-phones in particular enable direct personal communication as they bypass company software applications by using personal connectivity.

**PRODUCTIVE SPACES FOR MOBILE WORKERS**

As a result of greater mobility for knowledge workers, location independent ways of working are emerging. The types of spaces needed by mobile knowledge workers may be different from that of their stationary colleagues. Mobile workers no longer conduct work in a single fixed location, but rather in multiple workspaces (Julsrud 2005). Mobility may encourage a more self-contained ‘mobile office’ approach, with documents stored electronically on hard-drives and the cloud. Computing needs can be met through laptops and tablets, communication needs through teleconferencing apps on smart-phones and the Internet. A constant fixed geographical space from which to work is no longer required. Instead the focus for employers in the immediate future should be on the spaces that are currently being used by mobile knowledge workers, to better understand their current and future needs.

**AT WORK**

According to Venezia (2007), self-contained mobile knowledge workers showed less desire for a fixed working space at the office and a greater need for collaborative spaces. Venezia (2007) identified thirteen different types of spaces desired by mobile workers in the workplace, only one of which was an ‘enclosed quiet room’. The purpose of the other rooms was collaboration and social space (Venezia 2007, 5). The desire for an increased number of collaborative spaces and ‘hot desks’ within the workplace reflects the changing needs of workers as a result of wireless broadband. In Sydney the Commonwealth Bank of Australia (CBA) recently launched its’ new Commonwealth Bank Place, a 56,000 square metre office of ‘flexible workspace’ featuring WiFi connectivity, hot desks, and home zones (Cummins 2011).

It is possible that like the mobile workers in Venezia’s study, Triple Connectors make the best use of previously unproductive time to conduct work, and see returning to the workplace as a space for meetings with internal staff and clients rather than as a place to undertake ‘work’. Face-to-face meetings are extremely important even in an age of video calling. Aguilera contends that face-to-face meetings are decided upon for reasons irrespective of the type of information (Aguilera 2008, 1111). Aguilera suggests face-to-face meetings are significant because in meeting with external clients they signal interest that is invaluable, and they are also important because they assist in building ‘mutual trust’ (Aguilera 2008). Hence the desire by respondents in Venezia’s study for rooms that focused on collaboration and social interaction.

Mobile Knowledge Workers need not only the opportunity for physical collaborative spaces but also virtual ones. The aim of the introduction of social networking tools into organisations
such as the Australian Bureau of Statistics (ABS) is to foster greater communication between colleagues, and to increase employee opportunities for participation (Hutchinson 2010). The ABS has introduced blogs and wikis as part of their suite of Web 2.0 tools which enable increased engagement by employees by allowing tags, comments and even videologs as a way of disseminating information accessible to all employees mobile and stationary (Hutchinson 2010). Participatory social media at this level within an organisation increases collaborative opportunities between stationary and mobile workers.

IN TRANSIT

Mobile Knowledge Workers often have specific requirements when they travel, which may seem contradictory. In airports the main concern for business travelers with no access to flight lounges is often privacy (Breure and van Meel 2003). The inability to work in a space where no one can read your screen impacts hugely on the work being conducted while waiting for transport. Tackling other basics, such as power sources and refreshments, can impact on constructive work time (Breure and van Meel 2003).

Paradoxically we find many mobile knowledge workers happily using their laptops in cafes and restaurants, places that can be noisy and also lack privacy. Several factors may account for cafes being preferred locations for work. Some Australian chain restaurants and coffee shops, as well as independents, offer free Internet access with food or beverage purchases McDonalds 2011; Starbucks 2011). Another key attraction is table service. Computer users can work steadily away while their meal is being prepared and then delivered to their table removing the need to pack and unpack their belongings each time they wish to order refreshments (Breure and van Meel 2003).

A third factor is ‘remote socialising’ (Ling and Thrane 2002). While mobile knowledge workers may be able to conduct work at their office, in some instances they may prefer a physical separation from their work place, but at the same time wish to be social. Cafes and public spaces such as a library provide physical co-presence without the need to interact. Wireless broadband enables contact and collaboration to occur with physically remote colleagues using email or social networking tools. For mobile knowledge workers without internal organisationally-based collaborative tools, it may be possible to collaborate with colleagues and contacts using a wide range of smart phone apps such as LinkedIn, FaceTime, Skype or location aware apps such as Mingler.

The current and future challenge for organisations is to assist and support their mobile workers with appropriate tools to conduct work (Drake et al 2010). As discussed earlier there are various levels of employees within the category of mobile knowledge worker, all of whom would have different needs in relation to tools and IT support. The IT requirements of mobile knowledge workers need to be balanced carefully with corporate policies.

CONCLUSION AND FUTURE RESEARCH

This study recognises the flexibility of connection offered through wireless broadband services and how it is impacting on the location and practice of work. Wireless connections offer the employee the flexibility of connecting to ‘the office’ and their colleagues near and far all the while situated in a different space at work, in a different branch office, at an airport, coffee shop, library, or other place that suits that day’s location needs.

Further research needs to be conducted into a contemporary profile of the ‘mobile worker’ from the perspective offered in this paper of the Triple Connector. Extant research about mobile workers does not differentiate between forms of connection, nor between devices. There may be a correlation between the different mobile knowledge workers and the type of connection they use in their everyday work tasks. As outlined in this paper different connector groups use different types of connectivity and devices for particular tasks. This differentiation may impede work efficiency and needs further investigation. The results also showed that irrespective of location, Triple Connectors are consistently using wireless broadband to perform work from a variety of in-transit locations, irrespective of device. By performing
tasks during periods of transit, mobile workers make the best use of previously unproductive work time. This indicates that of all the connector groups, Triple Connectors are likely to be the most productive mobile workers and have a disciplined approach to work-life balance.

More specific data collection in relation to the types of devices, tasks, and applications and services used by Triple Connectors should form part of the next round of research. An elite group of mobile knowledge workers may exist who travel regularly, rarely visit their workplace, and require different devices that are cross platform and internationally compatible. This elite group may also take advantage of collaborative, social networking and cloud-based tools and services as part of their everyday life, along with other yet to be uncovered communication tools. Knowledge of this elite group may assist in informing us about the future of mobile work, workplaces and spaces, and the needs of the broader range of mobile workers in their everyday lives.

REFERENCES


ACMA 2008. The Australian VoIP Market. The supply and take-up of VoIP in Australia. Melbourne, Australian Communications and Media Authority.


Mackay, M. 2010. Australian Mobile Phone Lifestyle Index. 6th Edition - Special Topic: Mobile Phone Applications. AIMIA Mobile Phone Lifestyle Index, AIMIA.


ENDNOTES

1. Total combined figures of VoIP (ISP) and VoIP using a web-based branded service such as Skype. Single Connectors – WiFi are the only group not to use ISP provided VoIP services hence their low take-up percentage.

2. The complete list of questionnaire responses in relation to tasks included checking emails, online banking, paying bills, making travel arrangements, checking weather updates, checking traffic/transport updates, reading local news, checking sports scores/updates, downloading music, online shopping, managing my photo collection, reading online newspapers and magazines, reading blogs, posting to my personal blog, posting to my work blog, watching television catch up episodes, watching music videos, just surfing the web, porn, in car navigation, skyping family and friends, checking Facebook, instant messaging or chat, gambling, GPS tracking of their children’s mobile phones, and playing social games through Facebook.

3. 54.5% of Triple Connectors use an Internet enabled smart phone or iPhone (45.5%). A small percentage use an iPhone that is not Internet enabled (2.3%).

4. The iPad was launched at the time of the online questionnaire. The results can only be indicative as only 25% of Triple Connectors used an iPad.

5. The response option was ‘checking emails’. There was no response option for the writing or sending of emails.

6. The list of spaces included: shared common areas, enclosed “quiet” rooms, video conference rooms, war rooms, informal lounge areas, café, team space in open area, shared equipment/service spaces, learning/training spaces, break rooms, small meeting rooms, conference rooms.
TELEVISION’S NEWCOMERS: NETFLIX, APPLE, GOOGLE AND FACEBOOK

Trevor Barr

This paper essentially deals with innovation related to Internet Television, not Internet Protocol Television (IPTV), which is so widely seen as a major new application for NBN Co. It constructs four business models of Internet television related to the recent innovation offered by four American based corporations, each of whom is relatively new to television. It offers an analysis of Netflix as the aggregation model, Apple TV as continuing its iPhone walled garden business model but this time for television, Google TV where convergence for television would be free, and also of movies becoming available on Facebook, the progressively more ubiquitous social media site. None of these players are original television content creators. All are highly dependent for content on the established commercial television networks in the USA, whose management face complex dilemmas as to whether it embraces the opportunity to make more programming available to new outlets, but at no risk to their programming rights, or to their lucrative advertising base. The development of Internet television, and how it comes to compete or co-exist with IPTV, may be a broadband game changer, not only in the USA but also eventually for Australia.

INTRODUCTION

A popular genre of media industry conferences in the United States canvasses the possible long-term effects of recent innovations in the television industry. Three of the largest communications corporations in the world, namely Apple, Google and Facebook, have recently entered the United States television markets. However, the boldest challenge to date has come from a newer and much smaller US company, Netflix. Each of the new foursome has a different, but related, business model for television. This paper investigates what each of the foursome offers television viewers, what is known about viewers’ responses, and what evaluation can be made at this early stage of the likely impacts on the established broadcasters.

An important distinction needs to be made at the outset that this paper deals essentially with innovation related to Internet Television, not Internet Protocol Television (IPTV) and essentially service distinctions are made here. With Internet TV (Apple TV, Google TV, Facebook movies) the consumer pays for the content package separately, and in addition to, the broadband access package. Therefore the consumer pays Apple, for instance, for the movies, but possibly Big Pond for the broadband service. There is no guarantee of the quality of service. The content provider may use a VPN (Virtual Private Network) to deliver the content, but all that means is securing the content from copying, or eavesdropping, or recording, as best they can. So it is delivered over any Internet Service (ISP) providers’ network, but encrypted and decrypted. However, with IPTV (Foxtel on T-Box, or Fetch from iiNet) the consumer pays the Internet Service provider (ISP) for both the content package and the broadband delivery package. This allows the ISP to "guarantee" some quality of service by putting in place the necessary infrastructure and Content Delivery Network (CDN) to ensure that the content is coming from the nearest possible server to the consumer’s premise and over their own networks.
To date, the debates about possible new services for Australia’s National Broadband Network (NBN) have largely focussed on IPTV, and its likely new associated players, whose new investment is important to the long term commercial success of NBN Co. IPTV services could be made available as the video component of ‘triple play’ services – voice, internet and video services- or as managed single service offerings by a content supplier, delivered by one or more Internet service broadband providers. The question that arises is whether new developments in Internet television are likely to pose a possible threat, or an opportunity, to IPTV services in the context of the roll out of the NBN.

In 2005 a consultant futurist, Mark Pesce, predicted draconian changes would result from the long term effects of the peer-to-peer file sharing technology, Bit Torrent, and lead to the death of TV as we have known it. He argued in his provocatively titled paper ‘Piracy Is Good: How Battleship Galactica Killed Broadcast TV’:

October 18th 2004 is the day TV died. That evening British satellite broadcaster Sky One – part of News Corp’s BSky B satellite broadcasting service – ran the premier episode of the re-visioned 1970s camp classic Battleship Galactica (as an episode titled ‘33’)…A few hours after the airing on SkyOne, ‘33’ was available for Internet download. From its première, Battleship Galactica has been the most popular program ever to air on the Sci Fi Channel. Piracy made it possible for word of mouth to spread about Battleship Galactica (Pesce 2005).

Posterity may eventually be kind to Pesce regarding his overall prediction about the bleak future of broadcast television, but this paper argues that the change processes are likely to be different from what he suggested in 2005. New services made possible by Internet, broadband and mobile networks are facilitating widespread changes to broadcasting as we have long known it. No longer does a relatively easy transition to a new order seem possible: attention is now centred on threats to destabilise long-standing institutions.

This paper constructs four business models related to global innovation begun by four American based corporations, each of which is relatively new to television: first Netflix as the aggregation model; second Apple TV as walled garden; third Google TV: convergence is free; and fourth Facebook where social media is ubiquitous

**NETFLIX: THE AGGREGATION MODEL**

Reed Hastings, born Boston, Massachusetts 1980, one time teacher of mathematics in Swaziland during the mid 1980s, co-founded Netflix in 1998, as one of the few survivors of the dot.com crash of the 1990s. In 2003 Netflix patented a hard drive that could download movies, but it cost consumers $300 to install, and it generally took up to eight hours to download a two-hour film because of the lack of sufficient network capacity. So the company decided instead to create a mail order business, and by1998 this became the largest online DVD mail rental service in the USA. Then in 2007 Netflix launched a new service streaming movies to users’ computers, but only for users in the USA. Late in 2010, the company began its ‘watch instantly’ streaming content service essentially to be delivered to PCs, but now with the added prospect of delivery to set top boxes for television as well. Netflix announced the new service plan (again only for Americans) late in November 2010:

We are now offering a new $ 7.99 a month plan which lets you watch unlimited TV episodes and movies streamed to your computer or TV… The new plan, which does not include DVDs, is a great option for the increasing the number of members who only want to watch instantly. (Becker 2010)

The ‘unlimited episode and movie offer’ is actually an exaggeration because rights agreements inevitably constrain what Netflix can offer its customers. An examination of the Netflix one-month-free trial site shows that its content strength is based on the rights it holds to movie titles, such as those from Paramount Pictures, MGM, 20th Century Fox, Sony Pictures, and Time Warner – all big movie studios, but restricted to back-list movies. Hence Netflix is essentially an impressively successful movie streaming organisation that has built a
clear market advantage over its main streaming competitor Hulu, another back-list organisation offering limited broadcast television content, but again to USA customers only.

Netflix offers the promise of multi-platform ready access – sometimes referred to as ‘hybridity’ – by promising that subscribers can:

a) ‘Watch instantly’ on a computer – including a Mac
b) Connect devices such as Wii, PS3 and Xbox 360 to a television set.
c) ‘Watch instantly’ on iPad and iPhone (Netflix 2011)

However, Netflix customers point out that only a few subscribers in the USA ‘have a broadband speed capable of giving them Blu-ray quality or often only DVD quality’ (Taub 2010), and that the quality of the vision often varies according to the device used irrespective of the speed of connection. This same analyst estimated that only 8% of Netflix customers in late 2010 viewed the content exclusively on their television sets. But substantial investments in high capacity broadband networks will surely act as a catalyst for more services being delivered directly to television sets in the future.

One of the problems in making any assessment as to the level of likely long term effects of Netflix is that key corporate financial, advertising, and audience data related to the take up of Netflix to date on key stakeholders are not generally publicly available. Private consulting companies offer evaluative market data, but their reports are only available to clients who invariably pay a large financial cost for such reports. Occasionally though, the work of audience measurement companies about users’ viewing habits is reported in the mainstream media. One such estimate by the company Rentrak OnDemand Essentials, is that USA cable video-on-demand network television entertainment significantly increased by 35% between 2009 and 2010 (Miller 2011). Also, some network traffic estimates are similarly available, such as that reported by Sandvine that traffic levels showed growth such that by October 2010 Netflix accounted for 20% of the downstream Internet traffic in the United States between 8.00pm and 10.00 am – remarkable indeed if accurate (The Online Reporter 2010).

Investment banker Jonathon Knee has suggested that most observers expect Netflix to grow its subscriber base from its current 23 million (USA only) to 30 million by the end of 2011, making it easily the largest video service in the country. He explains why he sees this as somewhat unnerving:

> Netflix is primarily in the business of aggregating entertainment content created by other companies and selling access to it as a subscription service to consumers. In a media culture committed to the proposition that ‘content is king’ the robust success of a mere distributor is something incomprehensible and frankly, a little unnerving, especially while those responsible for the creative lifeblood that flows through its veins struggle for profitability (Knee 2011).

There is already some evidence of cannibalisation of cable/ pay television networks in the USA. Some 37% of Netflix subscribers between the ages of 25 and 34 recently stated that they choose Netflix instead of a pay television service (Cerra and James 2011). Also it has emerged in major web cam discussion forums of astute video production editors the notion of ‘cord cutters’ – people cancelling, so cutting the cord of their pay cable boxes, in favour of Netflix TV viewing via iPad (Cohen 2011). Clearly the Netflix business success poses raises major issues for the established television content providers, and holders of rights, but it is difficult to assess their position because little impact data is available about revenue effects. In keeping with the long term managerial practices of commercial network television, their executives rarely engage publicly in industry debates.

Press reports at the time of writing suggest that Netflix is now negotiating with Internet service providers in Australia with a view ‘to begin operations in Australia in the next 12 to 18 months’ (Foo 2011).
APPLE TV: WALLED GARDEN

Views about Apple as a corporation and its strategies tend to be polarised. One school of thought is that Apple has designed its applications for users as a ‘walled garden’ or ‘trespassers will be prosecuted’ control model pitched against other competitors, and that this is anathema to the more ‘commendable’ open source movement.

A contributor to Wired (Vogelstein 2011) argues this case in the context of the iPhone:

   Apple exerts complete control over the iPhone. It builds the the hardware. It designs the operating system. It runs the marketing campaigns. And it curates and polices the Apple Store, refusing programs it deems potentially offensive or a threat to its own business.

The contrary overview of Apple as a corporation is one of deserved rewards for an entrepreneurial group that risked its capital, and backed its own people and their concepts. Users choose Apple in droves, so the argument goes, because it has the most appealing services, and users are free to go to Nokia or Android, or elsewhere, for a different phone, if they wish. Moreover Apple chooses to reinvest much of its handsome profit in other modes of innovation.

So how might these two schools of thought be applied to Apple’s latest offering, Apple TV? Apple’s first attempt to capture the television movie market was announced in September 2006 when it offered an iTunes compatible streaming media device intended to revolutionise how Americans viewed television. This coincided with Apple’s extraordinary success in launching its iPhone, and simultaneous change of corporate name to signify its ambitious diversification – Apple Computer became Apple Inc. However consumers widely rejected Apple’s first foray into the American on-line home television market in the USA. Users highlighted two main problems, namely that the price of the box was too high, and that ‘user settings for streaming or copying from iTunes are not stored’ (Critics 2008). Subsequently the first launch of the service was discontinued.

Apple’s second generation digital TV receiver (this time with a mere 256 MB storage) was released to the US market in September 2010. The company’s rhetoric on their site made everything seem so easy:

   Just plug the power cord into the wall and connect Apple TV to your widescreen TV using an HDMI cable…Apple TV (also) gives you access to some of your favourite Internet content ..(and) with Apple TV, every megapixel of every photo looks amazing. Big, bold and in glorious HD. It’s the treatment your digital life deserves. (http://www.apple.com/au/appletv/)

This version of Apple TV is the movie equivalent of the iTunes music store, where users can access movies through iTunes at one third of the price of the first version of Apple TV. Consumers are now able to rent movies and TV shows, and also stream audio and video podcasts. Version Two also allows access other content from Netflix, YouTube, and Flickr. Apple TV is inherently attractive in terms of the overall content by also allowing consumers to use an HDTV set to view photos, play music, and watch video that originate from limited Internet services or a local network. But its centrepiece service was always offering movies on-line to homes.

The new $US 99 set top box (but about $130 in Australia) has the simple elegance of what has become the trade mark Apple design, and is a quarter the size of its predecessor. However consumers must buy a separate cable to connect to the TV’s HD port, generally at an additional $60 each. The rental system only works one way in that users can rent TV shows from a computer, which can then be streamed over Apple TV, but recorded TV cannot be played on a computer. This is in contrast to cable TV (such as Foxtel), where a subscriber can record a movie screened on their television set on a DVD, and then re-play it on a computer. Apple TV consumers are also able to stream audio and video podcasts.
So why did Apple make the move into the television field? Apple CEO Steve Jobs explained that originally the on-line movie players had failed in their initial attempts to bring video from the home computer to the living room due to a failure to understand what consumers wanted. At the time of the launch of Version 2 he said:

No one has succeeded yet. We tried with Apple TV. Apple TV was designed to be an accessory for iTunes and your computer (version One). It was not what people wanted. We learned what people wanted was movies, movies and movies. (Edwards 2008)

So Apple created an online movie rental service, originally for USA viewers only, which included films from most of the major studios – Disney, Fox Touchstone, Miramax, MGM, Lions Gate, Paramount, New Line, Warner, Universal, and Sony. Films could also be watched from other platforms of the users’ choice – Macs, PCs, iPods, and the iPhone – more hybridity. Renters are allowed 30 days to download and view. The movies available are not merely B grade re-cycled product. Within one month of the February 2011 Academy Awards presentations, Apple TV was offering two of the nominated best picture films, The Social Network and Black Swan. Ted Nelson (personal interview, Melbourne, April 2011), founding designer of Project Xanada, attributed the overall success of Apple Inc to Steve Jobs, whom he described as ‘a talented former movie director who understands the soul of the users.’

Others would argue that Apple TV again guarantees the company considerable control over the content on offer by using its proprietary set top box. Apple TV is compatible with the files that only play iTunes, and cannot facilitate downloads from other videos. Viewers can, of course, also use their Apple remote to stream content from Apple’s associated products – iPhone, iPad or iPod Touch. But an Apple TV user cannot play back from a USB stick, or stream directly from their computer. All the result of careful product design so this is apparently another manifestation of the Apple walled garden principle.

GOOGLE TV: CONVERGENCE IS FREE

At the annual Consumer Electronics Show, held in Las Vegas in January 2011, the principal focus was on ‘web friendly TV’ and especially on those manufacturers who were not merely launching yet another separate set top box to access the Internet from television, but on new models that actually had Internet capability built into the television set itself. The associated conference discussions centred on the ‘hot button’ issues related to multiple predictions about the forthcoming battle between Apple TV and Google TV.

Earlier, on May 20, 2010 Google had announced plans to introduce Google TV on its Official Google blog (2010) claiming they were offering something that the television lacks – the web:

What if we helped people experience the best of TV and the best of the web in one seamless experience? Imagine turning on the TV and getting all the channels and shows you normally watch and all of-the websites you browse all day including your favorite video, music and photo sites. We’re excited to announce that we’ve done just that.

Well not quite. At this stage Google TV is basically an operating system that has emerged from collaboration between Google and Intel, whose Atom's chips power the system. Significantly though there is not merely one Google set top box comparable to the Apple proprietary business model. Instead Google consumers can make a choice between a set top box connected to an existing television manufactured by Logitech, or a new 46inch Sony television set that has Google search functions built in (currently at a cost of about $US 1400). At the time of writing earlier promises from other possible Google TV device manufacturers, notably Toshiba, Samsung, and Vizio, have not been realized, apparently in response to requests from Google to delay releases until some of the current operational issues are resolved.

The Google TV on offer at present is a software platform that can stream video, including material from Netflix and You Tube, and can also stream music and photos. Google TV
customers can search the web, via their browser Chrome system, and also stream content from their computer and from the Internet. There are currently no comparable applications to Apple available, but there are plans to eventually offer Android applications, and consumers will eventually be able to use their iPhone or Android phone to operate Google TV. For Android to become involved raises another dimension of the open v closed systems debates. One commentator of the former school argues:

Android, by contrast (with Apple), prides itself on its lack of control. It gives away its operating system for free to anyone who wants it – though manufacturers must submit their phones if they want to access is apps markets or run optimised versions of Google apps (Vogelstein 2011).

In June 2011, Google in a surprise move, purchased Motorola Mobility and this move was widely seen as a strategic initiative to lock up valuable Motorola patents. An alternative view was that this represents a major shift on Google’s part in signalling a move towards the Apple business model:

Many have theorized about the strategy behind blowing two years of Google's profits on a hardware operation… Does it mean that its Motorola arm will produce beautiful Android phones for which people will pay an arm, a leg and a couple of days of their lives standing in line? There has also emerged the notion that now Google can be like Apple – a company with its own hardware/software infrastructure that welcomes you into its warm bosom and keeps you there with untold varieties of emotional sustenance…Real people don't have to pay to use Google products. They don't have to really enjoy them. They just have to use them, so that Google can make money from the advertising… Apple works the other way around. It looks at real people, how they live, how they try and how they suffer to bring a level of fascination, ease and emotional uplift through gadgets that become friends, toys and lifelines… However, Google fancies itself as having brains bigger than Mars. So why shouldn't we wonder that the company would prefer not to be like Apple, but to be post-Apple? (Matyszczyk 2011).

So what of the users’ views? Google's own publicity promotes the notion that it has created the ultimate in convergence. Jessica Guylm, writing in the Los Angeles Times in August 2010 described some enthusiastic responses from trial users:

Brittany Bohnet and fiancé Dave Morin used to plop in front of the television in their San Francisco living room with a smart phone in one hand and the remote control in the other, computers resting in their laps as they switched their attention from screen to screen. But with Google TV, the young couple can watch the latest episode of AMC'S Mad menus, and check updates from friends on Facebook and on Flickr showing off photos of Morin's marriage proposal – all on one screen.

According to Morin, (partner of Google employee Bolmet who was one of 400 Google staff trialling Google TV), ‘People don't get what the possibilities are' (Guynn 2010).

Views are polarised about how Google TV will fare in the market place, but its launch was followed by an avalanche of criticism. One of the best encapsulated critiques described this initiative as being like ‘an incomplete jumble of good ideas only half realized, an unoptimized box of possibility that suffers under the weight of its own ambition’ – that ‘Google TV is a Trojan Horse with a home theatre PC inside’ (Patel 2010). Further, there is much criticism about several usability issues.

This much is clear: Google TV may be interesting to technophiles, but it's not for average people. On the great timelier of television history, Google TV takes an enormous step in the wrong direction: toward complexity. For starters, it requires a mouse and keyboard. That's right. For your TV. Hope you weren't going for that rustic look in your TV room. So why do you need a keyboard? First, you need it to navigate Chrome, Google's Web browser. Second, you need the keyboard for Google TV's star feature: Search. (Pogue 2010)
Google faces substantial hurdles if this initiative is to succeed. Briefly, end-users will need to be persuaded of the value of developing new habits and therefore to hook into either a new set-top box, or buy a new television set that runs on Google software.

Competition between Apple and Google is set to intensify as they progress their strategies. Steve Jobs, Apple CEO, until recently when speaking at trade shows in the U.S.A has underplayed how he sees the future prospects of Apple TV competing with Google. He has portrayed this venture as ‘a hobby’ in that he and his company colleagues are allegedly fully aware that any serious attempt to tackle head on the established network television would be a herculean task. So this innovation is apparently merely micro-consumers can download an enjoyable movie, courtesy of Apple TV! By contrast, Google TV has devised an ambitious interface that offers not only normal television programming but also the additional option of search functions on the general Web access and web video.

In terms of its future prospects there is the major thorny issue of finding incentives for the big American TV networks – ABC, CBS NBC, and also Fox – to co-operate with Google and risk what they see as their ‘signal control’ without an as yet identified business model for them. There are many doubters of a bright future for Google until resolution of some kind of acceptable long time terms is agreed in co-operation with the big American TV networks. However it is worth remembering that so much of the creation of new wealth in the communications industry in recent years has come from the new non-establishment companies, such as EBay, Amazon, Netflix – but most of all from Google. Google TV is clearly pitched at the $ US 70 billion per annum television advertising market, as well as the $70 per consumer monthly cable and television market in the USA.

This paper has drawn on many of the views of people who are responsible for technology platform innovations. Far fewer argue that such innovation generally appears to have been undertaken in a consumer vacuum without much investigation of usability preferences and social choices that affect end users. Take, for instance, consideration of the possible acceptability levels by consumers and the widely assumed inevitable popularity of common screen convergence with the integration of television viewing with Internet searching. Duane Varan, executive director of Murdoch University's audience research laboratory has doubts about end user responses:

Consumers don't want to replicate a PC screen on the device they use for leanback' leisure time. There are promises and there are pitfalls to Smart TV. The user interface has been hopeless (to date) and the idea that you can use your remote control to navigate a web site and type in a URL doesn't work very well. (Interview May 4 2011)

FACEBOOK: SOCIAL MEDIA IS UBIQUITOUS

And what of the latest newcomer here- Facebook? On March 8, 2011 Warner Brothers starting renting their movie, The Dark Knight, via Facebook (again only in the USA) as the first mode of release. A regular magazine contributor outlined his experience:

To find the flick, I signed into Facebook, opened The Dark Knight movie page, and clicked a link to "Watch The Dark Knight From Warner Brothers." After consenting to the app's prowl of my profile information, I arrived at a considerably more professional-looking movie page. The Dark Knight will set you back 30 credits – Zuckerberg for $3 – which is in line with iTunes ($2.99 for the rental)…Purchasing the flick requires that you enter a zip code (presumably for copyright purposes) and to click a "Pay with Facebook" button, the social network's integrated payment system ..(but) Facebook doesn't support alternative payment methods. Upon consenting to the 30 Zuckers, The Dark Knight began to play. Honestly, the quality is good, comparable to the other services. The sound is a bit low, but that can be remedied with a good set of headphones (Fenton 2011).
Given that Facebook has more than half a billion members internationally, it has the potential to disrupt the other emerging video streaming markets. Might Facebook become the most transformational model of all? Will the big studios progressively shift to Facebook as their primary mode of distribution for first release movies? Or, more speculatively, the longer term wild card may be that wider consumer access to high capacity broadband to American homes, and other homes internationally, could tip the film studios into a fundamental re-think of a distribution model – not based on physical cinema house but towards a prime market of home based on line streaming content.

Clearly though, so many people enjoy the cinema experience itself – the lights go down, the curtain rises, and different modes of human creativity appear on screen for all present to experience. So it may be that the much-discussed complex issues related to content rights are not just the major hurdle to institutional change. Rather, we come back to the vexed social issues that affect the take-up by end users and how generally so little investigative research is undertaken to shed light on these behavioural matters. While it is possible for Facebook to offer so many more first release movies from the big studios, as well as access to movies from Netflix (and also those offered by Amazon and Hulu), this might not be what the Facebook participants actually want. Might they continue to prefer the user-generated content that most likely brought them to the site in the first place, and that the ‘unprofessional’ mobile uploads of the best friend’s party, or a special cooking sharing project, or video of the new grandchild’s birth in hospital be their prime content appeal?

**HOW TRANSFORMATIONAL?**

The greater availability of higher capacity broadband has made possible new services related to the different delivery modes for end users that broadband can support, such as attractive on-line-streaming of video and television programming because of increased network capacity. Changes outlined in this paper should not be seen as evidence that the USA is leading the world in new higher capacity broadband services, because the availability of good broadband is actually very patchy in the USA. Currently in the USA, television is in an early stage of facing changes to the so well entrenched conventional over the air broadcasting model with considerable on-line experimentation coming from several newcomers to this field. And making predictions is fraught with difficulty because the management of established commercial network television in the USA faces complex dilemmas as to what extent they might embrace the opportunity to offer more of their programming to new outlets, but also ensure no risk to their programming rights and to their lucrative advertising base.

And for Australia? Video stores might eventually be under some pressure to survive. Scott Lorson, CEO of Fetch TV, a company that seems set to make its mark with NBN, has suggested that until recently Australians rented more video than people in any other country in the world. But he now points to considerable anecdotal evidence of video store closures in Australia, and has suggested that on-line TV ‘offers the prospect of a user downloading the entire DVDs of a video store’ (Dalgleish 2011). Similarly Turner had suggested earlier that:

> The days of tramping to the video store to find the night's entertainment are past. Now the question is only how long will it be until walking to the mailbox to get a DVD is considered antiquarian. (Turner 2008)

And in the long term too the existing hierarchy of release for film and movies may not be maintained: currently generally first theatrical, then hotels, DVD retail, subscription television within 45 days, then release on commercial over the air television. As well, the prospective new IPTV players, such as Telstra with its T-Box, Foxtel, and Fetch TV, are searching for their place in a changing media landscape.

Australia’s NBN brings with it greater network capacity as a potential catalyst for substantial institutional change to the Australian television industry in the long term. The development of Internet television, and IPTV, and how they come to compete or co-exist, will be worth watching.
REFERENCES


Cerra, A; James, C. 2011. The Shift, second edition, Alcatel Lucent, Sydney


Knee, J. 2011. ‘Why Content Isn’t King’ The Atlantic, July/August.


Taub, E. 2010. ‘Netflix streaming: convenience or quality’ viewed March 16, 2011
http://gadgetwise.blogs.nytimes.com/2010/12/06/netflix-streaming-convenience-or-quality/


TiVo is a digital video recording device that was first introduced into the North American market in 1999. Since then, TiVo has been made available in many countries, including Australia in July 2008.

This paper seeks to examine TiVo in Australia, using the cultural economy of media and communications as its theoretical framework. While related to ‘political economy’, in this paper we position the notion of ‘cultural economy’ as a preferable term on the basis that cultural economy research focuses specifically on how discourse and cultural practice constitute the spaces within which economic action is formatted and framed. This theoretical framework is employed to examine: (1) questions of ownership and control, with primary consideration given to TiVo licensing issues, and corresponding technical alterations to device capabilities that came with this; (2) representational concerns, how TiVo has been marketed, depicted, debated and discussed in the popular and trade presses; and, (3) questions of consumption, by considering, at the end of its first two years in the Australian market, how users have engaged with it thus far.

INTRODUCTION

This paper examines TiVo in Australia. The theoretical framework, which gives structure and direction to the analysis here, is the cultural economy of media and communications – a variation on the more traditional political economy of the media approach. A political economy approach is well-established in the study of traditional media, where it has yielded an abundant and insightful research literature with a critical focus upon the economic interests and the political environment in which technological development and commercialisation shape media development. While related to political economy, in this paper we position the notion of ‘cultural economy’ as a preferable term to more established ideas of ‘political economy’ on the basis that cultural economy research focuses specifically on how ‘discourse and cultural practice constitute the spaces within which economic action is formatted and framed’ (CRESC 2010; see also, du Gay and Pryke 2002a).

In addition to taking account of social and discursive contexts in which economic action proceeds, this perspective is also well equipped to account for the technical contexts or milieus in which media cultures are assembled (Bennett and Healy 2009; Goggin 2009). A cultural economic approach, Goggin (2011, 38) points out, is ‘worth pursuing precisely because of the heightened role that culture plays in contemporary economies’. As Goggin observes, ‘the importance of cultural economy has grown rapidly in the past decade, especially with developments in globalisation, and digital cultures and forms play a significant role in this’ (Goggin 2011, 38). What it offers, then, is ‘a way to bring together central questions about digital technologies and cultures – especially to do with the role of use and the new role consumption and creativity is believed to have in new media’ (Goggin 2011,
Thus, this theoretical framework is employed here to explore the evolving practices of television consumption in Australia. However, rather than attempt to develop a macro or detailed picture of this ongoing and broader terrain, the approach that is adopted here is exploration of a specific case – that concerning the history of TiVo in Australia. The benefit of this approach is that, although TiVo uptake has been modest to date, the practices of these early adopters sheds light on quite specific cultural practices and economies in a way that illuminates much broader industry and consumer shifts. In looking at TiVo then, this article examines:

1. questions of ownership and control, with primary consideration given to TiVo licensing issues, and corresponding technical alterations to device capabilities that came with this;
2. representational concerns, how TiVo has been marketed, depicted, debated and discussed in the popular and trade presses; and,
3. questions of consumption, by considering, at the end of its first two years in the Australian market, how users have engaged with it thus far.

TiVo is both an incorporated company and the name of a proprietary personal video recording (PVR) device that combines a digital video recorder (DVR) with an integrated electronic television program guide (EPG). It updates the television recording functionality of VCR through digital technology. Like a VCR, it can be programmed to record specific shows, but the combination of digital recording with an Internet-connected EPG means a TiVo connects via Internet connection to a TiVo Inc. server to download electronic program guide information and software updates in a proprietary format. This enables users to select programs from the guide, simultaneously play and record, skip ads, or fast forward through recorded material, record a season of a show in advance (Season Pass recordings), and record programs based on metadata criteria using keywords such as an actor’s name (WishList searches).

Prior to examining the deployment, uses and controversies surrounding these TiVo capacities in further detail, however, we provide some contextual background on the digital TV and free-to-air network landscape in Australia as a way of grasping shifting practices of television viewing in this country. This forms a useful backdrop against which we can understand the implications and significance of TiVo in Australia.

DIGITAL TV AND FREE-TO-AIR NETWORKS

In the current digital environment, there are a growing set of technical options for the distribution and viewing of TV content, including cable and pay TV, DVDs, Internet Protocol Television (IPTV) hardware, and Internet Television software offering on-demand TV programs, online file-sharing, and Internet video streaming (Meikle and Young 2008). These technologies not only challenge the dominance of a traditional broadcast regime and the business models of free-to-air networks, but also, as Bruns (2008) argues, undermine the very significance of broadcast television. In comparison to an Internet-based video distribution and transmission model, broadcast TV is a limited medium insofar as it requires the addition of other bits of hardware in order to retain its appeal in a changing cultural economy, and, as we shall see, TiVo has been cast in an important role in achieving this, if not through capturing marketing share itself, then through its capacity as a leading edge technology, to model some of the functionality that threatens the broadcast model. TV, as Bruns writes,

offers no built-in opportunities to request, play on demand, pause, restart, rewind, save, share, or retransmit content, and such possibilities have been retro-engineered into the basic television system only through the development of time- and place-shifting technologies (VCRs, PVRs, personal media players) and the deployment of on-demand and more or less interactive television services (Bruns 2008, 82-83).

Academic literature identifies these changes as a ‘post-broadcast’ regime, which disrupt the linear logics of a TV schedule with new media convergence and customisability – a transition
from network to networked television (Palmer 2006; for detailed discussion, see Bennett and Strange 2010; Tay and Turner 2008; Ross 2008; Kenyon 2007; Olsson and Spigel 2004; Poniewozik 2009). This literature addresses both the political economy of the TV industry, as well as changes to the experience of television for audiences (eg. Barkhuus and Brown 2008; Chorianopoulos and Spinellis 2007). Terry Flew (2005, 2), for example, has noted that Internet TV is ‘an instance of qualitatively “new” media, not so much because it changes the form, but because it changes the means of distribution and storage, and the associated business models, of those media’. In this media ecology, control of content has shifted from a provider ‘push’, to a consumer ‘pull’ model, in that the viewing of content is more customised and personalised. Whilst it is important to acknowledge that television has never been a passive medium, our relationship to the control of TV content is undergoing significant change from one that was relatively ‘lean-back’ to one that is relatively ‘lean-forward’.

Traditionally, free-to-air television has held a significant place in the cultural, economic, and political landscape of Australia. As Jock Given (2003) has noted, broadcast media is ‘something special’ requiring little in investment in terms of literacy or ongoing costs. In Australia, broadcasting was historically free to viewers. The economics of free-to-air TV did not require a dollar payment flowing from viewers to broadcasters, but required an in-kind payment from viewers, in the form of accepting exposure to advertising. This exposure was then on-sold by the broadcasters to the advertiser. This model meant that TV was almost universal in its availability (Kenyon and Wright 2006) as it emerged from the mid-20th century as a national mass medium.

Now, digital technology supports a variety of delivery formats and services, especially through Internet TV and streaming content to viewers, which allow viewers to bypass broadcasters and access content more directly or in more personalised ways (Kenyon and Wright 2006) — whether via authorised or unauthorised sources (such as iTunes and iView, or Hulu and BitTorrent). These services, which cater to individual viewing preferences, challenge a whole range of received or accepted TV norms, such as the aesthetic of ‘liveness’ and the shared experience of viewing (Bourd don 2000; see also, Morley 1986; Spigel 1992; 2001), as well as the TV viewing environment, which is increasingly built around time-shifting technologies (Meikle and Young 2008). Nevertheless, TV histories suggest that the cultural, political and institutional inertia of free-to-air television is considerable, and unlikely to be replaced, although analyses suggest its significance will likely be displaced (Kenyon and Wright 2006; Meikle and Young 2008).

The television industry in Australia is acutely aware of this shifting terrain, as evidenced by moves by ‘many media corporations in Australia and elsewhere [who] have increasingly hedged their bets by diversifying beyond television and investing in a variety of Internet and other digital enterprises’ (Bruns 2008, 93).

Two further sets of responses are discernible. On the one hand, networks have been slow to take-up opportunities and make the transition from analogue to digital TV in Australia – although this has changed in recent times as a result of the work of the Freeview consortium, to be discussed in greater detail below, which aims to provide a consistent and united digital platform to accompany the expansion of digital multi-channels and to compete against alternative digital content delivery. Freeview may only offer limited digital and on-demand capacities, yet appears to be garnering enthusiasm from networks and audiences, with a 25% rise in free-to-air digital television conversion and a 93% awareness of the Freeview brand (ThinkTV 2010a). Typically, free-to-air networks’ past reluctance to invest in digital multi-channels has been attributed to uncertainty about audience fragmentation and advertising revenues, as well as a slow uptake of digital receivers by consumers and the Government’s indecision and delay in setting a date to switch-off the analogue system (Idato 2009; Mann and Bernsteins 2007). On the other hand, networks attempt to maintain some semblance of control of, or determination in, the ways content is distributed, transmitted, and viewed. They seem particularly concerned about the effects of recording and time-shifting of digital television content, especially in ways that enable advertising to be avoided, the impact of streaming and online distribution for traditional models, and the overall place of television in Australian culture (Wright et al. 2007). Clearly the divestment of control over media content
selection and modes of consumption from broadcaster to consumer is recognised as a key feature of the current cultural economy, but it is also seen to be an economic threat to the commercial free-to-air business model. If, for example, advertisements are skipped using a digital video recorder or other service such as TiVo; or, if viewers shift to watching content distributed online, whether through peer-to-peer networks or from online distributors of aggregated content, via Internet TV (Wright et al. 2007; Green 2008), free-to-air loses its source of revenue. In this sense the challenge facing networks and both established and emerging technologies is not purely cultural, but also economic.

Viewers – that is, cultural consumers of domestic media content – are increasingly aware of alternative platforms and offerings; in this regard, it is notable that Australians reportedly have the highest per capita downloading rate for television programs (Pesce 2005, cited in Kenyon and Wright 2006). There is clearly a sense that broadcasters are not providing the options viewers want, with the latter being aware of alternative content and distribution avenues. Evident here are ‘new cultural practices and relationships’ (Goggin 2011, 39) which pose challenges to the ‘kinds of systems – economies – that construct our relationships with, around, and through cultur[al] forms’, such as television. In order to remain relevant, media companies and technologies must respond to shifts in cultural patterns and habits of viewing. The terrain has shifted, and the horizon of consumer possibility has expanded. In this context it is no longer possible to adhere to traditional models. In cultural terms, technologies that mediate the expression of personal agency in relation to media consumption need to be embraced, and need to be seen to be embraced by free-to-air television, yet in economic terms, the performance of this agency can’t be allowed to extend to the consumption (or not) of advertising. This threat to free-to-air television advertising revenues is clearly serious, and follows only a little behind a similar threat that has perhaps fatally undermined the business model of newspapers. The contradictions evident in this situation make for an unstable cultural economy, and compound the instability that flows from fierce competition among alternative hardware platforms, software protocols and delivery modes.

Characterising this complex digital and free-to-air TV environmental milieu, then, are shifting distribution channels, business models, regulatory approaches, television geographies, user expectations, and cultural habits. Within this milieu, it can be argued that TiVo is a critical and exemplary technical actor for mediating the ways TV is being reshaped, but also for illuminating the limits and challenges all technologies face in a convergent environment. The critical difference that TiVo makes to the cultural economy of media consumption is evident in the difference between the affordances of digital personal recording devices and free-to-air television. The affordances of PVRs include time-shifted viewing of free-to-air content, on demand viewing of content from other sources, ad skipping, semi-automated recording, and the deployment of ‘recommender’ algorithms to advise on content. The cultural economics of this may be represented by an equation in which time and the attention of the audience is a relatively scarce resource, in which the content competing for that time and attention is plentiful, and in which decision making about content consumption has devolved from programming managers to consumers. PVRs offer a value proposition in the cultural zeitgeist represented by this equation by offering efficient decision making with respect to the selection and acquisition of content, and offering flexible time options for the consumption of that content.

With this as crucial context to our discussion, we now chart the early development of TiVo in a North American context, before turning to an examination of its place in the Australian market.

**TIVO AND THE US EXPERIENCE: FROM ‘FOUR-LETTER WORD’, TO INDUSTRY LEADER, TO ONE OF MANY**

The TiVo DVR was designed in 1997 by Mike Ramsay and Jim Barton, former Silicon Graphics Inc. executives who were working on a home network device before adapting it into a hard-disk recorder that digitised analogue signals (antenna, cable, or direct broadcast satellite). They founded TiVo Inc. in 1999, and launched the TiVo PVR at the National
Consumer Electronics Show in Las Vegas. At the same show, ReplayTV introduced their rival DVR.

It is worth noting the quite specific home media context that TiVo was entering, which is quite different from what consumers experience (and perhaps expect) today. Back in 1997, broadband was less common, and the idea of streaming video and other media content was still something of a pipedream. Not only were there few if any ‘legitimate’ services for downloaded content, but the pirate networks that did exist struggled to cope with the size of music files, let alone video. In short, then, TiVo held the promise of filling a particular market gap, and was ahead of its competitors in this respect.

Understandably, around the time of their first release in the US, these time-shift technologies were met with a great deal of industry resistance due to their ad-skipping capabilities, and concerns about their impact on broadcaster’s revenues – concerns that were widely reported in the trade and mainstream press. ‘The reaction of the advertising industry was less than hospitable: “[D]VR is fast becoming a four-letter word in some advertising and media circles”’ (Forkan 2000, 18, cited in Carlson 2006). The technologies were exploiting an inherent and perhaps fatal weakness in the free-to-air model. That is, where most businesses seek to meet a demand in the market place (or to create that demand and then meet it), free-to-air is utterly dependent for its revenue on providing a service (advertising) that no end-consumers demand, few consumers desire, and many actively resist. It has been argued that the ad-skipping function that has made TiVo famous threatens the whole economic model of broadcasting itself (Boullier and Huet 2008). Yet, it was ReplayTV’s more radical automatic ad-skip feature that drew more attention and a lawsuit for alleged copyright infringement; ‘The ReplayTV example shows how existing firms were able to stifle developments deemed too radical or threatening’ (Carlson 2006, 109).

TiVo, for its part, was much more circumspect, deciding not to implement automatic ad-skipping, and thus successfully avoided much backlash from the television industry. Instead of seeking an alliance with consumers seeking to avoid advertising, it formed alliances with product manufacturers, and with satellite and cable providers, such as DirecTV, allowing integration with other set-top boxes and with subscription services. These provided a strategic advantage in the early stages of industry development (Chorianopoulos and Spinellis 2007; Yoffie and Slind 2007) and assisted in mass distribution. From there, TiVo’s success owes much to its relationships with networks and advertisers as business partners instead of adversaries. By 1999, TiVo counted NBC, CBS, Discovery, and Comcast, among its major investors (Carlson 2006). While TiVo remains an independent company, Time Warner, DirecTV, Discovery Networks, NBC, and Sony, owned over 40 percent in 2003 (Lieberman 2003, cited in Carlson 2006). As Carlson (2006) notes, TiVo’s economic and industry alliances meant that rather than operating as an external threat to broadcasting regimes, it was to some extent incorporated into them, ‘preventing the technology from moving too quickly in a direction that would severely threaten existing revenues’ (Carlson 2006, 107) – as we show was repeated in the case with Seven Media Group in Australia. For their part, advertisers initially responded to the development and growing popularity of TiVo by trying to ‘TiVo-proof’ their messages, and by resorting to measures such a product placement within TV shows and making shorter or non-standard length commercials (Yoffie and Slind 2007).

In the US, TiVo quickly become a household name, synonymous with (and often a verb for) TV recording: ‘TiVo’ entered the popular lexicon as people spoke of ‘TiVo-ing’ their favourite shows. As a company, TiVo Inc. popularised PVRs, and dominated the PVR market. As a device, TiVo stood out for its simple user interface and for its novel proprietary features. However, in the US, as DVRs have gained steadily in popularity and the number of PVR models have grown, with generic versions offered by satellite and cable companies, the popularity of TiVo has declined, from a high of over 4 million in 2006 to below 3 million in 2009 (Gorman 2008). Thus, TiVo has played a critical role in reshaping television from a linear medium, in which viewers had no choice but to watch whatever programming broadcasters transmitted, to one characterised by intensified time-shifting practices, but its success has also contributed to a digital milieu that challenges its past dominance.
To compensate, and remain relevant, Tom Rogers, President and CEO of TiVo Inc., argues that, in the context of broadband-TV convergence, the TiVo has evolved: it has become a kind of computer, complete with software, and a hard drive (Yoffie and Slind 2007). Thus, with a broadband connection, owners can use it to access a wide array of video content and interactive services. The company has entered into agreements with online companies to provide broadband content. In the US, for example, TiVo now supports streaming rented content via Netflix, purchasing of video via Amazon’s Video on Demand service, and music via online music service Rhapsody (Yoffie and Slind 2007). As Rogers puts it, with TiVo,

We are in multiple businesses. We are a consumer electronics company. We are in the cable/satellite distribution business. We are in the software development business, and we’re in the intellectual property licensing business. We are in the advertising solutions business. We are in the audience research business. And we are pursuing international business. And each one of those has a whole different set of players attached to them. (Tim Rogers Interview in Yoffie and Slind 2007)

In this way, we can see how the TiVo brand has reinvented itself in the US from a maker of DVRs, to something that is much more diversified than this, and which strives to be much more competitive in an era of convergent communications. TiVo has persistently tried to differentiate itself from others in the market, to define itself and its affordances and capacities through advertising, yet this definition has shifted over time. Like the early telephone, which in its first decade was represented as a broadcasting device, a business communications device, an emergency response device, a domestic communications device, and a party-line device before stabilising as a personal communications device (Marvin 1988), so TiVo has had difficulty settling on a stable identity – or, more accurately, redefining itself in relation to shifting socio-technical contexts. In the UK, TiVo initially advertised the ability to ‘pause’ live TV; following poor sales it changed the tag-line to ‘a VCR without tapes’ (Wood and Skrebowski 2004). Later, in the US, it tried to distinguish itself through ad campaigns organised around catchphrases like, ‘I’m not interested in the generic PVR. I want the TiVo experience’ and ‘My TiVo Gets Me’ (Elliot 2007). Launched in 2007, these ad campaigns tried to highlight TiVo’s intelligent design features. Later, TiVo used the motto ‘one remote, one box, one user interface, all content’ (Boullier and Huet 2008), to emphasise broadband content delivery, such as video-on-demand (VoD) services.

What we can see in the US case, is a product, once synonymous with TV recording, and now one of many generic PVR devices and content aggregators, that has had to work harder to stand out (Yao 2010). The US case also highlights the importance of corporate creativity and adaptability within cultural economic systems especially in ‘the creation of economic value’ (Goggin 2011, 38).

THE QUIET REVOLUTION OR BUSINESS AS USUAL? TIVO IN AUSTRALIA

In July 2008, TiVo technology was brought to Australia by Hybrid Television Services (ANZ) Pty Limited. The licence for TiVo products in Australia and New Zealand is held by Hybrid Television Services (hereafter shortened to Hybrid TV), who in turn are owned by the Seven Media Group (Australia) and TVNZ (New Zealand).

To preface this tale, it is important to recognise that the decade that has elapsed between TiVo’s US introduction has meant that, upon its Australian arrival, TiVo met a very different media market than it did when it was launched in the US in 1997. As we shall see below, in coming here, TiVo entered a more mature home digital television market with users having a number of options for timeshifting – options that were not available to US consumers in the late 1990s. In short, in Australia, TiVo has had to contend and compete with a wider existing set of industry competitors.

Before its arrival in Australia, a small community of enthusiasts imported TiVo DVRs, and, hacking the Linux open source operating system, reverse-engineered the TiVo hardware and data protocols of the electronic program guides. This was unofficially tolerated at the time by TiVo Inc. (Mann and Bernsteins 2007; Toomey et al. 2004), until its official release. Since its
release, the series 3 version of the TiVo DVR available in Australia has had digital rights management (DRM) software installed with all data on the hard disk encrypted to prevent any copyright infringements.

Prior to its impending Australian release, there was uncertainty in the popular media about what functionality and service models it would include, especially around the ad-skipping capability and subscription fees. It is understood that talks between Seven Media Group and the US-based TiVo Inc. broke down when the parent company requested the device be sold as part of a monthly subscription package, just like Foxtel. Seven rejected this, claiming that the fewer than 20 channels (including HD versions) offered by free-to-air TV wouldn’t be able to compete with Foxtel’s 100+ pay TV channels (and iQ box). A compromise was reached, with Seven agreeing to pay TiVo Inc. a royalty for each TiVo box sold (Moses 2008). Thus, without the subscription component, TiVo’s Australian revenue model is based on sales of the box (retailing initially for $699), plus the add-on of its VoD service.

The device itself was launched in Australia in July 2008 by David Leckie, the Chief Executive Officer of Seven Media Group, and Tom Rogers, President and CEO of TiVo Inc. to much hype. Expressly linking free-to-air broadcasting with the newly emerging cultural economy of digital media consumption, Leckie declared that, ‘TiVo’s arrival in Australia further strengthens free-to-air television in Australia … it’s about us meeting new consumer demands for more control, more services and more involvement in the television experience’ and that ‘TiVo will play a key role in the future of free-to-air television in Australia’ by ‘introducing the technology and the broader multi-channel platform that will redefine television in this country’ (Seven Media Group 2008).

Primarily, however, it was launched in Australia with only basic DVR functionality (Neiger 2008). The home networking functionality and the ability to transfer and load recorded shows to a portable device were absent at launch, as were broadband and VoD services afforded by the TiVo’s Internet connection, such as movie and music download stores. In short, it was launched as a smart PVR with the promise of Internet and networked services to come. In December 2009, Hybrid TV launched its proprietary content and service platform, CASPA On-Demand; on-demand movies were launched in April 2009.

In general, the roll-out of TiVo in this country has encountered far less controversy than in the US, but also far less enthusiasm. Aware of the US history of the device, and in order to allay many of the content industry concerns, and given their own free-to-air television and advertising interests, rather than cannibalise its revenue by supporting a product that allowed people to skip ads, many key features present in the US TiVo were disabled by Hybrid TV and their owners. The device is allied with the interests of free-to-air broadcasters, and with the interpolation of the consumer as a consumer of free-to-air content, including advertising, and is not allied with the interests of consumer control over content consumption, inclusive of advertising. Consumption is empowered by the device, but only where that does not cut across the interests of the broadcaster.

**TIVO AND FREEVIEW IN AUSTRALIA**

In the absence of regulatory intervention to stop the sale of time-shift viewing technologies or to support DRM systems (Kenyon and Wright 2006), broadcasters in Australia have pursued alternative avenues. These de facto solutions, as Bosland et al. (2010) describe them, involve efforts to use intellectual property to limit other’s use of that content – particularly manufacturers’ incorporation of ad-skipping features in Australian PVRs. The free-to-air EPG, administered by the Freeview consortium – a collaboration between the public and commercial broadcasters – is not only a common marketing platform, and an aggregated online catch-up TV service for free TV network content, but also a branding exercise used to influence DVR equipment manufacturers (Bosland et al. 2010). Freeview endorsed DVR equipment is labelled with the ‘Freeview EPG’ logo to inform viewers that only this equipment will have access to the new Freeview EPG – although the Freeview-endorsed TiVo extracts Content Reference Indicator (CRID) data embedded in the broadcast signal to update...
its own EPG. Also, the EPG is only provided to DVR equipment if manufacturers remove features such as the ability to skip the advertisements. So, for example, as the TiVo is controlled in Australia by Seven Media Group, one of Australia’s largest free-to-air broadcasters, the EPG is limited to recording free to air television. Their corporate owners, Seven Media Group, adapted TiVo to a local Australasian market by disabling the ad-skipping function, although users can still fast forward through ads at 30x speeds.

What the above historical sequence of events and technical developments point towards is a tension between the strategies of the US-based TiVo Inc., and those of its Australian licensee, Hybrid TV, and its parent company, Seven Media Group. On the one hand, much of TiVo Inc.’s business operations have been geared towards remaining as relevant as possible as key shifts to a digital television milieu are taking place, primarily by developing technologies (like the continually evolving TiVo device) that are geared towards individual consumer viewing practices and habits, and providing for their more participatory role in networked TV culture. Yet, on the other hand, in Australia, Hybrid TV and Seven Media Group have limited the functionality of the device and delayed many features in order, it would seem, to try and keep their audiences within a broadcast regime, if in ways that permit a somewhat less linear or scheduled format. These moves, which could be seen as an attempt to stem the migration of free-to-air viewers to pay TV, can also be viewed as being in direct competition with other PVRs, with cable subscription TV (Foxtel), and with VoD and Internet TV.

TiVo has struggled to obtain the degree of market share in Australia that it enjoyed at one point in the US. There are a number of clear reasons for this. When launched in Australia, the TiVo was no longer cutting edge technology. It faced competition from other PVR devices, and was slow to the table. Moreover, ‘digital TV has also languished behind the pay TV platform Foxtel, which converted its service to digital in 2004 and controls the market leading PVR, the IQ, which has sold more than 540,000 units since 2005. The free-to-air equivalent, the Seven-owned TiVo, has sold only 40,000 since 2008’ (Idato 2009) – statistics which paint a rather bleak outlook for TiVo in Australia according to some pundits (Turner 2011).

THE TIVO DEVICE AND ‘TIMESHIFT’ CULTURES

What distinguishes the TiVo from many other PVRs is software written by TiVo Inc. that offers more ‘intelligent’ recording and storage facilities. These include the capacity to pause, rewind, and replay live TV; but also, by recommending or automatically recording programs based on monitoring of viewing habits and user ratings (TiVo® Suggestions); or automatically deleting oldest recordings, (unless marked for keeping), making room for newly recorded content. Thus, the TiVo software and an associated electronic program guide provide a high level of user functionality and customisability.

More recent TiVo DVRs can be connected to a computer local area network, which allows users to schedule recordings on TiVo’s website (via TiVo Central Online), and remotely (TiVo Genie Online); to transfer recordings between TiVo units (Multi-Room Viewing (MRV) or home computers (TiVoToGo transfers); to play music and view photos over the network; and to develop or use third-party applications written using TiVo’s Home Media Engine (HME) platform.

The TiVo has thus become a more convergent home media device, which offers functionality beyond standard DVRs, such as remote programming, access to broadband applications and games, and access to online content or video-on-demand (VoD). In the US, as discussed above, TiVo has also added a number of broadband features, including integration with Amazon Video on Demand, and Netflix offering users access to movie titles and TV shows, as well as access to streaming online music through Rhapsody. In Australia, broadband access to VoD is available through the CASPA On-Demand service; CASPA (Content And Services Platform Asia) was one of the first on-demand IPTV services, and is currently available only via the TiVo media device.

Clearly, TiVo has contributed to shifts in viewing habits and practices and to new ways of watching content, through functions that allow viewers to time-shift, and break from the logic
of linear broadcast viewing. PVR penetration is rising rapidly (Hamburger 2010), and research shows that PVR and TiVo users increase their viewing time and watch more television than those without (Boullier and Huet 2008; Carlson 2006; McIntyre 2007). Yet, data consistently shows that PVR users time-shift much of their content to watch recorded programs at a preferred time – figures vary somewhere between 30 per cent and 40 per cent (Boullier and Huet 2008; Nielsen 2009). Further, data suggests that the majority of users – estimates range between 50 per cent and 70 per cent (Boullier and Huet 2008; Nielsen 2009) – fast-forwarded through recorded ads, ‘although most consumer surveys say 75 per cent to 80 per cent of PVR users claim they “usually” or “often” skip ads. Media group Starcom undertook electronic tallies of users of the TiVo service in the US and found that the actual rate was about 50 per cent’ (McIntyre 2007). In Australia, television ratings agency OzTAM reports that about 25 per cent of metropolitan Australian homes and 17 percent of regional homes are now equipped with Personal Video Recorders (PVRs), yet their 2010 data shows that time-shift viewing practices (and thus ad-skipping) are currently fringe activities, with approximately 96 per cent of content still viewed live and less than 4 per cent of content time-shifted (ThinkTV 2010b).

CONCLUSIONS: TIVO’S FUTURE IN A CONVERGENT DIGITAL ERA

Early in TiVo’s US history, its core challenge was to convey to consumers a clear sense of what a PVR was, and why they should want one. Later, it faced challenges from competing PVR models and so tried to promote TiVo as superior – a more sophisticated and user-friendly PVR. Today, TiVo tries to sell itself as a multi-functional media device. This may prove increasingly challenging however, as TiVo now faces competition from a wide range of other actors: not only from PVR service providers, but from an explosion of online distribution platforms delivering content, and an increasing number of devices and services, as well as the blurring of TV and Internet.

This convergent context is one that is increasingly competitive, and one in which the competition and challenge to TiVo is occurring on multiple fronts: PVR and IPTV hardware manufacturers, online content providers, and other integrated services (e.g., Foxtel IQ; Telstra T-hub). TiVo must stand-out through functionality, usability, and cost. In terms of Internet TV and IPTV, broadcast and VoD services compete with other organisations and partnerships involving content providers and online platforms, VoD, streaming, and peer-to-peer (p2p) networks. To remain relevant, then, the TiVo and Hybrid TV must either offer content unavailable elsewhere (unlikely), or offer a wider range of content access than other platforms, to record streaming content for example (something also unlikely when given they are owned by a broadcaster).

In this period of change and uncertainty, TiVo Inc. is attempting to shore up its relevance, straddling pre- and post-broadcast arrangements, allowing recording and time-shifting, but also trying to provide access to VoD or streaming digital content. The problem is, they are operating within a rapidly shifting digital economy with a complex milieu consisting of digital convergence, and multiple platforms, devices, and services. What is more, increasing numbers of gaming consoles, flat-screen TVs, and personal video recorders are broadband-enabled, and new devices capable of downloading and screening paid video content will be released onto the market in the coming years (Lobato 2009).

Whilst this environment has generated a range of responses (from litigation, IP, collaboration, and investment – see Carlson 2006), the conventional assumption in the television industry that re-use, such as file-sharing of content, is a threat to the traditional broadcaster business model, is not fully supported. Bruns (2008) argues that evidence suggests piracy and p2p distribution increases audiences and sales. Similarly, the assumption that widespread diffusion of PVR technology threatens television advertising models fails to acknowledge longstanding and widespread practices of ‘ad-skipping’ or avoidance, such as leaving the room, channel surfing, and so on (Notkin 2006). Moreover, this same assumption fails to acknowledge the emergence of new revenue streams or models from new technologies (Hamburger 2010). As shown in the Sony decision from the 1980s, the VCR was initially seen as a threat to...
copyright and the economic models of broadcasters, but was later supported and justified for making possible the home video market (von Lohmann 2008).

In the digital context there are revenue possibilities in streaming content and VoD (von Lohmann 2008), something TiVo has sought to do. But, even more productive has been to realise the potential uses of the technology for data collection of viewing habits and the value of this data to advertisers and networks (e.g. target marketing) (Carlson 2006; Yoffie and Slind 2007). This data gives the advertisers more accurate information on the reach of their advertising, and thus provides the potential for more effective advertising. And yet, the TiVo has received condemnation in the popular press for being an outdated and expensive PVR, a technology that is increasingly irrelevant in the contexts of digital distribution and online streaming TV, and emerging streaming models such as Hulu; yet it continues to strive to change and adapt to digital circumstances.

This article has taken a cultural economic approach to examining the development of TiVo, and its arrival and reception in Australia. The usefulness of this approach is twofold. On the one hand, a cultural economic approach suggests that, with respect to culture, it is the ‘nature, character and operation of its relationship with other entities – be they social, natural, economic, or technical – that is at stake’ (Bennett et al. 2008, 2). And so the story of TiVo, in this first sense, is a story of alliances. On the other hand, and at the same time, this approach draws attention to ‘the ways in which the ‘making up’ or ‘construction’ of economic realities is undertaken and achieved’ (du Gay & Pryke 2002b, 5). And so, in this second sense, the story of TiVo’s alliances is a story about economics. The value of this theoretical framework to the present study is that it focuses attention on, and helps to clarify, the complex interrelationships that mutually define TiVo, and the new business models, economic pressures, and technical factors, that emerge around and structure them and their diverse cultures of consumption. That is to say, with its focus on the ‘heightened role that culture plays in contemporary economies’ (Goggin 2011, 38), it speaks to, and helps shed light on, new cultural forms and characteristics emerging around the media consumption practices of domestic television consumers, adaptations to industry systems – and attendant economies – in response to these shifts, and the systems of (economic and symbolic) value arising from both. What this study has revealed is that TiVo has arrived in Australia at a critical juncture in the history (and future) of free-to-air broadcast television in this country. Whether Hybrid TV (in conjunction with Freeview) are successful in leveraging TiVo as part of their attempts to shore up free-to-air TV in a shifting digital milieu in Australia is something that remains to be seen, and provides a unique window on the changing cultural economy of media production, distribution and consumption.

REFERENCES


ENDNOTES

1. The term affordance was originally coined by psychologist James Gibson to refer to the properties embedded within an object that enabled particular actions to proceed. It has since been modified within the fields of human-computer interaction and technology studies to include properties that users identify or appropriate, and so suggests a relational understanding where what a technology affords exists neither in the thing itself nor the person alone but instead emerges through their relationship.

2. Hybrid TV was clearly quite bullish about the prospects of TiVo in light of the impending roll-out of the NBN. In 2010, they launched the Hybrid SmartStreet Project (www.hybridsmartstreet.com.au) – a research project to explore the consumer demand side of high speed broadband adoption and the content and services associated with such adoption. This was developed in collaboration with the Tasmanian Government and piggy-backed on the TasCOLT test-bed fibre network. TasCOLT was a project co-funded by the Tasmanian Government who invested $3.35 million of $10 million to roll out the network to 1050 homes in the suburbs of New Town, South Hobart and Devonport in Tasmania in 2005 to test the viability of a Tasmania-wide fibre network.

Hybrid TV, in partnership with the Tasmanian Government, planned to trial the TiVo device on the network by paying the monthly Internet service fee of 135 subscribers for a year on this network and equipping them all with a TiVo media device. Their interest was to explore the potential of PVR and VoD services in fibre-connected homes versus copper-connected homes, and to also assess the potential of ad-supported content. Despite these ambitions, the project stalled in the middle of 2010.
because Internet speeds to Tasmanian households in the trial were not fast enough to support use a broadband entertainment device to its full potential. Rather than access to the promised 100Mbps of the NBN service, the Tastel service provided in the trial was “limited to speeds of 4Mbps” (Martin 2011; Wilken et al. 2011).

3. This figure accounts for any content that is recorded and viewed at a later time. Oztam, however, differentiate time-shift viewing that is ‘As Live’ – viewing of recorded television content within the same day as broadcast – and ‘Time Shift’ – viewing of recorded television broadcast content up to seven days after the live broadcast time, see http://www.oztam.com.au/time-shift-faqs.aspx.
Sports content is central to the operation of national and global media markets, with infrastructure initiatives such as the National Broadband Network (NBN) set to have a major impact on how fans access and consume sport. Communications network speed, scale, functionality and accessibility are useful concepts with which to understand these changes and processes of media convergence. This article uses these concepts to guide analysis of the evolving relationship between sport, the Internet and broadband media. Two stories are presented, each supported by original evidence drawn from research interviews with media and sports industry professionals. The first examines sports audio content and changing norms of technology use and radio presentation. The second story concerns video content, industry codes of practice, and conflict between sports organisations and news outlets over the use of online footage and commercial practices in a fast-changing communications and media environment.

High-speed broadband services and applications are the latest wave in a much longer story about media and modernity (Thompson 1995). Identifiable biases of space and time have been produced historically by different technologies that communicate print, audio and video content, contributing to evolving manifestations of institutional, commercial and cultural power (Innis 2007). The transformation underway is from a system dominated by analogue-broadcast technologies to one where digital-convergent platforms deliver content via broadband. This shift is producing new rituals of media use and a changed ecology of communications, reflected by the growing footprint of online platforms and spurred by infrastructure initiatives such as the National Broadband Network (NBN).

Using sports media as a case study, this article analyses the present ‘moment’ of change. The approach used here treats developments in digital media and networked communications ‘as history in the making’ (Albrow 1996, 18), or events that are changing lived experience in an age of networked connectivity. This analytical strategy has become increasingly necessary following the rise of globalising processes and the accelerating speed of information and commodity circulation (Tomlinson 2007; Elliott and Urry 2010). Confronted by the systemic uncertainty produced by these conditions, policy-makers, regulators and media workers charged with managing money, content and the public interest face a difficult challenge. Their need to properly understand the broader media and communications environment in which they operate has arguably never been greater, but the time and space available to them for considered reflection and analysis has been severely curtailed (cf. Lash 2002). Intersecting global information and financial flows have reached speeds that are difficult to comprehend and control over the past 30 years (Strange 1986; Hassan 2011). The repeated structural convulsions of the global economy – Black Monday in 1987, Black Wednesday in 1992, the Asian financial crisis of 1997, the tech-wreck of the early 2000s, the onset of the global financial crisis (GFC) in 2007, and the flash crash of 2010 – are evidence of the high-speed ‘accidents’ produced by the capitalist system that impact upon citizens and employees across the globe (Virilio 2007; Cottle 2011). Paradoxically, as the fundamental flaws in the
promise of neo-liberal progress and economics are exposed, consumers demonstrate unremitting devotion to the digital networked technologies that made informational capitalism and a real-time global economy possible (Williams 2004; Castells 2000; Benkler 2006). Waves of ‘exciting’ new digital consumer products, super-abundant entertainment programming, and personalised online and mobile media services offer psychological insulation from the impacts of financial (and natural) disasters. The welcome casual experience of checking a sports result or watching match footage on a tablet computer, smart phone or Internet-enabled smart TV belies the large-scale changes and industry conflicts that make these acts possible. As signalled by the production of this special issue, an urgent task for scholars and industry analysts is to look beyond the screen and provide empirically based analysis that affords perspective on what is significant in the midst of this fast-paced change.

Waves of technological innovation have transformed the economic and cultural importance of ‘media sport’ (Rowe 2004; Wenner 1998). Two of the most expensive and bitter disputes in the history of the Australian media industries have been fought over the control of sports content (Hutchins and Rowe 2009a, 358). Kerry Packer’s one-day cricket ‘revolution’ of the 1970s, and the attempted hijacking of rugby league by News Limited and ‘Super League’ in the 1990s both used sport to establish dominance in free-to-air and pay television markets respectively. More recently, the Australian Competition and Consumer Commission (ACCC 2006, 18) has stated that sport is one of just two forms of ‘compelling content’ available online. This point was reinforced strongly by an ACCC representative in a research interview conducted last year (Interview with author). Sport is a prized form of media content because of its capacity to attract reliably large audiences and advertising revenue at a time when collective attention is fragmenting across different platforms, technologies and online communities. This fact helps to explain the record $1.25 billion the Australian Football League (AFL) received for its media rights between 2012 and 2016, and the activities of Telstra and Hutchison Whampoa in purchasing exclusive mobile and online rights to elite level sports, including the AFL, rugby league, V8 Supercars, netball and cricket. Indeed, the ownership and control of live sports content, highlights, news and information are playing a crucial role in the political economy of global media, especially given the entry of wealthy telecommunications operators into the market for coverage rights (Rowe 2011; Hutchins and Rowe 2009b; Hutchins and Rowe forthcoming).
Broadband access is not a prerequisite for listening to radio streamed over the Internet, although high-quality transmissions obviously require greater bandwidth. Nonetheless, the interesting feature of radio is its continuing appeal to listeners in a convergence culture (Jenkins 2006), meaning that they may be listening via a desktop or tablet computer, mobile handset, digital radio receiver or analogue receiver. A pertinent question was asked during industry negotiations for the 2007 to 2012 coverage rights to the National Rugby League (NRL) competition. Is it an Internet right or a radio right when a fan listens to the call of a game supplied by a radio network over the Internet? (Masters 2007) This issue did not arise during the previous set of negotiations for seasons 2000/2001 to 2006, when, according a football communications manager, the Internet ‘was an afterthought’ once the broadcast deals had been completed (Interview with author). Following on from this change, the question of what constitutes radio has been complicated by online only ‘radio’ operations established to provide commentary for the duration of both low- and high- profile events such as Women’s National Basketball League (WNBL) matches, and track and field meets staged by the International Association of Athletic Federations (IAAF). In other words, network scale, functionality, and accessibility are allowing the creation of more forms of radio than ever before.

A brief account of the history of sports broadcasting reveals that a demand for immediate results demonstrated the usefulness of an immediate precursor to radio, wireless telegraphy. Under the careful stewardship of Guglielmo Marconi and his Wireless Telegraph and Signal Company, the results of the 1899 America’s Cup yacht races were relayed to the New York Herald and Evening Telegram (Baker 1970, 48). From the 1920s onwards, radio broadcasting served to transform localised sporting passions into truly ‘mass-cultural events’ (Andrewes 2000, 105; Boyle and Haynes 2000, 33-38; Holt 1989, 311-314). Cricket in Australia – the ‘national game’ even prior to Federation in 1901 (Mandle 1976) – exemplifies this transformation. A hunger for Test match commentary and scores from abroad and across the country contributed to the spread of over one million licensed receivers during this decade. Tales of the ‘golden age’ of radio and cricket have been recounted ever since. A doyen of cricket commentators, the late Alan McGilvray (1909-1996), is synonymous with nostalgic tales about the popular ‘synthetic’ radio broadcasts of Test matches played in England during the 1930s. Calls were conducted by reading and embellishing ball-by-ball telegraph cables relayed from England to Australia, complete with simulated bat-on-ball noises (McGilvray with Tasker 1987). Even following the introduction of black and white television in Australia to coincide with the 1956 Melbourne Olympics, radio remained part of the ritual and drama of sport for fans and listeners during the summer and winter months.

Radio maintains an important position in media consumption habits, serving as a flexible form of audio ‘companion media’ that is easily accessed while performing other tasks in the home, car, workplace or garden. Its flexibility and portability create reliable listener exposure to radio for lengthy periods of time – close to 20 hours a week according to some estimates (Nielsen Radio Ratings 2010) – but with necessarily uneven levels of focussed attention. Sport is a key source of programming for radio, attracting listener attention as it delivers reliably engaging live action, scores, and talkback. The value of radio coverage rights, though, has been complicated by the provision of live online streaming by most commercial and public service radio broadcasters, as well as by podcasting of sports lifestyle, magazine, and interview format programs. The introduction of digital radio receivers, or Digital Audio Broadcasting (DAB+), has enabled temporary niche channels for particular events, as well as a range of complementary on-screen information that adds a visual dimension to the auditory experience. analogue and multiple networked digital alternatives mean that there is more than one type of radio in operation, accessed through stand-alone analogue and digital receivers, personal computers, and a range of Internet-connected portable devices:

There are still people who listen to the radio in the morning, whether it’s AM or FM. They listen to the radio in the way that my mother, who’s in her late eighties, listens to the radio. But added to that there’s this whole other big and growing
group of people who know that the online option exists. To be clear, broadcasting is still going on, there’s still this live audience, and it’s measured in the hundreds of thousands. But it is diminishing at least in proportion to the number of people who use either online or podcast. (Radio producer; interview with author)

As already mentioned, the question of the practical difference between, and relative value of a radio signal, broadband Internet stream, and downloadable audio file that contain the same content has proved confounding for selected sports organisations. Complicated questions have also been posed for governments when issuing broadcast licences to radio operators that offer live online streams. The Internet functions as a point-to-point technology, and, therefore, has appeared to fall outside accepted definitions of a ‘broadcasting service’ (Given 2003, 176).

Specialist Internet radio and online streams have altered a system of coverage contracts, advertising sales, and licensing processes that have traditionally been organised according to circumscribed geographical territories. These systems have operated on the assumption that domestic audiences are physically within receiving distance of a radio transmission tower. However, live on-air reads of listener emails, text messages and tweets (on Twitter) by radio sports announcers on various stations indicate that many fans now listen to the commentary of games online while travelling interstate and abroad for work and leisure. The ease with which listeners can interact with programs ‘on the move’ has also affected the way radio programs are structured. Listeners use a single networked digital device - mobile phone, tablet or desktop computer - to hear and comment about the issue under discussion, a practice encouraged by the ‘participatory habitus’ of web 2.0 platforms and convergent media environments (Song 2010; Cormode and Krishnamurthy 2008). The increased bandwidth available through wireless and wired broadband networks has made these multi-media practices easier to execute without disrupting the listening experience or program transmission. As the following comment from a radio producer and presenter indicates, these changes are influencing how program formats are created and presented:

Terms like user-generated content, Facebook, Twitter, engagement and interactivity have come into vogue now. And instead of broadcasting at people, we’re broadcasting with people. It’s the sense of making programs with people, as opposed to pushing content at them. So our program goes to air at the scheduled time, but we also have a blog, a Twitter presence and the podcast. We track those as we broadcast and afterwards so we can feed listener ideas into next show. There’s a sense of radio as an extended conversation that carries on beyond the broadcast cycle. (Interview with author)

These types of changes have allowed the world’s first 24-hour sport talk station, WFAN (660AM) in New York, to extend its reputation through live and on-demand streaming for expatriate and overseas audiences. Similarly, many public broadcasters, including the Australian Broadcasting Corporation (ABC), British Broadcasting Corporation (BBC), Deutsche Welle Radio, National Public Radio (NPR) in the United States and the Canadian Broadcasting Corporation (CBC) use sports reports and/or programming to engage with domestic and international audiences.

The BBC has attempted to unscramble the technological muddle that sees radio broadcasters speaking simultaneously to the ‘national public’ that they have historically addressed over the airwaves, and a dispersed cosmopolitan listenership tuning in through the Internet and podcasts (cf. Murray 2009; Turner 2009). Radio in the age of globalisation and convergence is no longer about the medium, but content and data. The BBC acknowledged this reality by jettisoning the term radio and replacing it with ‘audio’. In the words of a former news editor for BBC Radio Five, Robin Britten, ‘In BBC terms, calling it “audio” is so sensible because that’s what it is, it’s sound, it’s audio…but you can pick it up on the move from a range of sources’ (Boyle and Whannel 2010, 365). Re-labelling of this sort is helpful from an internal organisational perspective, allowing an operator to make better sense of how the content they produce can be distributed and repurposed. As the next section shows, however, such an
exercise is of minimal help when rival distributors complain that the reproduction of digital content infringes on their rights and activities.

FIGHTING OVER ONLINE VIDEO

The Federal Minister for Broadband, Communications and the Digital Economy, Stephen Conroy, announced a new Code of Practice for Sports New Reporting (Text, Photography and Data) (2010) in Australia on 30 March 2010 (Elliott 2010). The Minister lauded this Code as being very much in the interests of the sports loving public who are entitled to the fullest news and photographic coverage of sport across all technological platforms. (Conroy 2010)

The Code’s content had resulted from lengthy roundtable discussions between many of the major sporting codes, including the AFL, NRL, Australian Rugby Union (ARU), Cricket Australia and Tennis Australia, and news media organisations such as Fairfax Media, News Limited, Australian Associated Press and Getty Images. The recently retired Chair of the ACCC, Graeme Samuel, oversaw the negotiations between the two groups that had been at loggerheads over restrictive terms of journalist and photographer accreditation at sporting venues, as well as the online reproduction and archiving of digital photographs on news websites. A fascinating feature of the Code is that it omits any mention of a crucial source of conflict between the two groups: the retransmission, replay and archiving of audio-visual sports footage and highlights on the Internet and news websites. This issue continues to fester because of expanding household Internet download limits and bandwidths that see growing numbers of fans access online sports coverage.

It is difficult to forecast the consequences of media convergence given the vicissitudes of content circulation, media practices and technology use. The current Federal Government sponsored Convergence Review is a recognition of this fact, representing an attempt to canvass a wide range of potential policy options provided by industry representatives, consumer groups, experts and citizens. The process that led to the Code of Practice (COP) for Sports News Reporting began with a smaller, but nonetheless pioneering, Inquiry conducted by the Parliament of Australia ‘Senate Standing Committee on Environment, Communications and the Arts’ (2009). As explained at length elsewhere (Hutchins and Rowe 2009c, 2010) and expanded upon here, this Inquiry announced openly that control over sports content is pivotal in the exercise of power in the contemporary media market. The shift towards digital-convergent communications had contributed to a series of disputes between several sports organisations and news media outlets over the use of online footage, highlights and photographs dating back to at least the 2005 Ashes Test cricket series. These disagreements affected the coverage of cricket and the football codes and produced unwelcome images of journalists locked out of stadiums (Magnay 2006; AIPS 2009; Linden 2009). Each party involved in these disputes sought to position themselves advantageously in the marketplace, producing opposing claims over who could display what online content when and for how long. These protracted problems led to a commitment from the Federal Labor Party that they would hold a formal inquiry into the issue if they won the 2007 Federal election (Davies 2009, 1). Beginning work in 2009, the Committee responded to nine terms of reference that addressed the growth in digital communications network speed, functionality and accessibility, including:

- the nature of sports news reporting in the digital age, and the effect of new technologies (including video streaming on the Internet, archived photo galleries and mobile devices) on the nature of sports news reporting;
- whether and why sporting organisations want digital reporting of sports regulated, and what should be protected by such regulation;
- the appropriate balance between sporting and media organisations’ respective commercial interests in the issue;
the appropriate balance between the public’s right to access alternative sources of information using new types of digital media, and the rights of sporting organisations to control or limit access to ensure a fair commercial return or for other reasons.

This Inquiry was the first of its type internationally, attracting 44 submissions from national and international organisations such as the International Olympic Committee (IOC), the Coalition of Major Professional Sports (COMPS), the International Cricket Council, News Limited, Yahoo!, Optus, ninemsn and the World Association of Newspapers. The Australian newspaper’s reporting on the Inquiry’s public hearings (conducted in Canberra, Sydney and Melbourne over four days) included comments made by a media sport industry analyst. He explained proceedings were being watched closely by observers around the world, including the International Federation of Association Football (FIFA), the English Premier League (EPL), the Professional Golfers’ Association (PGA) and the Ladies Professional Golf Association (LPGA) (Canning 2009).

A cause of the Inquiry and the subsequent roundtable negotiations is the contested question of how sports organisations and news companies should manage the digital plenitude that now defines the ‘media sport content economy’ (Hutchins and Rowe 2009a). During the broadcast era, a limited number of channels and networks possessed the financial resources and technical capacity to distribute high quality sports coverage. By contrast, the multiplication of affordable Internet-enabled devices means that good resolution audio-visual content and digital images can be distributed, copied, replayed, repurposed and archived on several widely accessed platforms. For elite level sports leagues, these changes are welcomed as they promise greater revenue from the increased number of coverage rights packages that they can sell, including mobile, Internet, online archive and web hosting rights (Hutchins and Rowe forthcoming). However, they also produce significant difficulties in effectively managing and controlling content, which can travel across different platforms quickly by authorised and unauthorised means. This transferability erodes the value attached to the exclusive coverage rights and access purchased by television broadcasters in particular. Restrictive accreditation conditions placed on sports journalists are part of an effort to preserve the exclusivity of coverage contracts. Sports officials also need to make decisions about who is awarded official journalist accreditation following the emergence of specialist online reporters, bloggers and digital photographers. These figures are armed with affordable equipment able to capture high-quality still and moving images that may encroach on the interests of broadcasters and other media partners (cf. Allan 2006). The ability of anyone to record and share footage has been made easier by mobile handsets and software such as Qik and Ustream.

Addressing developments in digital media generally, the Chief Executive Officer of Cricket Australia, James Sutherland, lamented the ease with which sports footage can be retransmitted during the Inquiry’s hearings:

…I can tell you that in recent times we have had discussions with media organisations and content aggregators about the value of our commercial rights, particularly in the digital space. The comment that we hear over and over again is that, ‘Well, why is that worth anything, because I can just grab that content and provide a highlights package; it is not worth anything to me because I can take it for free’. (Proof Committee Hansard 15 April 2009, 20-21)

Sutherland’s angst was exacerbated by Christina Allen, Manager of Legal and Business Affairs at Premier Media Group (PMG) (a joint venture between News Corporation and Consolidated Media Holdings), the company that operates the popular Fox Sports website and pay television channels. She declared before the Senate Standing Committee that PMG has never viewed the ‘three-by-three-by-three’ broadcasting norm as a ‘codified regulation that we are required to abide by’ (Proof Committee Hansard 29 April 2009, 24). Allen’s declaration meant that the prevailing industry convention limiting the replay of another network’s footage did not apply in the reporting of online sports news. Seeking to counter this argument, the major sports organisations called on the Committee to recommend ‘an enhancement of their intellectual property rights’, and clarification of what is ‘fair’ online in...
relation to the retransmission of sports highlights and footage, including the ‘frequency of content updates and refreshes’, and ‘size and nature of archive material’, including clip lengths (COMPS 2009, 5).

Sporting authorities are upset at news websites that present extensive, up-to-the-moment coverage and highlights, instead preferring that fans access ‘official’ online sports portals (Hutchins and Rowe 2010, 8-9). This preference sees news sites accused of using moving and still images as an ‘entertainment offering’ under the guise of reporting the news, which undermines the capacity of leagues to maximise their broadcast and media rights income (Proof Committee Hansard 15 April 2009, 33). Unsurprisingly, news companies reject this accusation, countering that sports are trying to dictate the shape and definition of news through the application of unfair journalist accreditation conditions. The Group Editorial Director of News Limited, Campbell Reid, stated before the Committee members:

…the problem media companies face is that sports bodies want to issue accreditation to the media only if the media agree to a definition of news as prescribed by the sports bodies. This was at the heart of a dispute two summers ago when Cricket Australia tried to withhold accreditation unless media groups agreed to limits on the subsequent use of material they produced at Test matches. There are numerous problems with this argument but, principally, the main problem is that the sports body believes it has a legitimate role in determining what is and is not news. (Proof Committee Hansard 16 April 2009, 48)

News companies also have their own challenges to deal with, facing considerable competition in the delivery of online news, footage and highlights to sports fans. Traditional print news companies such as News Limited and Fairfax Media are forced to compete for eyeballs and advertisers with official sports websites, telecommunications and mobile operators, online specialists such as Google, Yahoo! and YouTube, independent blogs, and illicit streaming directories. The sheer complexity of this situation contributed to the key recommendations presented in the Senate Standing Committee’s report (2009). No ‘enhancement’ of the fair dealing provision in the Copyright Act would be recommended (Recommendation 2), and the aggrieved parties should negotiate the conditions of journalist access to sports events (Recommendation 4). The result of these negotiations was the new COP announced by the Minister in March 2010.

The Inquiry and the roundtable that produced the COP took over 12-months. Yet, the time, energy and resources expended saw no progress on a primary point of contention between sports organisations and news outlets – what constitutes ‘fair’ use and reproduction of online video and audio-visual sports highlights. This is a frustrating conclusion for those sports organisations that, in seeking to deal with this question, saw the Inquiry as a much less ‘expensive’ and ‘grubby’ avenue than formal litigation (Senate Standing Committee 2009, 26, 32). According to a disappointed official employed by a major sport, the Inquiry failed to achieve the clarity they were seeking:

I don’t think that the recommendations that came out of the Inquiry actually had any kind of meat behind them…and I don’t know that the process achieved everything it could have. It’s pretty clear that, whereas the Senate Inquiry involved genuine traditional broadcasters and other groups, the round table focussed more narrowly on the issues of text and data and photography. It did not deal with audio-visual and therein lies some of our greatest concerns…For us it’s about the grey legal zone of fair use and copyright, it’s about streaming and piracy…and then it’s about unauthorised use of even archival material being filmed or being broadcast and the use of our logos and things like that. They’re the kind of areas that are just becoming more and more problematic for us to protect against and ensure that their value isn’t diminished…The Inquiry has taken up a lot of additional time and resources to prepare for and ultimately it didn’t give us a result. (Interview with author)

The decision to exclude audio-visual content from the roundtable negotiations was deliberate. A senior public servant who observed the proceedings that led to the COP explained that the
matters of fixed image and text on the Internet were deliberately dealt with first, leaving the question of moving images until a later date:

Look we thought about it [audio-visual content], but it was quite clear that there were two issues. Firstly, audio-visual content is a much bigger issue. But, secondly, you had to involve a lot more people. You had to involve all the free-to-air television groups, who weren’t there. You’d have to involve Telstra, and then we’re getting a whole range of other audio-visual presenters and aggregators…it was felt that let’s concentrate on fixed image and fixed text and then audio-visual will be dealt with at a later stage. (Interview with author)

This comment is revealing on two levels. First, it obliquely acknowledges that the presentation of sports footage and highlights on the Internet repositions and redefines sports television and the viewing habits that have been built around broadcast technologies over the past four decades or more (Lotz 2007, 2009). The presentation of audio-visual content online challenges established institutional and contractual relationships between powerful media companies and elite sports leagues that have long dictated how moving images are used and by whom. Any government-sponsored alteration of these conditions will need a much larger political and regulatory response that also takes into account potential flow-on effects in other areas of the media. Second, the idea that ‘audio-visual will be dealt with at a later stage’ recognises that the full impacts of media convergence are still years away from being realised, especially given that the NBN is presently under construction. The Senate Standing Committee’s final report stated as much, noting that a particular concern for many sports was the ‘future potential revenues’ they may derive from their websites and ‘as yet unforeseen digital media and platforms’ (Senate Standing Committee 2009, 49). As much as it might frustrate the major sports organisations that want greater certainty for their financial planning, it is impossible to regulate or legislate for the unknown. In the meantime, sports organisations and news companies will continue to muddle through, battling against the competitive pressures generated by content aggregation, online competitors, user-generated content, telecommunications operators, Internet streams and social networking platforms.

CONCLUSION: HISTORY IN THE MAKING AND THE AFL

This article has used examples of digital audio and video content to assess how change in media is negotiated and enacted in a convergent media environment. Telling the stories of transformation in different areas of media activity is an urgent undertaking given that much is stake in terms of access to, and use of media content and technologies. The evidence presented in this article is an effort to account for ‘history in the making’, by highlighting changes in communications technology use and media policy development that will help to determine the future of media sport. As explained at the outset, this type of analysis and reflection are difficult to undertake in a culture of speed (Tomlinson 2007; Virilio 2007), making it all the more necessary for media scholars and analysts to record and assess contemporary events.

Network speed, scale, functionality and accessibility are helpful concepts in understanding the transition from a media market and culture dominated by broadcast-analogue media to one where digital-convergent technologies are ascendant. Representing ‘a different service paradigm’ (Barr 2008, 3), broadband encapsulates each of these four qualities. It can be safely predicted that sport will play a key role in creating and servicing demand for new broadband services and content, just as it has done throughout the historical development of radio, free-to-air, pay-, and satellite-television services and programming (Whannel 1992; Rowe 2004; Majumdar 2011). Live sports programming is already delivered via broadband for multi-channel IPTV, smart TV, and Internet-enabled computer game consoles. Such activity is to be expected as the demographic profile for enthusiastic and early adopters of new media technologies is young males with disposable income, paralleling that of sports fans (Boyle and Haynes 2004). Popular men’s sports leagues, tournaments, commentary and highlights are also a proven method of attracting fan and advertiser attention. The intersection between broadband services and sports content is also likely to intensify if widely
publicised estimates are in any way reliable. By 2015, it is thought that the sum of all forms of video (TV, video-on-demand, Internet and P2P) will comprise around 90 percent of global consumer traffic on the Internet (Cisco 2011).

The AFL provided a glimpse of the future during 2011. There was one notable disagreement during the completion of the AFL’s record-breaking media rights deal for the period 2012 to 2016. The radio component was finalised a full three months after the television, mobile and online contracts. There had reportedly been ‘severe friction’ between the AFL and bidders over the value of the radio coverage rights. One radio network representative remarked on the ‘bullish’ attitude adopted by the AFL in relation to their cost, despite the games being ‘available on every platform known to man’ (Ralph 2011). Debates over how to value and regulate sports audio content that flows between devices and platforms and across territorial borders will continue as a source of contention in the coming years. This persistent issue was met by the possibility of marked discontinuity in live football telecasts and television. In August, the AFL Chief Executive Officer, Andrew Demetriou, speculated that the AFL could reduce its dealings with the commercial television networks from 2017. The AFL is instead considering whether to offer games to fans, viewers and users through its ‘in-house’ operations and the NBN:

We have just set up our own media company. We’ve set up our own production company. We’ve got our own publishing arm and that is all about preparation for the next broadcast rights because we may decide with the advent of the NBN to sell direct to the consumer. We might control our content more. We might work across various platforms. We are trying to control as much as we can control and not deal with as many third parties. (McIntyre 2011)

The AFL appears to have paid serious attention to YouTube’s invocation to ‘broadcast yourself’ online. To countenance such a move is evidence that media sport powerbrokers are workshopping business models that involve the transmission of live moving images transmitted via broadband networks. Demetriou’s comment also suggests that the commercial television networks should hasten their preparations for altered marketplace conditions. When the AFL’s strategising is combined with the examples of sports radio and online video, it becomes clear that the future of media sport is as much about broadband as broadcast media.

REFERENCES


Proof Committee Hansard. 2009. _The Reporting of Sports News and the Emergence of Digital Media_. Senate Standing Committee on Environment, Communications and the Arts, Commonwealth of Australia, 15–16 April, 29 April, 5 May.


ENDNOTES

1. Interviewees quoted in this paper are de-identified in accordance with conditions required by a University Standing Committee on Ethics in Research Involving Humans. This research was made possible an Australian Research Council (ARC) Discovery grant.

2. Gerard Goggin (2011) provides a helpful explanation of Hutchison Whampoaa’s 3G strategies, including their use of entertainment and sports content to drive subscriber uptake.

3. COMPS has since been renamed COMPPS (Coalition of Major Professional and Participation Sports). Despite a low public profile, COMPPS is the most powerful sports lobby group in Australia. The sports that make up COMPPS are the AFL, NRL, ARU, Cricket Australia, Football Federation Australia (FFA), Tennis Australia and Netball Australia.

4. The three-by-three-by-three ‘rule’ is an unwritten industry agreement that prevents a broadcaster showing more than three minutes of another network’s footage three times a day, separated by a three hour break (deZwart 2009. 254). This unofficial convention has given non-rights holding networks access to copyrighted television sports footage for the reporting of news, and helped to prevent costly legal disputes over copyrighted footage.

5. A broad ranging investigation of these issues is presented in Hutchins and Rowe (forthcoming).

Cricket Australia has three main forms of cricket to manage – Test and first-class matches, Limited Overs cricket and Twenty20 cricket – and the sale of media rights is Cricket Australia’s single biggest revenue stream. Traditionally the basic business model has been based on a mixed blessing of the sale of generally secure broadcast rights, which usually account for 60-70% of income, though this has largely been earned each year over only one Australian season: summer. However the world of sporting rights is rapidly changing and new considerations involve judgements about appropriate content platforms, payment options (such as free, pay, pay per view), transmission windows (live, delayed, highlights, on-demand/catch up, archive) and technology options (satellite, cable, IPTV, digital or analogue). Though major benefits continue for international cricket to remain with the mass coverage of free-to-air television, all sporting organisations face a highly complex decision making puzzle in the emerging world of diverse platform choice offering people so many different attractive products. The NBN is another wild card in the mix, which may eventually reshape how people access their chosen content on which platform, but which in the long run may possibly consolidate the number of devices people use in their media lives. Cricket Australia needs to ensure that it has a strong commercial overlay to create sustainable revenue and to protect its valuable assets, whilst ensuring that the best interests of the cricket fans remain at the heart of its decisions about content access, distribution and consumption in the future.

INTRODUCTION

The world is changing! Ironically, there’s nothing new or game-changing about that statement or what it means. Our daily lives are filled with people talking about it and bloggers and journalists writing about it. Just like every other organisation that is managing or delivering a product or service, our job at Cricket Australia - as custodians of the game of cricket in this country – is to think about and understand how the changes will and are affecting our business and what our customers (cricket fans) want. Without question the changes in consumer behaviour, technology and convergence have and will demand changes for the way that cricket content is produced, distributed and consumed. This is particularly so with the penetration and advancement of the online environment. This paper explores some of the aspects we need to consider and account for as we work toward the next sale of our content, via the sale of our media rights, and the opportunities and challenges that accompany this process.

MEDIA RIGHTS DEFINED AND THE VALUE EXPLAINED

As background, it is important to explain and understand cricket’s unique business model and how environmental issues and matters intersect and influence our commercial business.

The sale of media rights is Cricket Australia’s single biggest revenue stream. In any one year they can account for up to 60-70% of our income base. This is the case for most major
professional sports around the world. It is this revenue, along with the sale of sponsorship and merchandise and monies from match attendance that are used to fund our entire operations – from supporting the Australian cricket team right down to funding local club activity, providing programs for all sectors of the community and developing our junior participation program, in2cricket.

In sport, a media right is an asset that is owned by the organisers of a sport or sporting event (Dunne 2009). Media rights are effectively our content. Cricket is an interesting case because of the governance of who ‘owns’ which matches (the primary content driver). Cricket Australia (CA) owns the rights for all matches that are played in Australia under our auspices. These include international matches (Test cricket, One-Day cricket and Twenty20 cricket), interstate competitions (the Ryobi One-Day interstate Cup, the Women’s National Cricket League and BUPA Sheffield Shield), the new KFC Big Bash League and a host of development competitions (U-17’s and U-19s, Imparja Cup etc).

Matches that are played overseas (eg when Australia tours another country) or played under the auspices of the International Cricket Council (ICC) – such as the ICC World Cups – are owned by the host country or by the ICC. CA sells its media rights assets to third parties (ie television networks, radio stations, telecommunications companies etc) giving them the ‘right’ to make a recording of our event (ie, the cricket match). The recording is then communicated in various ways, such as via television, radio, Internet, or mobile device, which is captured by different types of rights: audio visual, audio, still photographs, text, or data (Dunne 2009).

Rights can further be distinguished by the payment method (such as free, pay, pay per view), the transmission window (live, delayed, highlights, on-demand/catch up, archive) and the technology (satellite, cable, IPTV, digital or analogue). When you consider all the different products and the combination of division of rights, it becomes a highly complex puzzle.

As CA owns the matches played in Australia under our control, it means CA is very much a global business with valued partners throughout Australia and all over the world including New Zealand, Asia, America, South Africa and the United Kingdom. These partners take our content and the game to hundreds of millions of viewers around the world.

All this is all important to highlight because, essentially, 90 per cent of CA’s revenue comes from a short window of time – the summer of cricket – despite the fact the Australian cricket team, which generates effectively 90 per cent of CA revenue, plays 11 months of the year. It reinforces why the media rights we own are so valuable and the extent to which we must critically plan and understand the environment and the changes/ opportunities to ensure that we can balance our key objectives of:

i) generating sustainable revenue that can be reinvested into the game; and

ii) serving the fans by making available the right content at the right time, in the right way, in the right format for how and when our fans choose to engage and consume it.

WHAT HAS AND HASN’T CHANGED

The desire of consumers to have their needs satisfied has changed little over time – needs and desires are timeless (McCrindle Research 2011). In cricket, we are arguably in a period of unprecedented change, perhaps last readily seen when the late Mr Kerry Packer created World Series Cricket in the 1970s. The growth of Twenty20 cricket is dominating the pace of change in our game, possibly because it represents everything which characterises the appetite of the new generation: a time-poor culture that needs snack-size entertainment, served in an energetic and fast-paced manner and consumed and shared in a socially interactive fashion.

Of course, Test and One-Day cricket offer the social and entertaining aspect, and that’s why we are excited by the fact cricket has three different products that can be consumed by different fans according to what format they prefer. Fans have greater choice than ever before, not just in how they watch but in what they choose to watch, and the same is so for cricket.
Our challenge is to ensure that the products can co-exist and combine to increase our overall audience. Our current research suggests this is the case.

For CA and the matter of media rights, the world has changed considerably, not just because we now have three principal formats to manage, but because the communication and delivery of the content can be executed in so many different ways and in so many different parts and pieces. Historically, our media rights deals were based on television and radio contracts and limited to a small number of potential buyers. Today, we need to consider all of the aspects noted at the outset: the content platform, the payment options, the technology and the window transmission.

The complexity is magnified by the advances in technology which have given rise to more choice, more opportunities, more ways for fans to consume, engage and interact with each other and a change in social and consumer behaviour. Customers’ needs still have to be satisfied, but we must be creative in how we meet this need whilst at the same time ensure we can effectively monetise the content to maintain a sustainable and self-sufficient revenue model. The online landscape presents both opportunity and challenge in this regard.

**ASPECTS AND ISSUES TO CONSIDER IN SELLING CONTENT**

There is a wealth of social, customer, political, environmental, internal, technological and economic aspects that CA will need to take into account in the next sale of cricket content\(^1\). These need to be considered in the context of having three different product types (somewhat unusual in most sports) that are sold in international territories where consumption patterns, technological developments, regulatory matters and economic markets can vary significantly. Some of these aspects are explored below, particularly as they relate to broadband development and applications given the Internet and the digital economy is on the cusp of playing an even greater transformational role in our lives.

**REGULATORY MATTERS INCLUDING ANTI SIPHONING AND CONVERGENCE REVIEW**

The anti-siphoning list is a list of sporting events that the Government has determined should be available on free-to-air television for viewing by the general public. It is so called because it aims to prevent the events that are listed from being ‘siphoned off’ by subscription television to the detriment of free-to-air viewers (ACMA 2011). In December 2010, the Communications Minister for Broadband, Communications and the Digital Economy, Senator Stephen Conroy, announced an interim anti-siphoning list. In making its submission to the anti-siphoning review, CA noted its agreement with the Government’s Productivity Commission, which stated that, the anti-siphoning list:

“… appears to be a blunt, burdensome instrument that is unnecessary to meet the objective of ensuring wide community access to sporting broadcasts.”

And that it is:

“…inherently anti-competitive. The anti-siphoning provisions directly limit competition between subscription and free-to-air networks.”

Further, the List:

“… also has a negative impact on sporting bodies, as a result of the substantial reduction in competition during negotiations with broadcasters for the rights. The Commission, in the broadcasting inquiry, found that the provisions reinforced the market power of the small number of free-to-air broadcasters, reducing the potential benefits to the sporting bodies. The Commission also concluded that the anti-siphoning regime is likely to distort the relative prices of broadcast rights of listed events relative to non-listed events, potentially reducing the price received by sporting organisations for listed events (Productivity Commission 2009).”
In respect of cricket, all Test matches, One Day Internationals and Twenty20 Internationals played under CA’s auspices are Listed Events.

On the one hand, CA considers it a privilege that cricket events are regarded as being events of national importance and cultural significance (the criteria of the anti-siphoning list). There are major benefits for international cricket to remain on free-to-air television, most notably the mass coverage and reach that is achieved by this medium.

On the other hand, the effect of this regulation of content rights will certainly reduce the value of CA’s media rights, which, in turn, affects CA’s ability to reinvest in the game and in the community. Some might infer that this position – that CA believes it is privileged yet commercially restricted – is a contradiction: it’s simply the facts of the situation and from a media rights perspective, in which we are required to adopt a genuine commercial focus, it is unquestionably a limiting factor. At the core of our position is the principle that CA should be entirely responsible, without government intervention, for making a sensible, balanced decision between generating commercial return and achieving mass coverage in line with our vision to be Australia’s Favourite Sport. In an ideal world, CA would be in control of its own destiny; the anti-siphoning list (with cricket as a protected event) limits CA’s ability to realise its destiny and achieve fair market value for the sale of an asset without a free market at play.

As Stephen Bartholomeusz commented in *Business Spectator*

> “Regulation of content rights – the anti-siphoning list is a prime example – arbitrarily shifts value from content producers to their distributors. A relatively modest deregulation of the anti-siphoning list probably unlocked hundreds of millions of dollars for the AFL that would otherwise have been captured by free-to-air networks in the form of lower programming costs.”( Bartholomeusz 2011)

The other regulatory matter on the radar is the Government’s review of communications and media regulation. In his same piece, Bartholomeusz goes on to pose the philosophical question as to whether the digital age should enable deregulation and the lifting of the platform-specific regulations on content particularly when content is on a multi-platform basis. As he notes, “… the old structure for regulating is…increasingly anachronistic and will become even more so as the National Broadband Network is rolled out and the internet potentially becomes the primary distribution platform for most media and communications businesses.” How cricket content may be regulated in the future, on whatever platform, is an important consideration for CA.

**IMPACT OF THE INTERNET AND ROLL OUT OF THE NBN**

The online world and the roll out of the National Broadband Network (NBN) is a huge opportunity – and challenge – for cricket and cricket content. Consider some of the following:

**ONLINE CAPABILITY INCREASES DISTRIBUTION OPPORTUNITIES INCLUDING LIVE STREAMING**

The ability to live stream an event is valuable in itself, but particularly valuable for content that may not have otherwise seen the light of day on traditional platforms because the economics of that model did not add up. Cricket has plenty of content in this category which is currently not shown on either FTA or subscription television but which we know has a keen following among consumers. The single biggest driver of traffic to our website, [www.cricket.com.au](http://www.cricket.com.au), is for live scores. And while at-match attendances for the BUPA Sheffield Shield cricket have not grown substantially over the decades, fans logging on and sticking on the site to keep track of the scores is extremely popular. The monthly total unique visitors were up 50 per cent last season on 2009 figures. So we know there is interest and markets for products that underpin international cricket, and we know we have opportunity to build these products and distribution for fans. Part of this is about engagement and serving the community interest, while also devising a sensible economic model around this approach. The world’s most powerful video sharing website, YouTube, has entered into a number of
partnerships with sporting bodies to live-stream shows and events, and there are plenty of examples of these types of enabling partnerships creating benefits for fans and sporting bodies.

NBN SHOULD FACILITATE NEW MARKET ENTRANTS

On face value, a new high-speed broadband service that will connect to 93 per cent of Australian homes, schools and businesses sounds like a dream come true. If, as expected, the NBN facilitates the deployment of new technologies and encourages new market entrants – as buyers and deliverers of content – this will open up competition for sporting rights and increase the distribution and choice for fans.

PIRACY IS A REAL PROBLEM, EXACERBATED BY TECHNOLOGICAL ADVANCEMENTS

Alarming, while the online environment presents significant upside and opportunity for all Australians, a lack of regulation and protection for content creators – such as CA and our cricket matches – poses a significant threat to our commercial viability. Piracy is a very real issue for cricket. This is particularly the case in countries such as India, Pakistan and Sri Lanka where the game has a significant following within a highly populated market. Unauthorised streaming of matches and breaches of copyright is prevalent and very difficult to prevent. For example, in the 17 series and tournaments covered between January 1 2010 and December 31 2010, a total of 11,233 unique live source video streams were identified by CA’s specialist digital asset protection firm, Copyright Integrity International (CII). CII has identified three main trends in the digital piracy of cricket content:

(1) a movement towards more advertising-based piracy models as opposed to pay-for-view models;

(2) rapid growth in User Generated Content Live piracy; and

(3) continued growth in the embedding of streams throughout the Internet.

Each of these developments has had the effect of increasing free access to unauthorised streams of live cricket action online.

In addressing unauthorised streams, CII has had good success negotiating direct take down capability with some major UGC Live sites and modest gains using legal channels. The problem is that pirate websites continue to be highly agile, resilient and adaptable. As streams are taken down they are put up elsewhere on the Internet. As CII notes:

“The ability to distribute Internet-wide, live unauthorised streams of sports events makes it possible for viewers around the world to access content quickly and easily without any compensation to the sports whose rights are infringed. This poses a significant adverse threat to sports organisations, their broadcast licensees and others linked in the global business sector surrounding live sports. This availability of illegal streams limits the amount of money flowing in to broadcasters, ultimately channelling through to sports rights owners. Ultimately, like many other sports, funding models in cricket are hugely dependent on broadcast rights deals and sponsorship deals. Both of these sources of income are crucial to the future sustainability of cricket from the grass-roots level right up to professional cricket. Should digital piracy continue to grow, it poses a direct and real threat to both these funding sources.” (Copyright Integrity International 2010)

Recent research by PricewaterhouseCoopers among US consumers aged 18 to 59 suggests that 81 per cent of consumers who admit to pirating TV, movie and video content say they will continue to do so. It is also expected that mobile pirating will increase, with 40 per cent of those who pirate content via traditional methods saying they will probably also pirate on mobile devices within the next six months (PriceWaterhouseCoopers 2011).

The expectation that content can be accessed online for free is fast becoming a natural part of society and one that will lead to the downfall of many businesses through loss of revenue. The recent announcement in the US of a voluntary agreement between the major movie, music and TV businesses and America’s major Internet Services Providers is a welcome outcome,
and one that CA is keen to see replicated in Australia. The research on this type of graduated response scheme (a step-by-step process to alert and educate consumers) is that up to 70 per cent of users will stop illegally file-sharing after they receive a warning and face the threat of potential sanction if they continue (Heindl 2011). No one wants to deny consumers the opportunity to see and enjoy the content, as that is the aim of creating the content in the first place. But there must be recognition and protection for the creators of the content so that they can continue to create and deliver what people want without suffering irrevocably loss in the process.

THE COMPLEMENTARY NATURE OF MULTI-SCREEN VIEWING

As devices are adapting more and more to our lifestyles, a positive trend that is emerging is the complementary nature of the multi-screens to the overall viewing experience. In a sporting sense, there was some historical concern as to how the Internet could or would cannibalise the television coverage of an event if a consumer had to choose between the two. The reality, as we have seen played out, is that the best arrangement for fans is to be able to watch the content or to stay in touch with the progress of an event on whatever device is applicable to them at the time, whether they are at work during the day, travelling home on the train, or sitting back in the lounge room of an evening. There is no need to necessarily make a choice – they can have both and more if they wish. Sport is both a group and an individual viewing experience.

My view is that, typically, most sports fans (not in attendance at the ground) will gravitate to the biggest screen they can in order to watch a sporting match or event because of the drama, action and high production values that tend to be associated with sport coverage. This is usually done in the lounge room or at the pub, both social settings offering the chance to interact with family and friends. That interaction and engagement is enhanced with either other devices that complement the viewing experience (searching for statistics online, viewing replays, blogging, asking what your friends think about a key moment or decision) or maintaining the one main screen that enables the functionality to interact and personalise the viewing experience.

The NBN is set to reshape how people access the content on which platform, and may well consolidate the number of devices people use in their lives. Certainly the portable, flexible nature of a multi-screen offering will still be relevant for sport viewing and consumption for some time to come.

CONCLUSION

Cricket in Australia is at a very exciting juncture; times have changed, new trends and technologies have emerged, consumer behaviour has shifted and we are doing our best to adapt and embrace the movement to remain relevant to all fans. There are certainly challenges ahead from a content perspective, including the ongoing management of the product mix and working out what the right volume of cricket is to satisfy the appetite of the cricket family. The fan will be at the heart of our decisions regarding content access, distribution and consumption in the future, as will be a strong commercial overlay to create sustainable revenue and protection of our valuable assets. Cricket has long occupied a special place in the Australian culture and way of life, and our job is to ensure this privileged position is maintained, especially as the world continues to change.

REFERENCES


ENDNOTES

1. In this context, cricket content refers to current cricket matches, which is the primary revenue driver. Other content could include behind-the-scenes content, special programming, interviews, archive, films etc.

2. This period covered cricket events owned by a number of governing bodies, including Cricket Australia.

Large video screens have become a distinctive aspect of contemporary cities. Despite their initial history as a medium predominantly used for advertising, recent developments suggest they can offer innovative tools for exploring new modes of social interaction and cultural exchange. This paper argues that large screens such as the one in Melbourne’s Federation Square represent a new generation of screens, both in terms of spatial location and civic orientation. Drawing on fieldwork conducted in Australia, the Netherlands and the UK, a model is presented for three emerging ‘alternative’ uses of large screens. It is argued that, in the context of high-speed digital networks such as Australia’s National Broadband Network, urban screens now have the potential to move beyond ‘ambient television’ to play a role in initiating new collective interactions in public space.

INTRODUCTION

The roll-out of the National Broadband Network (NBN) marks a critical moment for the future of Australian cities. High-speed broadband networks such as the NBN are profoundly altering the relationship between communication, place and social agency. As access to digital networks becomes near ubiquitous, new possibilities for citizen participation in the making and remaking of city life are emerging. What Klein (2004) describes as ‘scripted spaces’, in which possibilities for agency were determined more by the spatial constraints and ambiance established by architecture, are increasingly being augmented by what Sassen (2011) describes as ‘a sort of open-source urbanism’. While Sassen was referring primarily to the use of digital feedback systems to fine-tune provision of local government services, the concept has a wider applicability to the organisation of urban public space.

This paper will examine the impact of high-speed broadband in relation to a particular urban setting – large video screens situated in public spaces. While large screens pass unconsidered in most debates about broadband, their transformation is indicative of a broader dynamic affecting urban space. The paper will begin by considering the implications of ubiquitous digital networks for contemporary cities. It then offers a brief history of large video screens located in public space and argues that a ‘second generation’ of screens demands that we reconsider their potential as place-making resources. From this basis, the paper considers the ways in which high-speed broadband is instigating further significant changes in the utilisation of this infrastructure. In particular, the paper will focus on two trajectories:

I) the shift from treating the screen as a display surface to an interface capable of supporting new modes of interaction including user-generated content; and

II) the extension of the screen’s reach from local and physically proximate viewers to a networked and potentially transnational audience.

Together, these shifts open a space for new modes of civic engagement and new practices of urban communication.
The impact of digital networks on cities has now been an object of study for several decades. Early approaches tended to be split between those focusing primarily on how digital networks were implicated in the restructuring of urban and regional economies, and those which viewed the Internet as promoting a new sphere of activity largely separate from the materiality of the everyday city. The first approach was typified by Castells’ (1989) examination of changing industry models and labour-force demographics, and Sassen’s (1991) influential conceptualisation of the ‘global city’ as the networked ‘command and control centre’ of global capitalism. The second approach was typified by the dot-com era ‘cyberspace’ manifestos of those such as John Perry Barlow (1996), and Esther Dyson et al (1994), which treated the Internet not only as profoundly immaterial but fundamentally de-materialising.

This tendency was repeated, albeit in a more nuanced way, by those such as Rheingold (1993) and Mitchell (1995) who saw new modes of ‘electronic community’ potentially displacing the primacy of embodied interactions as bricks gave way to bytes.

While both approaches captured some important aspects of the restructuring of social life by digital networks, they tended to ignore the lived experience of mediated urban space. For Castells and Sassen, this was because they situated their analysis at the macro-level of industry restructuring and flows of capital and labour. For ‘cyberspace’ theorists, this was because they were more concerned with how networks constituted a new ‘placeless’ realm in which association would be governed by laws of ‘interest’ rather than propinquity. But, despite many declarations to the contrary (e.g. Cairncross 1997), place continues to matter in networked cities. Over the last five or so years there has been growing recognition that networks don’t only work at macro-levels, or in some kind of parallel universe called ‘cyberspace’, but are deeply and profoundly implicated in the messy, embodied and material spaces of everyday life. From this perspective, the experience of contemporary urban space is now shaped, and even co-constituted, by digital networks (McQuire 2008, Eckhardt et al 2008, Foth 2009, Gordon and de Souza e Silva 2011).

This new paradigm partly reflects the impact of practical developments, most notably the exponential growth of mobile phones. Far from flattening and homogenising place, the growing use of mobile devices has sparked interest in understanding the techno-politics of place-specific public communication. In fact, the last decade has seen a world-wide explosion of discussion, in which technical questions of access overlap social issues such as new protocols for negotiating face to face encounters while permitting real time interruptions via the phone. More recently, we have seen the deployment of a new generation of technologies such as smart phones, tablets and other mobile devices, in conjunction with the relaxation of US military restrictions on civilian use of Global Positioning Systems (GPS) since 2000. The latter key technical threshold has sparked a range of new practices using location-aware devices and geo-spatial data, including leading commercial applications such as Google Maps, and location-based social networking services such as FourSquare and Facebook ‘Places’. It has also inspired the emergence of a wave of informal, non-market practices, such as locative media art (Tuters 2009), and the types of dynamic self-organisation of public space by citizen groups variously named smart mobs (Rheingold 2002), flash mobs and swarms.

This is the threshold of what I call ‘gemedia’. This term needs to be understood in two related senses. First, it refers to the fact that contemporary media are utilised in a much wider range of settings than the older defaults such as home and office, or specialised sites such as cinema. Media are now routinely embedded throughout urban infrastructure in a variety of forms and scales, from information kiosks to large video screens, while the spread of wireless networks and mobile devices enables the temporary appropriation of almost any public space. From a media paradigm conditioned by relative scarcity, in which one had to travel to particular, fixed sites in order to watch, listen, or be connected, we are rapidly entering a new paradigm of ubiquity. Second, ge media refers to the way in which media are rapidly incorporating location-awareness such as GPS systems, thus broadening the potential for use of place-sensitive data and context-aware applications.
If we add the growing deployment of remote sensors capable of automatically monitoring all sorts of environmental conditions, including object-based data technologies such as RFIDs and QR codes, we find ourselves on the threshold of the city as a ubiquitous digital environment in which recursive streams of data begin to impact on situations in ‘real time’ (Townsend 2000). This tendency towards the interlinking of human and non-human ‘agency’ has been variously described as ‘ambient intelligence’ (Aarts et al 2001), the ‘Internet of things’ (van Kranenberg 2008), or, even Latour’s (1993) earlier and more politicised ‘parliament of things’. These descriptions highlight the extent to which public space is becoming subject to new dynamics in networked cities.

The fact that public actors are now immersed within complex socio-technical networks extending throughout the city suggests a need to change how we understand the public. If, as Warner (2004) argues, it was always problematic to conceive ‘the public’ as a pre-existing and stable entity, the present situation has accentuated this complexity. Not only are most urban populations far more heterogeneous than in the past, they are also subject to novel forms of mobility such as tourism and short-term migration. National identity cedes ground to what Ong (1999) calls ‘flexible citizenship’. Moreover, publics now operate in relation to global digital networks which generate overlapping and ‘stacked’ spheres of action. In media studies this has usually been examined in terms of media use by ‘diasporic communities’ (e.g. Georgiou 2006). Here I am more interested in the reverse optic: the impact on the public (meaning whoever happens to be in a particular place at a particular time) of the diversity of communication lines that are routinely accessed in the contemporary city.

This new setting has particular implications for public space. While the ‘local’ context of public space remains important, it increasingly has to operate as an open locality crossed by new speeds and scales of communication and new potential for action. In this context Anne Galloway (2006) argues there is a growing need to understand the formation of temporary publics that assemble mobile and disembedded actors on a contingent basis around specific issues and events. This new condition underlines the importance of undertaking detailed and situated analyses of the intertwining of digital networks and public space.

PUBLIC SCREENS

At first glance, urban screens seem an unlikely site for the reinvention of public space – after all, the advertising they usually carry is one of the most visible developments associated with its demise. For some, a primary reference point for the effect of urban screens remains Ridley Scott’s influential film Bladerunner in which giant screens advertising the benefits of ‘off-world’ life circle above earth’s remnant population abandoned in a ruined cityscape. However, foreclosing other possible screen uses seems premature.

If we date their emergence from the erection of the landmark Spectacolor Board on the old New York Times building in 1976, urban screens are roughly 35 years old. By the mid-1980s, screens had the capacity to display full colour video at much better resolution. This meant they began to find a home primarily in two sites: on the one hand, premium sporting venues, and on the other, iconic city centre locations such as Times Square in midtown New York and Hachikō Crossing in Tokyo’s Shibuya. Each location favoured a distinct mode of screen use and spectatorship. Stadium screens primarily supported specific live events, such as sport or live concerts, by providing close-up vision for mass audiences schooled on the television staple of ‘instant replays’, while street screens were primarily used for advertising. Unlike the relatively stationary stadium spectator, the street spectator is usually mobile. Attention is not focused, but, as Walter Benjamin argued long ago, is often fundamentally ‘distracted’ (Benjamin 2003, 269). In this context, street screens placed a premium on spectacular display in order to attract fugitive ‘eyeballs’. Treating the audience as moving targets whose attention has to be caught and held for only a few seconds has tended to perpetuate a fairly narrow mode of programming. Such an approach faces significant challenges in the contemporary cityscape. Once LED became a viable video format in the mid-1990s, screens proliferated across more and more urban surfaces. As screens have become more common, particularly in the high traffic sites that have historically had the
greatest density of innovative advertising displays, the impact of any single screen has been diminished. Instead what stands out is the visual excess of the cityscape as a whole.

This history of using street screens primarily for advertising and stadium screens to support premium live events such as sport has often led to the dismissal of urban screens as a vehicle for other modes of communication. However, over the last five or six years it is possible to observe new trends emerging. An increasing number of screens have been constructed in more traditional public spaces, such as city squares and plazas, rather than in high traffic thoroughfares. These settings open the potential for a broader spread of programming, less constrained by the immediate need to grab attention.

Here I want to briefly describe three models for the alternative use of urban screens. By ‘alternative’ I mean that these screens show either little or no advertising, and instead seek to display a new range of content, to foster new institutional partnerships, and especially to develop new practices of public spectating. I have characterised the models respectively as

i)  public space broadcasting;

ii)  civic partnership, and

iii)  video art.

These are by no means an exhaustive typology of possible approaches, but serve to indicate new directions.

The ‘Big Screen’ Public Space Broadcasting project in the UK constitutes the most developed urban screens network, comprising some 20 screens in different cities at the time of writing (BBC 2011). The project was initially inspired by the success of a series of temporary screen-based events staged by the BBC in conjunction with the Commonwealth Games and the Queen’s Golden Jubilee in 2002. This led in 2003 to a project to program a large screen in Manchester over an extended period (initially a year), which in turn developed into a pilot program for rollout of up to 10 permanent screens by 2007. In 2008, primarily responsibility for further roll-out devolved to LOCOG (London Organising Committee of the Olympic and Paralympic Games), and 10 more screens have opened. The screens are intended to form part of the ‘live site’ program of national engagement planned for the London Olympics in 2012.

One striking aspect of this project is that, while the screens have always had a heavy reliance on BBC content, from the beginning they were not seen as BBC-owned or controlled, but depended on partnerships established with a mix of local government, cultural institutions and universities in each city. The driving ambition was to use the screens to support local events, as well as to allow public spectating of a range of cultural events from music to sport. A key aim of the pilot project was to learn more about what sort of programming might work in the context of public space. Reflecting on the early roll-out Bill Morris (then Director of BBC Live Events and now Director of Culture, Ceremonies, Education and Live Sites for LOCOG) divided screen operation broadly between the ‘event mode’ of established crowd pullers like live sport where the screen is the collective focus of attention, and ‘ambient mode’ where the audience attention tends to be looser and more transient:

The event mode is the obvious one, but what are the range of other content which, when it’s in ambient mode, are still useful in terms of the normal warp and weft of people’s daily life? […] What happens if you put on a soap opera, so there’s Neighbours or East Enders? Is that actually going to make people stop and watch the screen? Again, say, a news information program? What happens if you put a local, non-broadcast, non-commercial film, or a professional artist on, will people watch it? (Morris 2005)

From the beginning, the success of different screens in engaging the community has depended on specific local factors, including the choice of site and the commitment of various partner organisations to support the screen with original content. In cities such as Liverpool, the screens have been used for a wide range of community-related and innovative content, including interactive games. However, following the conclusion of the pilot project, the screens were integrated into a more formally structured network in which local nodes can still
choose to ‘opt out’ but the default setting is centrally controlled programming from Birmingham. This was partly driven by the BBC’s desire to develop a stable model of standardised screen technology allowing more efficient installation and operation, and also by the practical issue of producing significant amounts of local or innovative screen content (Gibbons 2008). While the network model offers benefits in terms of streamlining content provision and screen maintenance, it has led to concerns expressed by bodies such as the Commission of Architecture and the Built Environment (CABE 2008) about the lack of integration of new individual screens with the existing urban environment.

The second model, which I call civic partnership, is typified by Melbourne’s Federation Square. When the site opened in 2002, it included a large screen integrated into the facade of a building facing onto the main plaza. While this orientation away from the street placed it firmly in the new generation, for the first two years the screen was used in what might be called the traditional mode: to run advertising or for public display of commercial television programming. However, under the leadership of a new CEO, Federation Square has increasingly sought to integrate its multimedia assets, including the large screen, into realising its Civic and Cultural Charter. As CEO Kate Brennan (2009) describes it:

The majority of Fed Square’s success is about its engagement with a broad cross-section of the community and the big screen in particular is an integral part of that. So we were really pushed into a situation in which we had to think about what was the most efficacious engagement with the broadest possible community: how we could make the screen work better for events, how could we use it creatively, and for information. It was important to me that this wasn’t cluttered up by having advertisements on the screen for X or Y. […]

Brennan adds:

We were, in a sense, unsure about what we were trying to do. But the things that were working for Fed Square around community, not so much about cultural product, but certainly around community, were the things that we started to focus on. Also, because we took the notion of telling stories as a really important component, we thought we had better tell the story of what was going on here on site as well.

In practice, this has involved sourcing a much wider range of content, both locally and internationally, developing programming relevant to specific communities, as well as programming information about the site and events in the precinct. While some programming has been more experimental and risk-taking, the overriding strategy has been to use the screen in ways which promote rich forms of community engagement.

The third model I want to describe is that developed by CASZ (Contemporary Art Screen Zuidas) in Amsterdam, which is distinguished by its commitment to displaying contemporary video art in a public context. As its inaugural curator Jan Schuijren puts it:

I will also never go as far as, for example, the FACT initiative in Liverpool or what is being done here at Federation Square, where programming is partly catered to the community. CASZ is not meant to be, and will never be, a community screen – it has been conceived as an arts stage. And that’s a clear difference in our intention. (Schuijren 2008)

This orientation reflects the specific genesis of CASZ as a collaboration between the Virtueel Museum Zuidas, the Zuidas district, and the Foundation for Art and Public Space. It has also led to specific strategies for displaying contemporary art. Interestingly, while Schuijren was happy to display work which provoked reactions and incited criticism, he was less attracted to the new media staple of ‘interactivity’. Rather, he sought to explore how programming might relate to patterns of audience mobility. After an initial year of operation when Schuijren admits he tried to be ‘very anticipatory’ in relation to audience moods and rhythms, in 2008 he moved to a simpler and more repetitive structure of programming. As he described it:
The fact that we have this ‘regular’ audience, so to speak, means that we have to work for them. Let me put it another way. For me, there are many reasons not to work, at least yet, with interactive material or interactive content. Why? Because I think that people who have to use that square every day in order to go home, or to go to work, or to go to the university, would not want to be asked to interact five days a week. I don’t think that will work. If eighty percent of your possible audience is returning more than four days a week, you have to be really careful what you ask from them. And, of course, you also have to carefully decide what you offer to them, and how you offer it to them. […] That’s also why this repetition is important and why it’s so beautiful in itself to have the opportunity to have a regular audience. This audience that comes every week, every day of the week, time and time again, allows us to actually to build something over time. (Schuijren 2008)

NETWORKING URBAN SCREENS

These snapshots point to some of the ways in which large video screens can become distinctive new public settings that combine attributes of both media and architectural space in novel and still relatively under-explored ways. What I want to consider now is how high-speed connectivity is further transforming this situation. At the same time that large LED screens became cheaper, more robust and therefore more viable as public infrastructure, bandwidth became progressively cheaper and more widely distributed. Whereas most large screens in the 1990s were developed as stand-alone installations, by the 2000s there was growing potential to link screens without exorbitant cost. The formalisation of the UK Public Space Broadcasting project as a network is one expression of this capacity (although it used dedicated cables rather than public Internet connectivity). But, in principle, any screen could now link relatively cheaply to others. Second, growing penetration of mobile devices such as phones created new possibilities for constructing flexible interfaces between large screens and individual members of the public. Rather than having to take turns at a console, the mobile phone opened a way for displaying content generated by multiple users on large public screens.

To explore these possibilities for new forms of public communication, a partnership was developed between researchers at the Universities of Melbourne and Sydney, and partner organisations Fed Square Pty Ltd, the Australia Council, and Art Center Nabi in Seoul. The objective was to commission interactive art works specifically for display on large screens, so as to engage diverse members of the public who happened to be in a particular public space. Second, we wanted to utilise the new capacity to network large screens in order to develop a live link-up between screens in Melbourne and Seoul, thus constructing a temporary ‘transnational public sphere’. The choice of a partner in Seoul reflects the new spatio-temporal contours of global networks: like many other Asian cities, Seoul is ‘closer’ to Melbourne—in terms of time difference—than Perth is. The project stands at the crossroads of two ideas of the public sphere: the older conception in which the public sphere is rooted in physical space (the street, the plaza or agora) and the modern conception in which the public sphere operates primarily as media space. Our interest was the emergence of a third space in which certain elements of the earlier models were intertwined rather than in separate or oppositional domains.

The first ‘urban media event’ event was run in August 2009, on the occasion of the opening of a new urban precinct in Songdo, Incheon. Come Join Us Mr. Orwell (organised by Art Center Nabi) involved a combination of live camera links between the two sites, screenings of artists’ videos, and live performance. It also included two interactive works, specifically commissioned for the research project, which used SMS as the interface to the large screen. SMS origins (by Australian artists Leon Cmielewski, Josephine Starrs and Adam Hinshaw) allows participants to text the details of the birthplace of their parents and themselves to the screen. The software translates the information into lines on a world map connecting the different places. Audiences in both sites see the creation of a real time map of the co-ordinates
reflecting the collective input of participants from each city. The graphic design of the work is deliberately low-tech and simple, emphasising the process of audience input rather than offering a rich palette for personal expression. The limited options means the work is best described as user-influenced rather than user-generated. Nevertheless, like other crowd-sourced participatory art, the content of the work will be different each time it is displayed, depending on the composition of the audience. **Value@ Tomorrow City** (by Korean artist Seung Joon Choi) used the screen more as a public bulletin board. Audiences were asked to respond to the question: ‘As a member of the future city, what do you think is the most important value?’ When messages were sent, the ‘values’ appeared on the screen as key words. If the words entered by one person were identical or similar to those used by others, the size and position of display changed. By using ‘folksonomy’ (an informal taxonomy generated by users) as the basis for the visuals, the arrangement was not only dynamic in response to user-input but subject to self-organisation.

What lessons can be learnt from an event like this? Partly because it was in ‘event’ mode, the mode of interaction with the screen had to be more tightly defined than we might otherwise have chosen. Since it was a pioneering undertaking, there were certain technical constraints, some of which proved difficult on the night. Despite these limitations, our audience research found plenty of interest from participants in the different cities in using this new communication platform. While part of this interest was undoubtedly related to novelty, participants also expressed enthusiasm for the way the screens were able to ‘connect’ specific audiences in each site as well as those assembled in different sites/cities.

**CONCLUSIONS**

Clearly, capacity to influence the public environment is not new. However, using flows of data to do this in ‘real time’ is. As Crang and Graham (2007, 811) note, ‘the environment has always been recursively influenced and influenced by action. What these technologies do is change the temporality of that action’. Real time interactivity can be manifested in many different ways. An important aspect of the design of both artworks was their capacity to display data in a manner which did not ‘average’ it, but retained traces of individual inputs while displaying each contribution as part of a dynamic network.

This capacity to register, process and display data gathered from a multiplicity of sources is a direct outgrowth of access to low cost, pervasive digital networks. Our initial research indicated that audience members gained pleasure from participation. This might be partly due to the fact that the capacity to mark make a mark in large-scale public spaces is relatively rare, especially for young people. Using the large screen in this way enhances a sense of ‘belonging’ in the space but also a sense of engagement with others who are watching or doing the same activity. This finding resonates with what others such as CASZ and the BBC have learned about the importance of local relevance to the programming of public screens. It also underlines the importance of designing works that enable easy transitions between different modes of engagement such as watching and doing.

In future iterations of the project the intention is develop more complex interfaces enabling richer modes of communication addressing dimensions of both embodied and media space. However, realising these possibilities is not an automatic function of building technological capacity. Digital networks in the current conjuncture are striking in the manifest tension between the new models of participation emerging simultaneously across so many sectors, and the techno-political horizon of what Deleuze (1992) famously dubbed ‘control society’. Moreover, the success of large screens as a place-making infrastructure is critically dependent upon location and integration into well thought out public spaces. It also demands institutional settings treating the screen as a dimension of public space, and which value public input. The mark of success is not necessarily spectacular productions but modest experiments which create space for new transversal forms of citizen-to-citizen engagement, collaboration and dialogue. In this way, large screens situated in public space can begin to offer a distinctive means for connecting erstwhile strangers—both those in the same physical space and those in a linked space elsewhere—in an experimental mode. They point towards new possibilities for
overcoming the barriers of public fear and mutual suspicion that have intensified in the ambient fears of post 9/11 culture.

REFERENCES


Brennan, Kate. 2009. Interview conducted by author and Meredith Martin in Melbourne, March 10th, 2009.


Dyson, Esther; Gilder, George; Keyworth, George; Toffler, Alvin. 1994. ‘A Magna Carta for the knowledge age’. New Perspectives Quarterly 11 (Fall): 26–37.


Gibbons, Mike. 2008. Interview with Mike Gibbons (Head of Live Sites and UK Coordination for LOCOG, and previously Project Director, BBC Live Events) by author, Melbourne, October 4th, 2008.


Tuters, Marc. 2009. ‘From control society to the parliament of things’. Available from: http://escholarship.org/uc/item/3zj2i89z


ENDNOTES

1. Dyson et al (1994) went as far as to proclaim: ‘The central event of the 20th century is the overthrow of matter’.

2. Spectacolor was actually a programmable animated electronic sign using an array of krypton incandescent bulbs to produce what now seem to be fairly rudimentary monochrome graphics. Its key innovation over existing signage was its capacity to display variable content.

3. Federation Square was designed by LAB architects and built on a ‘greenfield’ site in central Melbourne. It comprises a number of major cultural institutions as tenants, and is managed on behalf of the State Government by Fed Square Pty Ltd under a Civic and Cultural Charter.

4. Zuidas is a new urban development bridging Schipol airport and the centre of Amsterdam, and is intended to function as a ‘gateway’ to the city.

5. LP0989302 ‘Large screens and the transnational public sphere’ is funded by the ARC 2009-13.

6. New Songdo City is arguably the world’s best-known example of a ‘smart city’ built from scratch over a relatively short period. The urban media event took place in Tomorrow City, a precinct within Songdo built by SK.
Participant comments from research conducted in Melbourne and Songdo on the night included: “Different scale and many people are participating here”. “As it’s an outdoor event, the scale is much bigger [than indoor ones] and I was impressed by the overwhelming screen images and sound ... I felt connected [to Melbourne]”. “I felt difference, but I felt a sense of connection...”. “It was very new that we could directly participate [in art performance] through mobile phones. My previous experience with media art was one-dimensional, where the screen images were changed responding to my movements”. “It was fascinating to see that [I] could directly take part in the artworks through my texts”. “People in Melbourne and I could share each other’s words [values]”. “I felt very close to them as if I couldn’t feel the physical distance. It’s hard to say that a sense of connection has been created all of a sudden. However, I feel that we [Koreans] are a little bit connected to Australia’s art and media through texting and visual screening”.

In SMS Origins, when each mapping first appears, it is identified by the three place names and the line linking them is traced in bold. As the next mapping proceeds, the first line becomes part of the network. In Value@Tomorrow City, each term is tagged with the last digits of the sender’s phone number.
While the broadband Internet may extend Australians’ access to information, in this paper we argue that news diversity regulation matters more than ever in the emerging online media environment, where news applications are proliferating. Online news industry trends and research on source, exposure and content diversity indicate that media concentration should be a major policy concern for the Australian Government’s Convergence Review. In light of overseas responses to declining media diversity, we outline ways in which Australia might renovate its traditional approaches to safeguarding pluralism.

INTRODUCTION

In the last decade Australians’ access to new online media channels and services – from Al Jazeera online and Google News to Twitter, Blogger and Delicious – suggests we experience increasing information plurality. The value of these developments cannot be underestimated, but as we will demonstrate existing regulatory rationales for ownership plurality and media diversity do not evaporate merely because we have new services, products or delivery modes.

Broadband media market trends show new forms of news media industry consolidation, including content sharing across multiple publications. Other studies suggest that the domestic news Australians consume online is dominated by media sources familiar before social media were born — Fairfax, News Ltd, the ABC and Ninemsn.

Beyond the concerns it has raised about media ethics, the ongoing UK phone hacking scandal has cast the issue of media diversity in stark relief just as the Australian government’s 2010-2011 Convergence Review moves into its discussion phase. The challenge for governments and their regulators we set out here is to develop regimes that encourage greater news diversity, are based on enforceable rules in the public interest, and that prohibit monopolised ownership and control of influential media including online channels.

Finally in response to critics of regulatory intervention, we maintain that Internet media markets show no inherent characteristics that would remove the need for such rules. To the contrary, we will argue that as broadband media markets evolve, online content consumption, production and distribution are beholden to the commercial logics that apply to traditional media. Diversity measures simply require reinterpretation for unfolding market conditions.

NEW FORMS OF CONSOLIDATION

Back in 2006, Labor’s shadow minister for communications, Stephen Conroy, lambasted the Howard government for its proposed changes to ownership laws:
What we are going to see is a massive handing of concentration of media ownership to the most powerful people in the land already. This has got to be considered to be bad for democracy, bad for diversity of opinion and should be opposed. (Conroy 2006)

That legislation passed, consolidation did increase (with, for example, Fairfax Media buying Rural Press and Southern Cross Broadcasting, Foxtel swallowing Austar, and the Ten network being run by Lachlan Murdoch and part owned by James Packer) and Australia has renewed its dubious distinction of having the most concentrated media among comparable Western democracies.

But traditional media concentration has also had a flow-through to online news provision. Roy Morgan data indicates that Ninemsn, and the news.com.au and Fairfax Digital portals were among the top ten most visited websites in October-December 2010. Major news providers have also leveraged their existing print and audiovisual content in news applications for broadband mobile and tablet delivery, and for delivery on YouTube, Facebook and Twitter. Google and Bing then reinforce the dominance of these publishers, by ranking their news higher in searches based on inbound link counts, authority of the domain, freshness of content, social media mentions and popularity in search query data.

The industry-wide shift to multimedia, convergent production online has exhibited further signs of concentration via an increase in strategic cross-media content-sharing partnerships – for example video-sharing between Fairfax Digital and Network Ten, APN News & Media and Southern Cross Ten, News Digital’s perthtoday.com and the Seven Network, and among all News Limited companies via the global in-house wire service NewsCore.

Add to this the expanding editorial influence of AAP and we are seeing new forms of industry consolidation emerging that deserve closer examination. Both Fairfax Digital news sites and ABC News Online now republish significant numbers of AAP stories, in order to meet user demand for breaking news at peak periods. How might this demonstrate diversity (or independence on the part of the public broadcaster for that matter)? AAP’s Pagemasters editorial production service, which subs news and designs information pages for APN News and Media and Fairfax, as well as overseas publications, provides template-ready ‘content’ to plug the news hole. How might publication of the same world news across many co-owned titles impact on diversity? Consolidation questions are not as directly answered in a multichannel, globalising broadband services context as they have been in the past.

Historically the dangers of media ownership concentration have been well canvassed. The 1962 United Kingdom Royal Commission on the Press (one of three held from 1949 onwards as newspaper numbers declined) noted “the real danger may not lie in the active propagation of one-sided views, but in the conscious or unconscious suppression of shade of opinion which ought to have a voice” (Royal Commission on the Press in Commonwealth of Australia 1992, 17). Later inquiry findings warned about the undue influence of a few proprietors on public opinion (Norris 1981, 217) and the potential for “distorted” reporting (Commonwealth of Australia 1992, xxii).

The march of concentration generating these official anxieties could also be clearly demonstrated in terms of decreasing ‘source’ or structural diversity – fewer titles, owners and journalists. In the print sector alone the numbers of generalist paid metropolitan newspaper titles and owners has declined significantly over the past century – from 21 daily newspapers and 17 owners in 1903, to the present 10 hard copy dailies and three owners (Fairfax, News Ltd, and West Australian Newspapers, the latter now controlled by Kerry Stokes’ Seven West Media).

The current mediascape is far more complex, with source diversity apparently boosted by the launch of free commuter dailies, digital television and radio channels, and in the online realm by new metro dailies brisbanetimes.com and watoday.com, alliances between local and international news publishers (ninemsn, Yahoo!7TV) and the emergence of many small independent publishers, including bloggers, enjoying lower economic barriers to market entry.
It is certainly worth studying to what extent new online news publications – including commentary sites *The Punch* and *Unleashed*, news feature/commentary sites the *National Times*, *Online Opinion*, *New Matilda* and *Crikey*, and bloggers – increase source and content diversity. Only three of those new feature/commentary titles are produced by independent, Australian-owned entities. Two are largely philanthropically funded, and all are small, financially precarious niche operations, suggesting limited diversity gains. Crowd-sourced journalism initiatives such as *YouCommNews* and *Our World Today* are positive signs, but even more economically vulnerable ventures. Bloggers and other citizen journalists also have great potential for structural diversification of news coverage, particularly political reporting (*Ward and Cahill 2007*; *Bruns 2010*), but are less likely than mainstream organisations to be able to offer consistent, accountable coverage of public institutions, generalist political news, and major news and current affairs events. This is certainly the pattern in the more developed U.S online environment (*Project for Excellence in Journalism 2010*).

In terms of new journalistic voices, no reliable data exists on the contribution of independent sites and social media channels to jobs growth. In the broader news media there is increased demand for video and social media journalists, but it is unlikely that hirings would balance the estimated 700 full-time mainstream editorial jobs lost since 2008 (*Media Entertainment and Arts Alliance 2010*).

Importantly exposure diversity research indicates that the online independents are on the fringes of the consumption chain, indicating that their influence on public opinion vis-à-vis the majors should not be overplayed.

**EXPOSURE TO NEWS DIVERSITY ONLINE**

Online news audiences are expanding as traditional news audiences are in decline, yet recent data on news use and production indicates that Australians still rely on traditional media companies for their information. For example, Crikey.com commentator Bernard Keane, drawing on Essential Report data, observed that free to air TV is still the main source of news for Australians: 64% on weekdays, 59% on weekends; and that 32% of people also use ABC TV news (*Keane 2010*). The next most popular source is online news sites: predominantly the ABC’s site, the Fairfax and News Limited newspapers sites, and others like ninemsn.com, which draw content from TV networks. In other words, mainstream media dominates the source of news for most people. Newspapers were next: 42% on weekdays and rising to 50% on weekends. This data shows 17% of people use commercial radio as a news source; 9% use subscription TV news and only a small 4% use blogs. Alexa, the web measurement company, ranks Crikey.com the 620th most accessed site in Australia, compared to ninemsn.com.au, which was twelfth, or news.com.au which was tenth.

Australians’ reliance on internationally controlled news sources has also increased with their Internet and social media use. In its 2010-2011 Communications Report on the Digital Economy, the Australian Communications and Media Authority (ACMA) relies on Nielsen data to show that Australians are spending more time online, and “accessing a wide range of information and content online, viewing an estimated 18.2 billion web pages hosted within Australia and overseas from home during June 2010 alone” (*Australian Communications and Media Authority 2011*, 51). Nielsen also suggests that Australians are among the heaviest users of globally branded social media services like Facebook and Twitter (*Nielsen 2010*).

Web site traffic has so far demonstrated Australians’ very clear preference for overseas owned, global web properties – the top 10 most visited sites in June 2010 being Google Search, Facebook, YouTube homepage, Google Maps, Wikipedia, eBay, Google Image, ninemsn homepage, Windows Live Hotmail, and Blogger (*Australian Communications and Media Authority 2011*, 52). With ninemsn the only clearly Australian part-owned and based site among this earlier top 10, and not many more in the top 25, we can see a strong international ownership skew (*Australian Communications and Media Authority 2009, 2010*).

It is precisely because large, established media groups dominate online news provision and consumption that the theoretical diversity of Internet media is not realised. When looking for
news web users tend to go to the online sites of recognised brands or to news aggregators and the dominant search engines, Google, Bing and Yahoo which, as we have indicated, rely on traditional news media content (Haas 2005; Mitchelstein and Boczkowski 2009). In a 2009 study US scholar Matthew Hindman found that the:

…majority of searches contain the names of specific news outlets or specific Web pages. Of the 990 total searches, 595 — three-fifths — were searches for specific Web sites or online news outlets. In short, most searches involve citizens seeking out news organisations they are already familiar with. (Hindman 2009, 73)

Gauging the impact of social media on news plurality is a more complicated equation which requires further local research. Social media services facilitate the sharing of news and the creation of user generated content, and thus support the potential source diversity of social information and news, as well as civic and political engagement (Hampton et al 2011). However in the US the majority of social media producers are from typically higher socio-economic backgrounds (Schradie 2011; Technorati 2010) and so are those voices who have been best represented in the traditional media.

Furthermore, it is likely that the majority of social media users excerpt and aggregate mainstream news on events outside their everyday, lived experience, rather than producing original news research and analysis, the practice of journalism. Thus Australians’ increased use of social media services does not in itself constitute evidence of a concurrent increase in the exposure or content diversity of news media.

CONTENT DIVERSITY IN ONLINE NEWS

Another important online news trend is the extent to which content reuse is growing as source diversity (of owners and journalists) declines. In Australia, Fairfax Media and News Limited have rolled out web templates for all of their city, suburban and rural newspaper titles, grouped as the News Digital network, with over 135 generalist online news titles, and the Fairfax Digital network, with over 180 titles including five state farming news sites and four talk radio sites. In the example of News Digital, stories are now shared between these ‘brand variants’ of their hard copy mastheads, news.com.au, the online news production house, metro mobile news interfaces and iPad editions. These cloned products are all beyond the scope of existing diversity regulation – as are Fairfax’s online-only metropolitan news sources, Brisbane Times and WA Today, its video on demand content and its content licensing to news aggregators.

Research undertaken by two of us, tracking the sources of online news, suggests increasing internal re-use of news across these publications and platforms, particularly in Fairfax media sites (Dwyer & Martin 2010; 2011). Fairfax and the ABC have both increased their online use of ‘rip and post’ news agency copy. For example in late 2009 the ABC began running up to 20-30 AAP stories daily on its online news service to bolster its business and entertainment coverage for web and mobile delivery.

As indicated earlier AAP – through its full ownership of Pagemasters – has also been involved in the standardisation and republishing of data such as world news, TV guides, cinema listings, racing form guides, sharemarket data, and crosswords and comics pages for media clients such as Fairfax and APN News &Media, the UK’s Telegraph group and papers in the US and Canada. AAP’s primary shareholders, News Limited and Fairfax have even discussed shared printing operations to cut production costs as hard copy advertising revenues decline.

The appearance of the same content in multiple channels suggests clear limits on the diversity of convergent media production – even though there is no detailed research on how content sharing might affect public access to ideas and opinions in the long term. In that respect some overseas trends are yet to make an impact in Australia, such as co-branding initiatives between formerly discrete mainstream companies like The Washington Post and Bloomberg, and pro-am relationships, like that between The New York Times and ProPublica.
However, recent events in the UK illustrate more immediately why democratic governments and their regulatory agencies should be concerned with ways of ensuring sufficiently pluralistic news media in a convergent media environment.

THE NEED FOR NEWS PLURALITY

Before the full News of the World phone hacking scandal broke in July 2011, News Corporation’s bid to control 61% of British Sky Broadcasting (BSkyB) was shaping up as a litmus test for ownership and cross media regulation. If approved News would have owned around 37% of the newspaper sector and three of the top ten most trafficked news websites (Ponsford 2011) with its News International assets, as well as 35% of the TV market via Sky News channel (Financial Times 2011).

In early 2011, Jeremy Hunt, then the UK’s culture secretary, was considering whether to refer News’ planned acquisition of BSkyB to the Competition Commission, to see whether the deal would have an adverse impact on news markets. Opponents of the deal had argued that News’ influence on the UK media would be too great if it had full control of BSkyB and its £950 million cash flow. Their claims were given greater credence following revelations that News employees had covered up the extent of their phone hacking activities and failed to cover the scandal in any depth.

For good reason then, Ofcom, the regulator, had been concerned about the combined influence of News Corporation newspapers and BSkyB’s satellite news assets. Its 2010 public ‘invitation to comment’ noted the “need for sufficient media plurality in the functioning of a healthy and informed democratic society” and sought feedback about the impact of the acquisition on content types; audiences; media platforms; control of media enterprises; and developments in the media landscape (Ofcom 2010a; 2010b). Importantly Ofcom stated that it would “consider how future market developments, including the convergence of broadcast, print and Internet media may affect consumers consumption of relevant media and the current levels of media plurality” (Ofcom 2010a). It mooted a platform inclusive plurality test to assess: “how the proposed acquisition may affect the level of plurality of persons with control of the media enterprises serving the relevant audiences” (Ofcom 2010a, 1.10, 11.12) and was later requested by the Secretary of State to investigate this option (Ofcom, 2011).

This indicates that Australia’s Government could also develop a test capable of taking into account concentration and convergence across all platforms, including the broadband Internet.

HOW TO REGULATE?

Even for those who support the exploration of new regulatory processes the challenges of establishing workable regimes are obvious. So far we have established that online media, by which we mean internetworked systems such as web, mobile and tablet devices, are complexly interconnected with old analogue media, and ownership consolidation is not easily reflected in horizontal or vertical integration.

We have also shown that news media ecologies are evolving through a fluid interplay of business restructuring, content sharing and audience activity. This means policy discussions about media influence cannot be reduced to simplistic slogans about ‘maximising choice’ or ‘preventing the limitations’ on user access to diverse content.

The federal Government’s Convergence Review Discussion Paper states that: “The Government intends that the review consider appropriate policy settings to ensure that Australians have access to a diverse media sector offering a range of services and perspectives” (DBCDE 2010, Convergence Review Background Paper, 18). Based on the evidence we’ve briefly outlined here, there is a definite need to update existing diversity rules. The first focus, we suggest, should be their extension to incorporate new media services. This is briefly acknowledged in a note in the Review discussion paper:
Amendments to the Broadcasting Services Act in 2006 were designed to encourage investment in new markets by removing some restrictions on control and ownership. Despite these recent changes, the existing media diversity rules still only apply to three markets—radio, TV and newspapers. Importantly, they do not reflect the diversity represented by other content services including subscription television, new managed IPTV services and the range of Internet services such as download services, catch-up TV, and social media. (DBCDE 2010, 17)

During the 2006-07 media ownership reforms supporters of relaxed laws suggested that the advent of new media services, such as Internet and mobile news, justified that legal reform despite the fact that these platforms were not included in the new diversity tests. Instead we argue that that the potential for additional concentration of control via these new media platforms calls for further amendments to ownership limits.

In particular new voice diversity tests should be capable of assessing cumulative audiences across all mass use platforms, unlike the old model, which ignored many elements of the contemporary media mix:

- online and mobile media services do not constitute “voices” in the test — and neither do national newspapers, free local papers, the public broadcasters ABC and SBS, narrowcasters, subscription or community broadcasters. (Dwyer & Martin 2010) The default presumption is that regulating these platforms would be too hard. In our view it would be more accurate to say it requires renewed commitments by Government on behalf of the publics it represents.

The largest regulatory actor in the world, the European Union (EU), has not shied away from investigating these new media frontiers. In 2007, the Council of Europe’s Committee of Ministers signalled its longer-term goal of renovating legacy media policy rationales, while reasserting traditional measures for promoting pluralism and diversity. It recommended that member states should consider adopting rules for multiplatform digital distribution by:

- limiting the influence which a single person, company or group may have in one or more media sectors;
- introducing thresholds based on objective and realist criteria, such as audience share, circulation, turnover/revenue, the share capital or voting rights;
- using rules capable of being applied in horizontal integration phenomena or mergers in the same branch of activity and to vertical integration phenomena (e.g. controlling key elements of production, distribution and related activities such as advertising or telecommunications);
- having sufficient powers for agencies responsible for regulation to require divestiture of media assets where unacceptable levels of concentration are reached. (European Commission 2007)

MEASURING INFLUENCE

We believe it is also possible to extend cross media ownership limits to include highly trafficked online news sites and services, using aggregated user data to measure influence. Ofcom has examined a range of traditional and new media metrics for assessing plurality across media platforms. (Ofcom 2010b) In our submissions to the Convergence Review we made the point that if the media industries are able to innovate on the basis of that type of data (as evidenced by Google’s free ‘DoubleClick Ad Planner’) then so should regulators.

We recognise that there is ongoing global debate about the most effective and accurate audience metrics online, resulting in uncertainties about the definition of influence in web and mobile delivery systems. Notwithstanding this, there is sufficient consensus for the rapid growth of an online advertising industry.

It is therefore critical that the government seek to engage the major parties to these debates - including the major market measurement companies, Circulations Audit Board and Audit
Bureau of Circulations – in order to determine and adopt measurement standards that are appropriate and effective in the Australian context.

By broadening the scope of the existing cross-media rules to apply to major online news media sources, the government would be making public policy that responsibly responds to the changing characteristics of influential media. To do otherwise would be a flagrant breach of the government’s public policy making role.

ENSURING ACCESS DIVERSITY

At this stage we should acknowledge that many of the assumptions, arguments and policies under consideration in the Convergence Review are dependent on ongoing discussions about the National Broadband Network. We agree that the NBN will play a significant role in the future availability of news and information, so its policy framework needs careful shaping of regulatory supervision to meet public information needs.

Broadband’s impact on pluralism is a topic of international concern, underscored by the US Federal Communication Commission’s current review of ownership rules and their links to broadband planning objectives. It has specifically asked “How does access to broadband affect our diversity goals?” (Federal Communication Commission 2010, 33) The Australian Government’s commitment to the NBN operating as a wholesale-only network will have ineluctable consequences for access to content. Many features of service and content provision will be shaped by the other network policy settings and commercial forces.

If we persist in the assumption that news journalism needs to be publicly available, and priced for widespread demographic access, then the new world of pay walls, bundled content, specialist news subscription and application programming interfaces needs a measure of access diversity. Access diversity, a concept which has been central to debates about television service bundling (Marsden 2000) recognises that digital gatekeeping mechanisms on original and specialist information are multiplying, and may restrict an individual’s capacity to access current, in-depth news analysis. Given that advertising no longer fully subsidises print news distribution, and Internet carriage and service costs are borne by online news users, access is now a critical factor in enabling exposure diversity i.e. how many different news sources are available for scrutiny.

This is why funding for public service media is still an important component of media diversity frameworks, where PSM entities can demonstrate both relatively universal service for new channels and extended news sourcing and information depth, genre development and innovative delivery. But there is an obvious need to explore other ‘positive’ regulatory approaches drawing on, for example, traditional direct and indirect subsidy models for European media and adapting them for online news environments.

Australia requires models that address the problems of establishing independent publications in small markets, and encourage regional innovation in broadband publishing systems. Here we note the current debate in Denmark over the future of government distribution subsidies given to newspapers, a model which has sustained the country’s significant press diversity (for a country of only 5.5 million people). The head of the Committee investigating new subsidy models has declared that when web-based media, smartphones, iPads and other ereaders begin to dominate media use, it is certainly time for government to take account of that in its diversity funding regimes (Dyremose 2011).

In the face of these new proposals critics of intervention in new media environments may argue that the decentralised, distributed logic of new media systems makes further diversity measures redundant – even counter to media innovation. However in our final section we demonstrate that new media evolution is being shaped by many of the same economic and social forces that gave us our existing mediascape.
Phillip Napoli (2008) has observed that fundamental processes of media consumption, economics and institutional arrangements tend to compel new media technologies, and most notably the Internet, to evolve similarly to traditional media systems.

For example, even with the global popularity of DIY YouTube productions, and the growth of blogging, audiences typically still seek out higher budget content geared to mass appeal. This tendency then works against the availability of a more diverse content repertoire by supporting mainstream channels. As Napoli argues:

…it is somewhat telling that the typical television viewer, in an environment of channel abundance, regularly consumes only about 13 of the available channels – and that is roughly the same as the number of Web sites that the typical person visits on a regular basis. (Napoli 2008, 56)

Users tend not to go past the first page of links in their web searches. Content aggregators like YouTube, Hulu, MySpace and Joost have become popular through their ability to “confine the vastness and complexity of the Web into a simpler and more manageable framework” (Napoli 2008, 57). This clustering around a few content options mirrors the traditional ‘power law’ distribution theory of audience attention and spend, with 20% of available content attracting 80% of the audience. Although Chris Anderson’s famous long tail thesis suggests other models of online media consumption may operate it is still a contentious proposition.

Further Napoli proposes that audience clustering supports traditional advertising and measurement regimes so that “established audience measurement systems naturally favour sites that attract large audiences (in the perception of advertisers)” (Napoli 2008, 62). This explains why the “most popular websites attract a share of online advertising dollars that exceeds their share of the online audience”, and indicates that “economic disincentives for serving narrower, more specialized audiences online” (ibid). It is a critical point for discussion in small media markets such as Australia, suggesting government support for independent online news media production companies, and for regional news could be necessary despite lowered costs of entry to publishing and distribution.

Market forces operate to make online media seem more like traditional media – where YouTube editors seek out contract vloggers to build channel audiences and Twitter is used to promote legacy media products. Powerful economies of scale work with the characteristics of public goods (high fixed costs, low variable costs, non-depletability) to assist old media companies to dominate new news platforms. Legacy media can more consistently bear the high risks of originating online content with wide audience appeal, by virtue of their scale and market capitalisation. There are notable exceptions working on social production, one-to-one and one-to-many models. However, the well-documented back-story to new media industries growth is that large media corporations, from the 1980s, have been successfully consolidating their operations as a defence against disruptive technological change (Goggin 2011).

The need for diversity measures to respond more effectively both to economic imperatives and new consumption patterns was strongly suggested in a recent OECD report (2010). It discussed how media diversity might be supported in regional areas where concentration was increasing as small media companies sought to converge their operations. The authors stated that rules “to foster media diversity and avoid media concentration in geographic markets are outdated and fail to appreciate that local markets may not be able to sustain various independent media, in particular given the current economic crisis” (OECD 2010, 78). Noting that online media use may be impacting on local media consumption they also asserted that “geographic and product markets may need to be re-assessed in terms of where and how consumers now get their news and whether substitution between regional newspapers and other media, particularly Internet news services, is greater than perhaps has been assumed so far” (OECD 2010).
This discussion is consistent with US analyses of online search trends showing online news users are no longer constrained by geographic markets. Hindman argues American users are: “on-demand consumers, seeking platforms where they can get the news they want when they want it from a variety of sources rather than have to come at appointed times and to one news organisation” (Hindman 2009, 73). In our view it also supports the idea that the cross-platform usage of news media must inform new policy development.

CONCLUSION

In this paper we have sought to establish a prima facie case that news diversity in broadband convergent media remains limited in ways that recapitulate the constraints observed in traditional media. It is true that from all sides media is undergoing great transformations and that dynamic and unexpected online market sectors are unfolding — viz. the emergence of apps culture and the expansion of social media, alongside the extension of mobile media services. Yet the sources of news, as indicated by our own research into Australian online news, draw from a surprisingly limited pool with much content recycling and re-circulation.

In light of these industry and audience/user trends we believe that a key issue is how the federal Government and its regulatory agencies adapt existing diversity rules, and construct new normative policy principles to promote plurality of control (and therefore media creators and representational viewpoints) for influential media.

In particular, in the area of critical information genres, such as news content, the Australian Government should develop a plurality test capable of taking into account convergence and concentration across all platforms, including the Internet, however it is accessed. Such a test needs a measure of access diversity, to establish exactly how much online news is truly in the public domain.

Although there is considerable uncertainty regarding the rate of change in the transition of mass audiences to online and mobile media, many agree that the role of government and regulators must be to maintain core social and political principles for media. In converging media a key objective must be to ensure the growth of media environments where the public has pervasive and affordable access to relevant, diverse news media. And as the international reaction to Murdoch’s NoTW scandal has once again shown us, trust in democracy is inescapably linked to the quality and plurality of news.

REFERENCES

Australian Communications and Media Authority. 2009. Australia in the Digital Economy: The Shift to the Online Environment. Sydney: ACMA.

Australian Communications and Media Authority. 2010. Communications Report 2009-2010. Sydney: ACMA.


Conroy, Stephen. 2006. 'Govt to change media ownership laws'. Australian Broadcasting Corporation. 7.30 Report. program transcript available from: http://www.abc.net.au/7.30/content/2006/s1591679.htm


A challenge facing reformers in the field of communications law is the increasingly widening gap between converging markets and services, and regulatory frameworks that continue to govern on the basis of a rigid vertical distinction between broadcasting and telecommunications. In Australia, media and communications are governed by the two distinct and largely independent statutory regimes created by the Broadcasting Services Act 1992 (Cth) and the Telecommunications Act 1997 (Cth). However, markets and services and the underlying technologies have converged. In such a context, continuing to apply vertical 'silo' laws serves to undermine established regulatory objectives of parity and technological neutrality. In 2011, the federal government announced a review of the effects of convergence. One of the issues identified in the review was to need to consider shifting from a silo model to a horizontal 'layered' model. The purpose of the present article is to analyse the merits of adopting a horizontal layered model (i.e. one which mirrors the horizontal layered architecture of modern electronic communications) as the basis for the design of an effective regulatory framework for electronic communications in Australia.

In 2011, the federal government released its Convergence Review – Framing Paper (the 'Framing Paper') which outlined the terms of reference for the inquiry. After a process of stakeholder consultation, the government released its Convergence Review – Emerging Issues paper (the 'Emerging Issues Paper'). The Emerging Issues Paper outlines issues which were identified as important on the basis of the submissions received to the Framing Paper. For the present analysis, a critical issue is the need to 'shift from industry 'silos' to a market structure based on 'layers.' ' It is noted that such a 'shift' would enable the policy framework to 'focus on services offered by each layer, rather than each industry' (Emerging Issues Paper', 12).
The *Emerging Issues Paper* further notes that regulatory parity and technological neutrality would be enhanced by a transition to a horizontal layered model (p 13).

The objective of the present paper is to analyse the merits of transitioning to a horizontal layered approach to legislation through an examination of the scholarly literature in the field and a consideration of present Australian broadcasting and telecommunications laws. The discussion hence seeks to provide a reflective scholarly basis for the issue introduced in broad terms in the *Emerging Issues Paper*.

The article begins by outlining the vertical model of laws presently in operation in Australia, and considers the problems created by using such vertical laws to regulate networks and services which are intrinsically horizontal and layered in nature. This analysis of the problems is followed by an outline of the relevant law reform discourse to date, and a consideration of an effective mechanism for implementing a horizontal layered model. In light of reference in the *Framing Paper* to the relevance of considering 'international approaches' (*Framing Paper*, 18), and the benefits of examining an operational system, the European Union framework for the regulation of 'electronic communications' is then examined. Finally, it is concluded that in order to address the distortions created by the use of vertical sector specific laws, Australia needs to transition to a horizontal layered model of regulation, and that the electronic communications framework introduced in the European Union in 2002 provides an useful road map for Australian reform.

### 1. THE VERTICAL 'SILO' STRUCTURE OF PRESENT COMMUNICATIONS REGULATION

Bar and Sandvig note that modern communications policy in most of the world has evolved to treat different media as 'islands' (Bar and Sandvig 2000, 100). Nakahata describes such a framework as regulation 'by pigeonhole' (Nakahata 2002). Similarly, Rob Frieden notes that telecommunications law has historically been based on 'fixed service definitions and relatively static assumptions about the industrial organisation of telecommunications and information processing' (Frieden 2003, 209). These descriptions are certainly true in relation to the landscape of Australian communications law. Australia's media content and communications services regulation is rigidly structured on a vertical or 'silos' based model of regulation. That is, we presently have two discrete and distinct regulatory frameworks for each of broadcasting and telecommunications. Broadcasting activities and services are largely governed by the *Broadcasting Services Act* 1992 (Cth) (the 'BSA') and the *Radiocommunications Act* 1992 (Cth) (the 'RA'), whilst telecommunications is governed by the *Telecommunications Act* 1997 (Cth) (the 'TA'). Whilst a bridge of provisions exists in order to ensure that the laws interrelate, the statutory regimes remain intrinsically distinct and independent in application.

The broadcasting sector is primarily regulated through licences issued under the BSA. As discussed in the *Emerging Issues Paper*, these licences form a vehicle through which regulatory requirements can be imposed on operators. Additionally, the allocation of commercial and television radio licences forms part of the planning process for the portion of the radiofrequency spectrum reserved for broadcasting. The RA governs the allocation and management of licensing through a framework that involves spectrum frequency planning, the setting of radiocommunications standards, and most importantly, the licensing of spectrum and related infrastructure.

A comparison of the objectives of the BSA and TA illustrates their defined and different realms of operation. As noted in the *Emerging Issues Paper*, the BSA starts from the premise that broadcasting services need to be governed differently to other communications services on the basis that broadcasting laws seek to achieve a variety of social, cultural and economic goals. For example, the objectives provision in s 3(1) of the Act encompasses a variety of objectives designed to encourage access to information, education and entertainment, as well as encouraging content that develops Australian identity and character and cultural diversity.
Section 4 (3) of the BSA further provides that Parliament intends that Internet carriage services supplied to end-users in Australia be regulated in a manner that enables public interest considerations to be addressed in a way that does not impose unnecessary financial and administrative burdens on Internet service providers. It is also envisaged that such regulation will readily accommodate technological change and encourages the development of Internet technologies and their application, provision of services made practicable by those technologies to the Australian community and the supply of Internet carriage services at performance standards that reasonably meet the social, industrial and commercial needs of the Australian community.

In contrast to the detailed objectives of the BSA, s 4 of the TA simply provides that Parliament intends that telecommunications be regulated in a manner that promotes the greatest practicable use of industry self-regulation, and does not impose undue financial and administrative burdens on participants in the Australian telecommunications industry. 'Telecommunications industry' is further defined in s 7 of the TA to include an industry that involves carrying on business as a carrier or carrying on business as a carriage service provider, supplying goods or services for use in connection with the supply of a listed carriage service, supplying a content service using a listed carriage service, manufacturing or importing customer equipment or customer cabling, or installing, maintaining, operating or providing access to a telecommunications network or a facility used to supply a listed carriage service.

The BSA seeks to achieve its stated objects by dividing all services into a series of mutually-exclusive categories that attract different forms and levels of regulation (ss 11-18A of the BSA). The categories broadly relate to three main sectors of broadcasting, commercial services, community services and national services, each of which attracts a different licensing arrangement. Commercial services encompass the more specific categories of commercial broadcasting services, subscription broadcasting services and narrowcast services. National services encompass the Australian Broadcasting Corporation and the Special Broadcasting Service.

The Framing Paper observes that the BSA provides 'a mix of business models for broadcasters' (p 7). One model relates to 'free-to-air' broadcasters who are largely dependant on advertising revenue to deliver services and are governed by broadcasting and open narrowcasting licences. A second model relates to subscription broadcasters and narrowcasters who are largely dependant on subscription income to deliver services and are governed by subscription broadcasting and narrowcasting licences. A third model relates to community broadcasters who are largely dependant on community sponsorship. A fourth model relates to the regulation of the ABC and SBS who are largely dependant on government funding, and in the case of SBS, a measure of advertising revenue.

In comparison, the TA seeks to achieve its stated objects through the licensing of carriers, parties who own infrastructure for providing carriage services. Two further categories of industry operators, carriage service providers who provide services used on the infrastructure owned by carriers, and content service providers who rely on carriage service providers to provide content based services to the public do not require licensing under the TA but are subject to governance of the TA. The three categories are not mutually exclusive, and one operator can simultaneously fill all three roles. Notably, whilst the TA regulates content service providers, the actual content they deliver through such platforms are predominantly governed by the BSA. Hence, in comparison to the BSA, the TA seeks to create a liberalised regulatory environment that actively encourages self-regulation.

Finally, it is relevant to note that all three Acts confer a wide range of functions and powers on the Australian Communications and Media Authority ('ACMA'), and a more limited range of powers on the Australian Competition and Consumer Commission ('ACCC). The latter is also provided jurisdiction in the telecommunications sector by Part XIC of the Australian Competition and Consumer Act 2010 (Cth), the telecommunications access regime.

Therefore, the Australian communications sector is presently regulated by three distinct Acts, the BSA, the TA and the RA. Whilst a certain level of cohesion is provided by the
overarching regulatory function of ACMA, and to a lesser extent the ACCC, these three frameworks remain inherently independent and emphatically 'vertical' in structure.

2. THE INTRINSICALLY HORIZONTAL 'LAYERED' NATURE OF COMMUNICATIONS TECHNOLOGY

However, whilst laws continue to operate on the basis of a vertical or silo model, telecommunications and broadcasting services, markets and technologies have converged, and no longer operate in delineated and separate sectors. In order to understand the limitations of the present vertical laws, it is necessary to understand the layered nature of Internet communications and consequent services. Bar and Sandvig note that the Internet offers 'a range of applications that once existed in different domains governed by different policies' (Bar and Sandvig 2002). They also note that Internet also presents 'new applications that defy [traditional] classification.' Similarly, Werbach notes that 'hermetically-sealed categories' which are at the 'core' of the vertical approach are foreign to the Internet (Werbach 2002, 47).

As nearly all platforms and devices in the convergent era are digital, they are able to converge to a common network that operates over a variety of infrastructure types such as mobile wireless, copper phone lines, satellite and optical fibre-based infrastructure. This allows users to access the Internet on their television or mobile phone, or watch television or listen to the radio on a PC.

In such a context, it is necessary to examine the horizontal layers of electronic communications architecture. Entman notes that conceptually distinguishing the technical layers of the system can offer a 'new paradigm that can clarify and identify regulatory problems and point to their solutions' (Entman 2002). By examining the technical structure of the Internet, lawyers are able to better understand the different levels of competition that operate at the various layers. For example, if more intense competition is feasible and desirable at a particular application level of the network, stimulating competition at that level may yield higher consumer benefits that trying to do so at another level.

In order to design effective regulation that precisely targets its intended object, Cannon breaks the structural architecture of modern communications into three distinct layers (Canon 2003, 167). Firstly, the network layer which consists of the physical infrastructure of connection such as network cable and spectrum. Secondly, the logical layer which consists of the means of interconnection between users such as open access or peering. Thirdly, the content layer which consists of content. Cannon argues that by conceptualising the policy as layers, the analysis is able to more precisely identify markets, clarify issues, create effective boundary regulations, and, in so doing, 'target solutions where issues reside' without unduly interfering with other industries and opportunities.

Sickler and Mindel note that the real value of horizontal laws is that it enables regulation to be 'compartmentalised by considering the role of regulation on each layer distinct from the layer above it or below it' (Sickler and Mindel 2003, 69). They note that regulating on the basis of the horizontal laws enables the separation of the service aspects of the network in a manner that is consistent with the design of the network itself. Frieden further notes that horizontal based laws would serve to create a regulatory regime based on how technologies 'function,' precluding the need to make semantic distinctions between converging concepts (Frieden 2003, 209).

The responses of stakeholder to the Framing Paper echo these sentiments, and it is noted in the Emerging Issues Paper that it is no longer 'useful' to look at broadcasting, radiocommunications and telecommunications as 'separate and distinct industries with unique policy frameworks,' and that a 'more useful approach' would be to recognise market structures as consisting of a series of layers created by convergence. In comparison to Canon's three layer delineation, the Emerging Issues Paper identifies four layers. The first or bottom layer consists of the underlying infrastructure or conduit which transports content. The second layer is the network which manages and directs the content. The third layer consists of content or
applications. The fourth or top layer consists of devices through which the content is accessed.

Interestingly, Cannon attributes the highly successful early development of the Internet to the largely horizontal laws adopted by the Federal Communications Commission (the 'FCC') in the mid 1960s (Cannon 2003, 167). In 1966, the FCC identified a growing 'convergence' between the 'modern-day electronic computer' and 'communication common carrier facilities and services.' This can perhaps be described as the 'first wave of convergence.' That is, as Whit notes, the FCC recognised, very early, the need to separately regulate computer services and communications services (Whit 2004, 597).

In 1980, the FCC introduced the Computer II Order. This Order distinguished common carriage services from services that employed communications services for the purpose of providing value-added services in the market. The FCC distinguished between basic or enhanced services, and left the latter largely unregulated. Basic services were those that amounted to a common carrier offering of transmission capacity for the movement of information. In contrast, in order to qualify as an enhanced service, the service had to:

- utilise computer processing applications that relate to the format, content, protocol or like elements of the transmitted information;
- (b) provide the user with additional, restructured or different data; and
- (c) enable direct user interaction with information.

Vint Cerf, commonly regarded as the founding father of the Internet, credits the Computer Inquiry with supporting the development and use of the Internet. Cerf notes that the FCC's foresight in limiting regulation to the local phone companies and leaving the market for competitive information services largely regulated, 'contributed strongly towards the commercial introduction, rise and incredible success of the Internet' (Cerf 2002).

Therefore, the first wave of convergence can be described as the convergence of telecommunications and computer services and the decision to adopt an essential horizontal approach is widely agreed to have been successful. The issues raised by the 2011 convergence review relate to the convergence between telecommunications and broadcasting and arise within a very different factual matrix. The lessons learned from this successful and largely horizontal model of regulating the first wave of convergence should guide the regulation of this 'second wave.' However, unlike the first wave, which involved an entrenched legacy framework with respect to telephone communications and a relatively new industry of enhanced computer services, the present wave involves a clash between two established titans. Telecommunications and broadcasting each have entrenched legacy frameworks, and whilst the technologies have merged, the regulatory frameworks remain unyielding. As such, the effective regulation of this second wave offers far greater challenges than did the first wave of convergence.

3. THE PROBLEMS CREATED BY USING VERTICAL LAWS TO REGULATE HORIZONTAL-LAYERED NETWORKS

A variety of scholars have theorised on the problems created by using vertical laws to regulate horizontal-layered networks. Frieden identifies four limitations with the vertical silo-based approach to communications regulation (Frieden 2003, 211). Firstly a vertical approach assumes that the distinctions or boundaries between services can be identified. However, due to the convergence of technologies this is no longer a valid assumption. For example, the Internet can carry a myriad of different services such as e-mail, voice communications, gaming, shopping and entertainment. Secondly, vertical regimes often require mutual exclusivity in classification where a service is subject to either one or another regime. This does not recognise that a single service can bear indicia of more than one category. Thirdly, the regulatory regimes consider each category of service in isolation rather than as links or chains in a network. Finally, vertical regimes tend to inadequately consider the relationship between network architecture and the services provided to end-users (Frieden 2003, 211).
Similarly, Sickler and Mindel identifies a variety of 'distortions' generated by reliance on vertical regulatory regimes including, interconnection distortions, bundling discriminations, content discrimination, market distortions, and investment and deployment distortion (Sickler and Mindel 2003, 68-69). In Sickler and Mindel's analysis, 'interconnection distortions' relate to problems caused by interconnecting networks regulated by different law. 'Bundling discriminations' occur where different operators can restrict access to content. 'Content discrimination' occurs where operators are able to dictate the terms of content and conduit delivery. 'Market distortions' refer to price not accurately reflecting the cost of the service. Finally, 'investment and deployment distortions' relate to the making of investment choices based on the nature and degree of regulation governing a particular service rather than the demand and supply for the service.

Werbach states that communications policies need to be redesigned around the architecture of the Internet and the engineering protocols established for the Internet because due to the inevitable centrality of the Internet, communications policy will always be a 'subset' of Internet policy. (Werbach 2002, 39-40). Similarly, Frieden notes that adopting horizontal regulation would enable regulation to be based on how technologies function and would preclude the need to make semantic distinctions between converging concepts' (Frieden 2003, 212).

The Emerging Issues Papers affirms the above scholarship on this topic, and suggests that the use of a layered framework would enable policy makers to better focus on the service offered rather than the industry. It is further noted that, although it may be justifiable to treat services differently based on delivery, the use of a horizontal approach to regulation makes this more 'transparent' (p 12). Furthermore, the Emerging Issues Paper specifically notes that it is a logical extension of the 'layered' approach that a policy framework can develop around a specific service regardless of its mode of delivery (p 13).

4. THE LAW REFORM DISCOURSE TO DATE

Whilst the 2011 convergence review represents the most direct confrontation of the problem of convergence, it was preceded by a variety of other, more confined, reviews. It is useful to outline the relevant law reform discourse to date.

The 2000 Broadcasting Inquiry Report by the Productivity Commission included a discussion of convergence. The inquiry’s terms of reference required the Productivity Commission to 'have due regard to the phenomenon of technological convergence to the extent that it may impact upon broadcasting markets' (p 3). Significantly, the terms of reference were limited to 'technological convergence.' Unlike the 2011 inquiry, the 2000 inquiry did not encompass the broader issues of the convergence of markets and services. It is also interesting to note that in fulfilling its terms of reference, the Productivity Commission expressed conflicting views on the incidence of convergence. The Report acknowledges the 'possibility' of convergence. The reason given for the reluctance to consider reform is curious, even in 2000. It is that the pace of technological change increasing is not a certainty but rather merely a possibility: 'The pace of technological change in media and communications may increase in the near future' (p 122). Moreover the report concludes that no reform is necessary: '[T]here is a false choice in the notion that government must decide a wholly new policy framework to accommodate change, or the regulatory status quo because sufficient change has not yet occurred' (p 123).

The technological evolution of the subsequent seven years is clearly evident in the 2011 review that begins with a premise that appropriate reform as critical to the future development and growth of the communications sector.

As well as the above general reports, there have also been consideration of specific services and technologies. A review of datacasting services culminated in December 2002 in a Government report titled Report of Review of the Operation of Schedule 6 of the Broadcasting Services Act 1992 (Datacasting Services). The central objective of the review was to ensure that the legislative framework for datacasting services provided 'maximum scope for the development of new and innovative digital services' (p 2). Of secondary
importance were matters relating to the allocation of spectrum, specifically the appropriate arrangements for the allocation of licences and the appropriate arrangement for the allocation of datacasting transmitter licences. Of most interest for the present purposes is the last matter reported on the list of issues to be examined. Comment was invited on whether the Ministerial Determination made pursuant to s 51 of the Telecommunications Act, which exempted holders of a datacasting licence under the Broadcasting Services Act from also applying for a telecommunications carrier licence in relation to those services, should continue. The outcome of the review was that there were to be no changes to the rules relating to the content that could be provided under a datacasting licence for the time being.

The regulation of voice over Internet Protocol services ('VoIP') has also been the subject of reform discourse. In 2004, the Department of Communications, Information Technology and the Arts released a Discussion Paper entitled Policy and Regulatory Framework for Emerging Voice Services which considered the appropriate basis for VoIP regulation. The paper considered alternative regulatory scenarios, including an option of uniform regulation, an option of multi-tier regulation (classifying and regulating VoIP services on the basis of a series of criteria) and a next generation approach, termed the 'NGN approach.' The NGN approach is of relevance to the present discussion as it seeks to distinguish between the infrastructure, the carriage service and the applications layers of the provision of a VoIP service, and regulate each of these elements as a separate horizontal layer. Subsequently in 2005, the Department of Communications, Information Technology and the Arts released an Issues Paper entitled Telecommunications Competition Regulation. The paper outlined the issues relating to the proper regulation of VoIP but no final conclusions have been reached to date.

5. THE EUROPEAN UNION EXPERIENCE

If, as a consequence of the perceived distortions generated by vertical frameworks, it is accepted that communications regulation should be structured on a horizontal layered basis, the next question which arises is what would such a horizontal layered regulatory model look like in practice. A useful starting point is Solum's six-layered horizontal model of regulation (Solum 2003). Solum starts by adopting Lawrence Lessig's 'code thesis', which argues that computer software, and network architecture should be recognised as being the prime 'regulator' of the Internet (Lessig 1999). Solum's model consists of a content layer resting above an application level which in turn rests on a transport, network, link and physical layer. The benefit of this model is that it enables lawmakers to precisely identify and isolate the incidence of regulation.

In designing the precise dimensions of a horizontal regulatory framework to address convergence, the regulatory framework for 'electronic communications' introduced in the European Union in 2002 provides an extremely useful template for consideration. The central aim of the European regulatory regime was to address the impact of convergence and facilitate an efficient and equitable information society. In essence, the European Union adopted a harmonised regulatory approach which regulated on the basis of two essential criteria. The first criterion related to the nature of the electronic communications service provided by a company. The second criterion related to the level of market power possessed by the company providing the service. The nature and extent of the regulation imposed was based on these fundamental distinctions. Most significantly for the present analysis, the nature and extent of the regulation was independent of the nature of the technology used, such as whether the service is delivered by a telecommunications network or a broadcasting service.

6. COMPETING POLICY CONSIDERATIONS

For the present purpose of designing effective laws to address convergence, one of the most useful elements of the regulatory debate is contained in the European Commission's Convergence Green Paper. This discussion paper preceded the introduction of the 2002
The Convergence Green Paper is hence potentially very instructive for the next phase of the Australian convergence review.

The Convergence Green Paper outlines the principles that should be considered when formulating regulatory policy in sectors affected by convergence. Regulation should be specific and proportionate rather than general and all-encompassing in nature. In light of the speed, dynamism and innovative nature of the sectors affected by convergence, public authorities should be careful to not over-regulate.

The Convergence Green Paper commenced by stating that the new regulatory approach should seek to further the interests of consumers by providing greater choice of services, improving levels of service and lowering prices whilst protecting consumer rights. Regulation should seek to provide a predictable framework which would strengthen business confidence and encourage investment. Uncertainty as to the nature and extent of the regulation of new services could deter business confidence. This does not preclude evolution of the regulatory framework but it requires that changes to the regulatory framework be consistent with predetermined criteria. Regulation should seek to allow an opportunity for all players to participate in a converged information society. Finally, the Convergence Green Paper noted that independent regulators were central to the success of managing a converged industry. As the general trend is to a lighter regulation, the increased competition facilitated by convergence required an effective and independent regulator.

Three distinct options for regulatory development were considered. The first option was to build on current structures. The existing vertical regulatory models would be retained, with different forms and intensities of regulation continuing to apply to the telecommunications, broadcasting and information technology sectors. Regulation would be extended on an ad hoc basis to meet the challenges of new technologies and services. This option would minimise the need for dramatic change in the near future and so have an element of certainty that would be likely to encourage investment. However, such an option would entrench existing anomalies in the regulatory structure, which might deter investment.

The second option was to create a new and distinct regulatory model for new activities which would co-exist with certain components of the existing broadcasting and telecommunications regulator frameworks. This would require the legislators to identify and isolate 'new' services and activities which cross traditional boundaries and subject them to a new lighter regulatory regime. As converging markets typically produce 'high value' activities, this approach would be useful in providing tailored regulation for these services. The regulation of traditional core telecommunications and broadcasting activities could be refined at a more gradual pace.

The third and most dramatic option was to progressively introduce a single regulatory regime to apply to all existing services and new services. This course would not require that all laws be rewritten. It required that all laws be reassessed to remove inconsistencies within and across sectors and were flexible to adapt to changing technologies. Whilst this option was the most far-reaching, the Green Paper explained that it need not be disruptive. The approach could be gradual with initial changes being implemented in key areas where it was important to have a consistent regulatory regime. Network operation and access were provided as examples of priority areas for reform. The central difficulty identified with this approach was that of 'carving out' the new activities, and determining which would be subject to the new regime. One possible approach was the so-called 'negative approach', which entailed simply identifying those activities which were neither telecommunications nor broadcasting. Examples provided were that of Web-TV, the Internet and the operation of conditional access systems.

In the result, the European regulatory framework for the communications sector, agreed upon by The Council of Ministers on 14 February 2002, adopted the second approach. The overarching aim was to provide a single regime to regulate all communications infrastructure and services, with the regulation consisting of sector-specific legislation, recommendations and various non-binding guidelines, in conjunction with the continuance of existing competition rules of the European Commission Treaty.
7. THE NATURE OF THE ELECTRONIC COMMUNICATIONS FRAMEWORK

Specifically, the regulatory framework implemented in 2002 consisted of four central directives:

(a) A general directive which outlined policy objectives applying to a common regulatory framework for electronic communications networks and services (the 'Framework Directive');

(b) A specific directive on the authorisation of electronic communications networks and services (the 'Authorisation Directive');

(c) A specific directive on access to, and interconnection of, electronic communications networks and services and associated facilities (the 'Access and Interconnection Directive'); and

(d) A specific directive on universal service and user rights relating to electronic communications networks and services (the 'Universal Service Directive').

Directives on telecommunications data protection and privacy and electronic communications completed the regulatory package. The Directives were supplemented by a series of non-binding guidelines and recommendations. Of special significance for the present discussion is the Recommendation on Relevant Products and Services (the 'Recommendation') which sought to provide guidance on identifying operators with significant market power. Finally, the existing competition rules of the European Commission Treaty were expressly incorporated into the Framework Directive.

The Framework Directive provided an overarching framework, whilst the specific directives addressed matters of authorisation, access, universal service, and privacy. The Framework Directive contains critical definitions which applied to the interpretation of all the Directives. The definitions of 'electronic communications networks,' 'electronic communications service,' 'provision of electronic communications network,' 'public communications network,' 'associated facilities,' 'conditional access system,' 'user,' 'subscriber,' 'consumer,' and 'end-user' were all contained in this Directive. The Framework Directive also required each Member State to create a national regulatory authority (the 'NRA') to oversee the new electronic communications regime. The powers and duties of such a national regularity authority were delineated in the Framework Directive. Therefore, the regulatory model implemented by the European Union in 2002 created a new and distinct regulatory model for new activities which would co-exist with certain components of the existing broadcasting and telecommunications framework.

For the purposes of the new framework, 'electronic communications networks' was defined to mean 'transmission systems which permit the conveyance of signals by wire, by radio, by optical or by other electromagnetic means, including satellite networks, fixed and mobile terrestrial networks, networks used for radio and television broadcasting and cable television networks'. Interestingly, whilst the definition listed a variety of transmission technologies, the use of 'including' ensured that the definition would be able to embrace future technology. An 'electronic communications service' were defined to encompass a service, normally provided for remuneration, which consist in the conveyance of signal on electronic communications networks. Service providing, or exercising editorial control over, content transmitted using electronic communications networks are services that are excluded.

It is however noteworthy that the regulatory framework was not overly ambitious in ambit. It was limited to the regulation of transmissions and did not seek to regulate content. The European Council Directive 89/552/EEC of 3 October 1989 on the content of television programmes continued to govern content. Similarly, the framework did not seek to regulate most forms of equipment. Radio equipment, telecommunications terminal equipment and the
mutual recognition of their conformity continued to be subject to the Directive 1995/EC. Furthermore, electronic commerce was not covered by the regime and continued to be subject to the Directive on Electronic Commerce, 2000/31/ European Commission.

Commentators such as Whit and Frieden have noted with approval the European Union framework as providing an illustration of regulation based on a horizontal layered model. Whit further notes that the European Union's framework presents an explicit 'endorsement' of the horizontal way of thinking about regulatory policies (Whit 2004, 634).

The 2002 electronic communications framework had in-built provisions for review and revision. In November 2007, pursuant to these provisions, the European Commission issued a series of legislative proposals for updating the original Framework. The Citizens Rights Amending Directive and the Better Regulation Amending Directive contained the review proposals. These directives were accompanied by regulations which established the new Body of European Regulators in Electronic Communications, the successor of the former European Regulators' Group. In November 2009, revisions were introduced to improve the operation of the framework for businesses and consumers. A central objective of the revisions was to decrease the burden of regulation. Accordingly, the number of markets which are deemed to require ex ante regulation (i.e. markets in which it is presumed that there are problems relating to the level of competition) was significantly reduced from an ambitious 18 to 7. However, national regulators continue to have the responsibility of regulating markets in which significant market power is identified, irrespective of whether they are on the list of sectors deemed to require ex ante regulation.

CONCLUSION

Therefore, in an environment of converging markets and services, it is no longer viable to retain a vertical silo-based distinction between broadcasting and telecommunications. It is important to adopt a horizontal layered regulatory model that allows law makers to design flexible and transparent laws that precisely target the operations to be regulated, and have the capacity to adapt in response to technological evolution to ensure that the benefits of convergence are maximised both for all industry participants. Especially in an e-commerce environment, being able to delineate and separately regulate different areas of operation may provide an accurate and productive public policy. Furthermore, as Ismail notes, a layered model can assist policymakers in targeting regulation needed to further objectives such as fostering competition needed at the core or lower levels of the network, whilst also preserving and enhancing competition at the edge or higher levels of the network (Ismail 2003, 672).

The Emerging Issues Paper, whilst endorsing 'layers analysis,' and stating that it is appropriate to adopt a horizontal framework, cautions that there are practical obstacles to the implementation of such a framework. In this regard, the Framing Paper expressly notes the value of considering 'international approaches' in designing Australia's framework (p 18). Moreover, even scholars who strongly support a movement from vertical to horizontal laws have raised concerns about the political feasibility of such a transition. Entman, for example, notes that the challenge will be to develop the optimal means of converting insights into concrete and effective policy (Entman 2002). In a different context, that of the application of intellectual property laws to technology sectors, William Fischer comments on the need for technology policy to stay within the 'zone of political practicability' (Fischer 2001, 26).

In such a context, the regulatory framework for 'electronic communications' implemented by the European Union in 2002 provides a useful template for Australian policy and law makers. It forms an operational model of the horizontal layers model of regulation, and as such is potentially instructive for the purpose of designing communications laws which effectively address the effects of convergence in the broadcasting and telecommunications sectors.
REFERENCES

BOOKS


ARTICLES


CONFERENCE PROCEEDINGS


LETTERS

Cerf, V, Senior Vice-President, WorldCom Inc, Letter to Honourable Donald Evans, Secretary, US Dept of Commerce and Honourable Michael Powell, Chairman, Federal Communications Commission, 20 May 2002.

AUSTRALIAN GOVERNMENT REPORTS


Department of Broadband, Communications and the Digital Economy, 2011b. Convergence Review – Framing Paper, (the 'Framing Paper').


EUROPEAN COMMISSION DIRECTIVES, RECOMMENDATION AND REPORT


ENDNOTES


7. The November 2009 revisions were required to be implemented by Member States by May 2011. See Department of Business Innovation & Skills, *Implementing the Revised EU Electronic Communications Framework*, September 2010, for an overview of the process of implementing the obligations in the United Kingdom.
Telecommunications transformation is business driven, focusing upon operational efficiency, next generation networks, and market agility for new broadband products and services. Much of the activity has resulted in significant upgrades of the Business Support Systems (BSS) and Operational Support Systems (OSS). These systems have traditionally provided support for a wide range of products, with the spotlight on voice and data services. The influence of multimedia service delivery has now placed additional transformation pressure upon operators, with this form of content supported by a set of Delivery Support Systems (DSS). We have conducted a global survey of the scope and breadth of operator transformation of the three domains (OSS, BSS, & DSS) in practice, and present the results from that survey. The results provide insight into the scope of transformation and the level to which standards and frameworks are applied within the industry. Based upon these inputs we also present a design blueprint of these three domains co-existing, illustrating the functional scope of present day transformation for operators. This information may be useful to existing operators as well as new broadband operators entering the market.

**INTRODUCTION**

Operator transformation has both a business and technology driven perspective. In terms of business transformation, the key objectives include market influence, support for wide range of broadband products and services, and the need to provide a flexible business environment that enables the operator to adapt quickly to the needs of its customers. In order to support the operator business transformation, a technology transformation is also required. We focus our attention upon this technology transformation that operators are presently faced with to meet this business context.

The operator transformation has traditionally focused upon several technology domains that have included the core network, the network management systems, and other IT support systems. The recent trend in deploying next generation networks (NGN), that is broadband networks, has provided new momentum to upgrade the IT support systems, most notably the Business Support Systems (BSS) and Operational Support Systems (OSS). One of the underlying motivations for the NGN is the delivery of the next generation capabilities such as digital multimedia services. In addition to the core network, a number of supporting systems are also required to deliver these multimedia services. The supporting systems used to deliver multimedia services have included IMS, SDP, and Parlay (OneAPI). These systems may be referred to as the Delivery Support Systems (DSS) and we use that term to describe the set of systems involved in multimedia service delivery.

Collectively, the transformation of BSS, OSS, and DSS is intended to position operators to develop and supply the next generation communication and multimedia services for their customer base. In order to support the operators to improve operational efficiency and interconnect with one another a number of standards and frameworks have emerged. The
majority of these standards have focused upon the traditional OSS and BSS systems; however, more recently, newer standards that support multimedia service delivery have appeared. We focus this study upon the standards and frameworks available to operators to assist their transformation initiatives. Moreover, we conduct a survey to better understand the application and use of these technology standards.

This paper first provides an overview of operator technical requirements in OSS, BSS, and DSS transformation. The key focus is upon the scope and prevailing standards and frameworks available to operators. The key contributions of this article are the results of a survey conducted with global telecoms operators and system integrators of transformation initiatives. By analysing the results of the study and using our experiences in implementing transformation globally, we then outline a blueprint that caters for the BSS, OSS, and DSS aspects of operator transformation. The blueprint is a high-level depiction of the scope, and provides a perspective of the relationship between the various transformation components that may be pursued. Collectively the results may assist existing operators and new broadband entrants in defining their transformation strategy by understanding how the operator trends are maturing to influence the standards and frameworks available.

In the next section we outline the key themes of operator transformation, by summarising the applicable requirements, standards and frameworks. Section III outlines the method and tools used to survey transformation teams globally. In section IV the results of this survey are presented. Building upon these results and experiences, we propose a blueprint to model and view the scope of transformation in section V. The key observations, conclusions, and further work are then positioned in Section VI.

OPERATOR REQUIREMENTS, STANDARDS AND FRAMEWORKS

In general, transformation for an operator may involve a number of initiatives. This may include core network upgrade to a next generation network, migration of a mobile 2G network to 3G/4G, and overhauling the Enterprise Support Systems (ESS), business support systems, operational support systems, and delivery support systems. While the scope of transformation will vary considerably, due to the geography and demographics, this article will primarily address several aspects of IT and network transformation. Specifically, this will include the BSS, OSS and DSS domains of transformation. The boundary between IT systems and core network system components appears to be diminishing. Hence, often the transformation of these support systems may also involve (to a lesser extent) aspects of core network.

Business transformation may be summarised as a ‘combination of strategic, process, organisational change, and technology development focused around one clear vision, resulting in a significant change in the organisation and substantial financial benefits’ (Goonan 2005). A further definition suggests that business transformation ‘is a set of revitalisation initiatives at both strategic and operational levels that will lead to dramatic improvements in business capabilities, competitive advantage and long-term sustainability, ultimately resulting in sustainable market leadership, substantial financial benefits and radical business growth’ (Krishna 2007). In telecommunications, transformation is often associated with the upgrade of networks to next generation networks. Although significant, the network is just one aspect of the telecommunications operator infrastructure that also includes the IT systems, business processes and human resources.

A fundamental operator motivation for change also encompasses the need for adherence to government or regulatory requirements. For instance, this may involve unrestricted consumer access to network services and multimedia services, such as providing 100% coverage of the population including all rural areas. Further operator requirements include the need to remove the business constraints of many older legacy systems that restrict the ability of the business to adapt quickly to new market trends. Additionally, there is always the commercial pressure for operators to demonstrate growth in revenue and subscriber activity. The changes undertaken by an operator will impact many aspects of its business processes. The use of
well-defined standards, frameworks, and architectures assists considerably to reduce the risk of undertaking such large-scale transformation initiatives.

In the context of the operator requirements that drive transformation, we now briefly outline the standards and frameworks applied to the three domains of interest in this study. These standards and frameworks have evolved to assist operators to meet their individual requirements, whilst promoting interoperability amongst telecommunications operators. Later in this section a perspective on applicability of the various standards across transformation domains is also provided.

OPERATIONAL SUPPORT SYSTEMS

The systems that provide operational support to an operator are generally those systems not directly visible to the customer. These are termed the operational support systems (OSS). This includes provisioning services, fault and trouble ticket management, network monitoring & configuration, inventory management and change management. The standards and frameworks relevant to OSS transformation include the following:

- **eTOM.** The enhanced Telecommunications Operator Map is a business process framework for categorizing all the business activities that a telecommunications operator will employ (TeleManagement Forum Guidebook 2005a). This is considered a definition of best practice business processes for an operator.

- **NGOSS.** Next Generation Operations Systems & Software. NGOSS (Frameworx) consists of a coordinated set of frameworks, methods, guidelines, and definitions for building OSS and BSS systems (TeleManagement Forum Guidebook 2005b). A key component is the technology neutral architecture, which proposes the integration bus for integrating systems. Recently Frameworx (TeleManagement Forum Specification 2010) [13] has been introduced which attempts to expand upon NGOSS at a higher level, adding process to the NGOSS framework covering both the IT and communications aspects. However operators have embraced NGOSS and are as yet to adopt Frameworx more fully.

- **MTOSI.** Multi Technology Operations System Interface (TeleManagement Forum Business Agreement 2008) outlines an integration standard for the subset of the OSS systems that deal with network management systems. A key part is a definition of network related data communicated between systems.

- **ITIL.** The Information Technology Infrastructure Library provides a process framework for IT service management and governance and is considered a set of best practices for IT governance (Rudd 2004).

We elaborate further on ITIL, as the origins differ considerably to the other standards, which are TMForum based. ITIL emerged from a UK standards initiative and with ownership later taken up by the United Kingdom's Office of Government Commerce (OGC) (Brenner 2006). The standard outlines a number of processes for IT services which span IT delivery and operations. In other words, this covers management of IT systems during design, implementation, and most importantly when in production. The scope includes a number of process groups published as books with the central components addressing service delivery and service support. A further breakdown of ITIL process coverage is shown at Figure 1. Given the breadth of coverage, and the fact that many operators and IT services vendors have existing best practice procedures, generally only a subset of ITIL procedures are adopted at a time.

In some respects, ITIL’s objective and approach may be considered similar to eTOM, in that a set of best practice processes is provided on how to execute a business function. While eTOM addresses telecommunications business processes, there are aspects that address service management (Brenner 2006). Notwithstanding, ITIL processes focus on IT systems management and the delivery of those systems, and hence differ considerably from eTOM processes (Brenner 2006). Given the increased reliance upon IT systems by operators, and the significance of transformation initiatives, there is a need to manage the IT systems effectively...
during implementation and when in commercial operation. This is particularly important since the behavior of IT systems is becoming more visible to customers with on-line and self-care access available via the Internet.

![ITIL Process Groups](https://example.com/itil-process-groups.png)

**Figure 1 - ITIL Process Groups**

It is important to also note that the eTOM model generally associates those systems supporting the operational processes as the OSS systems ([TeleManagement Forum Specification 2003](https://example.com/eTOM-specification)). However, some aspects of the eTOM infrastructure life cycle management processes may also be viewed as operational in nature. What system is categorized as OSS will ultimately depend on how each operator views its support systems.

**BUSINESS SUPPORT SYSTEMS**

While the OSS business processes are generally associated with the operations domain under eTOM, the BSS processes relate to the customer facing aspects of business operations including customer management, billing, and product & service management. More formally, the TeleManagement Forum (TMF) defines BSS as the ‘systems primarily supporting the strategy, infrastructure and product processes of eTOM, with focus on external business’ ([TeleManagement Forum Specification 2003](https://example.com/eTOM-specification)). The systems typically include CRM, product catalogue, billing, and self care. The standards and frameworks that are specific to the BSS domain are briefly described below.

- **eTOM.** Includes the processes primarily supporting *strategy, infrastructure and product* aspects of eTOM ([TeleManagement Forum Specification 2003](https://example.com/eTOM-specification)). Also may include the billing related processes, which are under the *operations* domain.
- **NGOSS.** The Technology Neutral Architecture is relevant to both OSS and BSS.
- **ITIL.** IT service management and governance may be applied to all aspects of IT development and commercial management of systems.

**DELIVERY SUPPORT SYSTEMS**

The delivery support systems include those systems involved in the delivery of multimedia products and services to the customer. These are the set of intervening systems between the application that generates the multimedia output and the customer device, and related supporting systems. This includes media gateways, download servers, location servers, web servers, messaging gateways (SMS, MMS), multimedia product catalogues and portals,
network gateways (GGSN, SGSN) and aspects of the core network. Several current and emerging standards and frameworks are useful in this context.

- **IMS.** Developed by the 3GPP consortium, the IP Multimedia Subsystem specifies the next generation network architecture for the delivery of multimedia services over mobile and fixed IP networks [3rd Generation Partnership Project 2010](https://www.3gpp.org). Session Initiation Protocol (SIP) is the fundamental protocol for communicating with multimedia applications. The range of multimedia services includes peer-to-peer applications, video streaming, and other SIP related applications.

- **SDP.** The Service Delivery Platform is a consolidated platform of services that delivers a range of multimedia services. Also referred to as an IT-based SDP, the platform becomes a brokering agent for customer access to content and services from a variety of external and internal sources; simplifying access control, service navigation, and billing [Pavlovski 2007](https://www.3gpp.org).

- **SaaS.** Software as a Service is a type of SDP which concentrates on delivering application services to an enterprise. A SaaS platform generally hosts the enterprise applications internally within the operator’s domain. This paradigm is explained further below and this relates to more recent trends in cloud computing.

- **Parlay (OneAPI).** The Parlay standard specifies a range of network-oriented services such as call control, messaging, and mobility services for use by third party developers [Lozinski 2003](https://www.3gpp.org). Traditionally, the core network was managed as a secure and closed network. However trends in service delivery have placed pressure on operators to open their network capabilities to IT developers. With respect to service delivery, Parlay may be used in conjunction with IMS, or an IT based SDP, to build an extended service delivery platform. OneAPI [GSMA 2010](https://www.3gpp.org), formerly called Parlay X, specifies a web service interface that is used to access the underlying Parlay APIs.

- **SDF.** The Service Delivery Framework is a recent TMF initiative to standardise the capabilities of IMS, Parlay, and traditional IT based SDP into a consolidated framework [Greene and Lancaster 2007](https://www.3gpp.org).

While several of the frameworks above are well known, SaaS may be considered more recent. The notion of Software as a Service (SaaS) originates from the Application Service Provider (ASP) model, where a software application is sold as a service rather than a product. In this model, the service provider manages all aspects of the software service including operational management, upgrades, and hosting. A key difference between the SaaS and ASP model is the deployment approach and services offered. In an ASP model, the application and ASP platform is hosted offsite and owned by an external entity. Conversely, the SaaS platform may be hosted by the telecommunications operator with a broader range of managed IT services available. The SaaS application is usually shared between multiple customers, in a way that amortizes the operational costs. Customers only pay for use as required. This is also referred to as a demand-centric view [Bennett et al 2000](https://www.3gpp.org), and is more recently been subsumed by cloud computing. Some concrete managed SaaS examples include anti-virus, hosted firewall service, virtual hard-drive (off-site secure storage), and website building.

**SUMMARY OF TRANSFORMATION STANDARDS**

To conclude this section, it is observed that the relevant standards and frameworks for OSS, BSS, and DSS offer capabilities or features that may be shared. The following table summaries the general applicability of these, see Table I.
Table I - Applicability of Standards and Frameworks

<table>
<thead>
<tr>
<th>Standard or Framework</th>
<th>OSS</th>
<th>BSS</th>
<th>DSS</th>
</tr>
</thead>
<tbody>
<tr>
<td>eTOM</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>NGOSS</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>MTOSI</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ITIL</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>SDP</td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>IMS</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>SDF</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Parlay (OneAPI)</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>

The table is relatively straightforward to interpret. The only aspect that requires explanation is the applicability of SDP to BSS. Since BSS is predominately customer-facing, the role of an SDP in BSS is due to the customer-facing portals deployed. This usually includes portals for placing orders, external third party developer relationship management, and billing services such as prepaid, postpaid, and settlement. In addition, multimedia product management largely involves product catalogue, pricing, and bundled offerings, which may be coordinated with other BSS related functions that address telecommunication services.

SURVEY METHOD

Feedback was requested from transformation teams globally as to the scope of transformation currently being pursued and the level to which standards and frameworks are being applied. The survey was undertaken by providing participants with a questionnaire. A total of 88 responses from over 38 countries were received. The participants of the survey involved transformation teams (operators and systems integrators) involved in OSS, BSS, and DSS projects. The results obtained are intended to provide insight about the depth of standards use, and may highlight areas that require further work.

The survey questionnaire was issued to participants as either an on-line web-based form or an email survey form. The following list briefly summarises the twelve questions that were posed; note that the name and location of the operator was recorded only so that duplicate responses could be removed from the survey results. Shown in Appendix A is a more detailed example of the survey that was provided to participants.

1. Name of operator and country?
2. What is the scope of the transformation: OSS, BSS, DSS (i.e. SDP/IMS), other?
3. Is transformation planned for the future or currently in progress (in progress, 24 months, 2 – 5 years, other)?
4. Is eTOM being used?
5. Is NGOSS being used?
6. Is the SID being used?
7. Is MTOSI being used?
8. Is ITIL being used?
9. Is IMS being used?
10. Is SDP being used?
11. Is Parlay being used?
12. Is there any other standard or framework being considered?

As can be observed from the questions asked, a primary objective was to elicit responses on the use of applicable standards and frameworks in the context of transformation.
SURVEY RESULTS AND TREND ANALYSIS

A total of 88 responses were received, with 25 duplicates (that is, from the same operator). This was filtered down to a set of 63 different operators for analysis. Before considering the specific results for each set of questions, we examine a geographic breakdown of the feedback received. The following pie chart (Figure 2) illustrates the number of responses by geographic region. This provides context as to how the following results represent global and local trends in transformation.

![Figure 2 - Response by Region](image)

The first question concerning transformation scope provides insight on how operators view the relative importance of the three transformation domains. The OSS and BSS domains are better understood by the industry, with well-defined boundaries as outlined by the TMF. However, DSS is less well recognised in industry, and therefore we distinguish a DSS transformation as any initiative involving activity in either SDP and/or IMS. A related observation on the role and need for delivery support systems is also made by the TMForum as it observes the need for OSS, BSS, and support for content & digital media services (TeleManagement Forum 2011).

![Figure 3 - Scope of Transformation](image)

Referring to Figure 3, it is interesting to observe that all three domains were accounted for with similar significance: 65% OSS, 76% BSS and 60% DSS. The findings also reveal how the emerging DSS systems, such as SDP and IMS, have influenced operator strategies. This has broader impacts in terms of the products, services, and business models to be supported. Particularly, it is noted that OSS and BSS transformation initiatives may be considered relatively mature, with a longer history when compared to DSS transformation.
While the scope of transformation initiatives show that many operators are undergoing change in the three domains, this must be balanced with what is actually deployed, in progress, or planned. The following chart (Figure 4) illustrates the distribution of progress with respect to these three categories. It is clear to see that over half the transformation teams polled indicate that their systems are already deployed or have been initiated.

One of the principal objectives was to understand the use of standards and framework. This information is given in Figure 5, where the percentage of use of the various standards across transformation initiatives is shown. In general, the relevant standards are well practised, with eTOM and SDP frameworks applied in over 50% of the recorded initiatives. The IMS, ITIL, and NGOSS standards recorded use in the range of 38-44%. Taken together, these results indicate the desire of operators to leverage intellectual capital and proven architectures.

We conducted further analysis of the results by eliminating those responses which held no initiative for the related transformation domain (refer Figure 6). For example, only those responses which ticked 'yes' to OSS transformation were filtered to identify use of NGOSS, SID, or MTOSI. When applying this filter it was observed that the use of primary standards increased. This was in the order of 59% NGOSS for OSS, 67% eTOM for BSS, and 65/68% IMS/SDP for DSS. Although this provides greater clarity on relevant use, it must be recalled that these standards have cross-domain applicability.

One of the standards that did not feature prominently in transformation initiatives was MTOSI. This is perhaps due to its restriction to network management systems and its recent emergence. However, as operators continue to expose aspects of the network for external third party use, it is anticipated that demand for standardised network management data will continue to increase.

With each question posed, an option was also available to provide additional comments. These are now summarised. A common remark made was that where a particular standard or framework was not applied (or mandated) by the operator, the contracted systems integrator
used the relevant standard in any case. Alternatively, the relevant standard was still being actively investigated for potential use in the future.

![Graph showing OSS, BSS, and DSS Filter percentages for NGOSS, SID, MTOSI, eTOM, ITIL, IMS, SDP, Parlay](image)

**Figure 6 - Standards and Frameworks**

A further 32% of responses indicated that some other framework or standard was being applied during transformation. The most common additional technologies cited were SOA and OSS/J. In the context of this research, SOA and OSS/J (OSS through Java) are deemed to be underlying implementation technologies and their use is implicit when the relevant framework applies, such as SDP, NGOSS, Parlay or IMS. Perhaps the only response not anticipated was that several operators were also looking to develop a content delivery framework. These respondents also indicated that SDP was in use, hence there appears to be further requirements to manage the increasing complexity of content. Finally, of the respondents polled, 33% were also engaged in an additional transformation activity, such as core network and enterprise support systems upgrades.

**FUNCTIONAL ARCHITECTURE**

In this section a new consolidated functional architecture is presented and discussed, which may be used as a blueprint for consideration in future transformation initiatives. It represents a framework for building and integrating the three aspects of transformation in a cohesive manner and in conjunction with the underlying network. It may be argued that some aspects of the functional architecture may represent facets of the core network; however as convergence evolves, the well-defined line between the network and IT systems may diminish further. This motivates and emphasises the need for clearer standards to ensure that boundaries are maintained for their respective development and maintenance – a key issue for operators. Furthermore, as the IT support systems become more visible to the customer, such as the self-care systems, the requirement that customer interaction is simple and intuitive becomes more important.

Referring to Figure 7, central to the framework are the OSS, BSS and DSS domains. The common portal services contain the set of portals that are shared between the three boundaries. The core network is accessed either via the service delivery interface or the network management interface. While this may arguably be shown intersecting with customer devices, for simplicity it is shown as the underlying foundation at the bottom of the diagram that the domains build upon, to highlight the two interfaces from a transformation perspective (rather than between the devices and common portals at the top of the diagram). The external integration points include the various business-to-business (B2B) interactions, and the web service support for externally and internally hosted multimedia applications and content. We now describe each of these framework sub-domains (OSS, BSS, & DSS) in further detail.

Each framework domain illustrates the key components or sub-systems. Components shown within the BSS domain include: the billing systems for customers, settlement systems to manage funds transfers to third party developers, business partners and resellers. The order
management and product catalogue are further examples of key customer-facing BSS systems. The self-care portion is illustrated as part of the common portal services framework. While self-care may intrinsically remain a BSS system, the functions are shared across the domains, especially the delivery support systems. Hence the sharing of self-care functions is shown within the common set of portal services.

<table>
<thead>
<tr>
<th>DSS Network Access Systems</th>
<th>OSS Network Management Systems</th>
<th>BSS</th>
<th>OSS</th>
<th>DSS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common Portal Services</td>
<td>[SRM, Consumer, Content, Self Care]</td>
<td>Settlement</td>
<td>Inventory</td>
<td>SDP</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Billing</td>
<td>CRM</td>
<td>IMS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Order Mgmt</td>
<td>Provisioning</td>
<td>SaaS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Product Catalogue</td>
<td>Assurance</td>
<td>Service Catalogue</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Single View</td>
<td>Ticketing</td>
<td>Internal Apps</td>
</tr>
<tr>
<td>OSS Management Interface (MTOSI SOA)</td>
<td>[Activation, Fault Mgmt, EMS]</td>
<td>[Parlay GW, Messaging, Media GWs]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service Delivery Interface (SOA)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Figure 7 - Functional Architecture for Operator Transformation**

The B2B gateways will include several sub-systems that provide an interface to external organisations. This may include payment gateways for integrating (via a financial network) to financial institutions, procurement interfaces to vendors and suppliers, and virtual private network gateways for business partners. While this is nominally shown as integrating with the BSS domains, other domains may access these interfaces.

The OSS components are divided into IT business systems and the network management systems: the upper and lower OSS shaded areas respectively. Additionally, the DSS components also reflect this division, where business systems and network access systems are shown in different shaded areas. In the case of OSS, an MTOSI bus interconnects the various OSS/BSS systems to the network management systems. These network management systems typically include fault management, activation, and element management systems (EMS). The remaining OSS components shown include traditional capabilities such as inventory, Customer Relationship Management (CRM), provisioning, and service assurance.

The integration of all three domains is underpinned by an NGOSS integration bus. The use of NGOSS provides a natural extension for integration between OSS/BSS and the DSS domains. This may also be used to integrate with the legacy OSS and BSS systems via adaptors (native product services that provide interconnections through APIs). The SDP Web Service Gateway (WSG) contains the set of foundation services that support the creation (via developer ecosystem), and distribution of multimedia content and services to customers. A more detailed explanation of how this is used is described in [Pavlovski 2007](#).

The multimedia applications are exposed as external, interconnecting via the WSG, and internally hosted applications shown within the DSS domain. The types of multimedia applications shown include IMS applications based upon the Session Initiation Protocol (SIP), Intelligent Network (IN) applications, and regular J2EE applications. In practice, customers
access multimedia applications, which in turn invoke web services from the SDP to fulfill customer requests for content. The web service gateway is essentially a component of the SDP platform. However it has applicability across the SDP, SaaS and IMS platforms, and is depicted as a distinct component to highlight this characteristic.

The DSS service catalogue differs from the BSS product catalogue in that it is more of a content menu that lists multimedia content and services. On the other hand, the BSS product catalogue is a comprehensive list of telecommunication services. The Service Relationship Management (SRM) portal and content portal is usually a DSS component of the SDP. However, this portal may be used by other domains and hence is appropriately placed within the shared common portal services.

With respect to the service delivery interface an SOA gateway is applied. This interface may consist of Parlay OneAPIs, IMS interface components, and web services for other network delivery nodes. Depicted within the DSS access systems are the network-oriented delivery systems such as media gateways, messaging servers, and call control systems.

As revealed by the survey results, all three transformation domains (OSS, BSS, & DSS) are viewed as an essential element in operator transformation, and the functional architecture reflects the importance of all three domains. In addition, the architecture described is based upon our experiences globally in transformation.

CONCLUSIONS AND DISCUSSION

This paper has provided insight into telecommunication operator transformation world-wide. An overview of the scope, standards and requirements for transformation is provided. Building upon these fundamentals, this paper outlines the results of a survey conducted with transformation teams globally to understand the breadth of these projects and how the various standards and frameworks are applied in practice. The traditional domains of OSS and BSS transformation must also accommodate the scope of DSS. The results of the survey support this conclusion with 59% of operators undergoing transformation also having a DSS transformation within their strategy.

While the results demonstrate clear support for the use of standards and frameworks, other emerging principles appear to be gaining traction. However, one of the well-established standards yet to make a significant impression with operators is ITIL. We now briefly discuss the implications of this particular observation.

Traditionally, the customer was obscured (and protected) from the nuances and complexity of the operational and business support systems. This meant that a customer service representative (CSR) would interface with the relevant systems while handling the customer order, fault, or service question. Of course in these cases the CSR has the opportunity to hide underlying OSS/BSS problems when dealing with the IT and network management systems. The trend is to migrate many of these traditional operator functions and make them directly available to customers over the Internet – most notably the ordering, provisioning and self-care systems. A further point to consider is that with these systems becoming web enabled, the business process of the operator for managing these interactions also becomes directly visible to the customer. Customers will become well versed with the relative complexity between operators with such visibility. Consequently the transformation of these systems becomes increasingly important to ensure that such customer interactions are smooth.

It will be challenging for broadband operators to present to the customer an impression of speed and efficiency through an on-line self-care interface if back-end business processes ignore standards and frameworks such as eTOM and ITIL. Hence adherence to best practice business process standards such as eTOM and ITIL will help optimise organisational processes. For this reason the requirement for ITIL standards becomes an imperative to ensure the operational effectiveness and streamlined function of these on-line web systems can be achieved.
It is clear that the adoption of standards and frameworks is central to the thinking of operators globally. The emergence of delivery support systems has added complexity to the traditional scope of such transformation. The additional activities to web-enable operational support systems also motivate the need to adopt best practice business processes and frameworks. Hence, it seems certain that operators will continue applying current and emerging transformation standards to prepare for their strategic business models. This insight may be of particular use to new market entrants, such as emerging wireless broadband operators and broadband initiatives such as NBN locally within Australia.

FURTHER WORK

The longer term impact of multimedia service delivery upon the operator is still unknown. While many operators believe that a firm commitment to support multimedia, and infotainment in the broader sense, is required, the degree to which the service delivery systems influence the transformation of existing BSS and OSS systems may vary considerably. It may be viewed that OSS and BSS transformation is still pursued with the primary telecom services of voice and data in mind, with multimedia services positioned as an emergent need that requires support. With traditional voice revenues stagnating or reversing, the current pricing models for the operator may well be undermined as multimedia emerges. Operators who embrace multimedia service delivery more comprehensively within their transformation initiatives may well be positioned to compete more effectively. Hence further work on how best to integrate and accommodate multimedia within the existing OSS/BSS environments is suggested. For instance, new forms of multimedia delivery such as 3D content for virtual world interfaces may be one area that may have a significant impact on traditional OSS/BSS systems.

ACKNOWLEDGEMENTS

We thank the anonymous reviewers, in particular the anonymous reviewer who gave a more detailed portrayal of how the three domains relate and the suggested extensions provided to this paper are gratefully appreciated.

REFERENCES


APPENDIX I. SAMPLE OF TRANSFORMATION QUESTIONS

1) Name of Telco and country.

2) What is the scope of the transformation (select all that apply)?
   - OSS (Operational Support System - usually includes fulfillment, provisioning, service
     assurance, inventory, etc.)
   - BSS (Business Support System - usually includes billing systems, product catalog,
     ordering, self care)
   - SDP/IMS (Service Delivery Platform - SDP such as using IT vendor supplied or custom
     built) / IMS (IP Multimedia Sub-system).
   - Not decided
   - Other (e.g., Next Generation Network, Enterprise Support System), please indicate these
     specifics in the "Additional Comments" area.
   
   Additional comments:

3) Is transformation planned for the future or currently in progress (select only one)?
   - In progress or already deployed
   - Next 24 months
   - 2 - 5 years
   - 5 - 10 years
   - Not considered at this time
   - Other (please specify)
   
   If you selected other, please specify:

   Additional comments:

4) Is eTOM (enhanced Telecom Operations Map - TMF standard for Telco business
   processes) being used?
   - Yes
   - No
   - Don't know or undecided
   - Other (please specify)
   
   If you selected other, please specify:

   Additional comments:

(Note: Remaining questions 5 to 12 in the same format as question 4).

Cite this article as: Pavlovski, Chris. 2011. ‘Broadband Transformation through improved
The introduction of Chronic Disease Management (CDM) Medicare items and use of information technology (IT) has had an impact on GPs, patients and health professionals. As e-health initiatives are implemented, concerns have been noted about patients’ variability in computer and mobile phone ownership, skills and use.

The aim of this research was to investigate patients’ use of, attitudes to and beliefs about web-based care planning, using a combination of questionnaire and interviews.

Similar levels of computer and mobile phone ownership were reported. Although two-thirds of the cohort of 99 participants used the Internet, hardly any (1%) used the Internet to upload their glucose readings and very few (0.05%) ‘often’ used their mobile phones to receive and/or send SMS messages.

Conclusion: the reluctance by patients to become directly involved in web-based health records might be due in part to their limited use of the Internet and mobile phones, although other factors also need to be explored.

INTRODUCTION

Chronic disease management (CDM) Enhanced Primary Care (EPC) Medicare items and funds for computers introduced by the Australian Government during the 1990’s assisted endeavours to achieve better outcomes for patients (McInnes et al. 2006; Australian Government 2010a; Australian Government 2010b). More recently, support has been provided through the use of revised Medicare item numbers including General Practice Management Plans (GPMPs), Team Care Arrangements (TCAs) and subsequent reviews (Inner East Primary Care Partnership 2007; Shortus et al. 2007; Zwar et al. 2007; Hartigan et al. 2009), as well as continuing developments in information technology and e-health (Adaji et al. 2008; Kambati et al. 2008; HealthConnect SA 2009; Wikipedia 2010). Although the physical presence of computers has increased significantly in GPs’ clinics over the past decade, some GPs are still reluctant to fully embrace this technology (Henderson et al. 2006). This may be due to medico legal concerns (Nash et al. 2009) or difficulties in making changes to current practice to adopt a more systematic approach to care (Saunders et al. 2008).

Nonetheless, when patients are diagnosed with a chronic illness, there is a need to ensure they can access GPs and allied health professionals to develop an ongoing, trusting relationship and consistent care (Martin et al. 2009). Efficient practice systems are also important to assist the GP to make the right clinical decisions, make links with community resources and services (Centre for Primary Health Care and Equity 2006) and provide patient education (Brooks 2008). As multidisciplinary teams are effective in improving chronic disease
outcomes and adherence to guidelines, developing multidisciplinary team care is an important component in the optimal management of chronic conditions (Australian Primary Health Care Research Institute (APHCRI) 2006). Additionally, electronic support assists the care team and patients to enhance communication and patient outcomes (Piette 2007).

For some time in Australia, some patients have been active in finding health information on the Internet and taking it to their GPs, and have also made a major contribution to the understanding of e-health advancements and the subsequent benefits (Infante et al. 2004; Consumers' Health Forum of Australia 2005; Consumers' Health Forum of Australia 2007). Nonetheless, concerns have been noted about the lack of access of many patients to computers, inconsistencies in privacy legislation and subsequent tensions as e-health initiatives are implemented (Consumers' Health Forum of Australia 2006; Australian Health Ministers' Advisory Council 2009; California HealthCare Foundation 2010). One study conducted in England about the introduction of centrally stored medical records where people can view their summary care record (SCR) and can use a personal health organiser (known as HealthSpace), which is accessible through the Internet, reported patients’ views about potential benefits and negative aspects about a range of issues. Issues included the impact of this type of record on those with a stigmatising illness; access to health care; the quality and efficiency of care; more objective care or further entrenched prejudice; patient empowerment; clinician-patient trust; and issues about security and/or exploitation of individuals’ records (Robertson et al. 2010). Overall patients did not see this Internet program as useful, nor was it easy to use, and in terms of interest, anecdotally, patients rarely seek access to either paper or electronic health records (Greenhalgh et al. 2010).

The Chronic Disease Management Network (CDM-Net) project, led by Precedence Health Care (PHC), was undertaken in 2008-2009 by a collaboration of twelve Australian and international organisations. There were two parts to this project: one was to develop and test a broadband-based network of health services known as the Chronic Disease Management Service (CDMS) to facilitate the use of GPMPs, TCAs and subsequent reviews electronically and to improve communication between GPs and other health professionals. Type 2 diabetes (T2DM) was used as the demonstrator disease to evaluate CDMS. The second part was to evaluate the impact of the introduction of CDMS.

The aim of this component of the evaluation is to explore the patients’ use of, attitudes to and beliefs about web-based care planning, including GPMPs, TCAs and subsequent reviews.

**METHODOLOGY**

**Methods:** Mixed; questionnaire (1) and semi-structured face-to-face interviews (2).

**DATA COLLECTION**

1. **Questionnaire**

A questionnaire was purposively developed for the CDM-Net project comprising 10 sections with a total of 102 questions using a range response options. Questionnaire sections were variously administered to the 99 participating patient cohort at three time points during the intervention period: Time 1 (T1) soon after the commencement of the intervention, Time 2 (T2) approximately half way between T1 and T3, and Time 3 (T3) close to the conclusion of the intervention period.

Patient participants’ attitudes and beliefs were recorded in four sections of the questionnaire:

1. communication (collected at T1; multiple choice questions),
2. self reported allied health service utilisation (collected at T1, T2, T3; yes/no response),
3. beliefs and attitudes about and satisfaction with CDMS (collected at T3; Likert scale),
4. sharing of health information electronically and privacy (collected at T3; Likert scale).

2. Face to face interviews:

A semi-structured schedule was purposively developed and interviews were conducted with ten patient participants between March and October 2009. The ten participants, five females and five males with an age range from 54 years to 82 years, were purposively selected in an endeavour to reflect a representative sample of the project cohort. Patients were invited to participate by their GP, and when patients indicated their agreement and provided written informed consent, their contact details were forwarded to one member of the research team who contacted the patient, made arrangements and conducted the interviews. Seven interviews were conducted in GPs’ practices and three in participants’ homes. The interviews were approximately 30 to 45 minutes duration, tape recorded and transcribed verbatim.

DATA ANALYSIS PROCESSES

1. Questionnaire – data were analysed using descriptive analysis.

2. Semi-structured interviews – data were analysed using thematic analysis and verified independently by two investigators. When there was a difference of opinion, discussion was held until agreement was reached (Telford et al. 2002; Liamputtong and Ezzy 2005; Reid et al. 2010).

Findings are reported and discussed under the four sub-headings used in the interviews.

ETHICS

Ethics approval for this project was obtained from Barwon Health Research Ethics Advisory Committee (REAC 08/09) and Monash University Standing Committee on Ethics in Research Involving Humans (SCERH 2008/0262), and noted by the Deakin University Human Research Ethics Committee (HREC).

FINDINGS

1. QUESTIONNAIRE

Of the 99 patient participants, all completed the questionnaire at T1, 93 at T2, and 80 at T3. The cohort comprised 61 males and 38 females; 48 were <65 years and 51 were 65 years or over. Analysis conducted for differences in gender and age revealed, overall, that there was a small trend towards males and/or those <65 years owning and using Internet and mobiles.

1.1 Communication (collected at T1 n=99)

Approximately two-thirds 63/99 (67%) indicated they have Internet – either a broadband Internet (57%) or a dialup (10%) connection in their home (Consumers' Health Forum of Australia. 2006). Approximately twice as many males than females indicated they had an Internet connection, with more than half being <65 years (Table 1).
Table 1 - Access to the Internet (Collected at T1 n=99 – multiple choice questions)

<table>
<thead>
<tr>
<th>Question</th>
<th>All N=99</th>
<th>All (%)</th>
<th>Male</th>
<th>Female</th>
<th>Age &lt;65</th>
<th>Age 65+</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Internet connection</td>
<td>32</td>
<td>32.32</td>
<td>18</td>
<td>14</td>
<td>8</td>
<td>24</td>
</tr>
<tr>
<td>Yes, broadband</td>
<td>57</td>
<td>57.58</td>
<td>36</td>
<td>21</td>
<td>32</td>
<td>25</td>
</tr>
<tr>
<td>Yes, dial-up connection</td>
<td>9</td>
<td>9.09</td>
<td>7</td>
<td>2</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>Use Internet sometimes</td>
<td>66</td>
<td>66.67</td>
<td>42</td>
<td>24</td>
<td>33</td>
<td>33</td>
</tr>
<tr>
<td>Use Internet weekly</td>
<td>40</td>
<td>40.00</td>
<td>25</td>
<td>15</td>
<td>22</td>
<td>18</td>
</tr>
<tr>
<td>Use Internet daily</td>
<td>33</td>
<td>33.33</td>
<td>25</td>
<td>8</td>
<td>18</td>
<td>15</td>
</tr>
</tbody>
</table>

Of the 67% who had an Internet connection, while all indicated they used the Internet sometimes, only 33% indicated they used the Internet daily. Men and/or those <65 were more likely to have and use the Internet. Approximately half (51%) of the cohort used the Internet for email or Internet searching, and 20% used the Internet for banking, paying bills and/or making purchases. Few used the Internet for social networking (7%), Voice over IP (5%) or other reasons (4%), including health purposes. Of importance to this study, only 1% uploaded their glucose readings on the Internet (male 65+). In other words, using the Internet for health purposes was significantly lower given the number of participants who had an Internet connection (Table 1).

Mobile phones were owned by 75/99 (75%), and of those, 42 (56%) primarily used the mobile to make phone calls, with 25 (33%) ‘sometimes’ sending and receiving SMS. Of importance, both generally and to this study, very few, 4 (0.05%) ‘often’ received and sent SMS. Men were more likely to own and use a mobile phone than women, and those 65+ who used a mobile phone, were less likely to send/receive SMS text. Similarly, while mobile phone ownership was reasonably high, the use of the SMS facility was low (Table 2).

Table 2 - Mobile phone use (Data collected at T1 n=99)

<table>
<thead>
<tr>
<th>Question</th>
<th>All</th>
<th>All (%)</th>
<th>Male</th>
<th>Female</th>
<th>Age &lt;65</th>
<th>Age 65+</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Response</td>
<td>7</td>
<td>7.07</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Don't have a mobile phone</td>
<td>17</td>
<td>17.17</td>
<td>9</td>
<td>8</td>
<td>2</td>
<td>15</td>
</tr>
<tr>
<td>Yes – primarily to make phone calls</td>
<td>42</td>
<td>42.42</td>
<td>27</td>
<td>15</td>
<td>19</td>
<td>23</td>
</tr>
<tr>
<td>Yes - phone calls and sometimes receiving SMS text</td>
<td>17</td>
<td>17.17</td>
<td>13</td>
<td>4</td>
<td>13</td>
<td>4</td>
</tr>
<tr>
<td>Yes - phone calls and sometimes sending SMS text</td>
<td>8</td>
<td>8.08</td>
<td>5</td>
<td>3</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Yes - phone calls and often receiving SMS text</td>
<td>3</td>
<td>3.03</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Yes - phone calls and often sending SMS text</td>
<td>1</td>
<td>1.01</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
<td>4.04</td>
<td>0</td>
<td>4</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Totals:</td>
<td>99</td>
<td>100.0</td>
<td>61</td>
<td>38</td>
<td>48</td>
<td>51</td>
</tr>
</tbody>
</table>
1.2 Self reported allied health services utilisation (Collected at T1 n=99, T2 n= 93, T3 n=80)

Reported at all three data collection points, attendance at the five categories of health professionals tended to increase during the study (Table 3).

<table>
<thead>
<tr>
<th>Health Professional</th>
<th>Time 1 (n=99)</th>
<th>Time 2 (n=93)</th>
<th>Time 3(n=80)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmacist</td>
<td>90 (91%)</td>
<td>74 (80%)</td>
<td>76 (95%)</td>
</tr>
<tr>
<td>Podiatrist</td>
<td>39 (39%)</td>
<td>51 (55%)</td>
<td>42 (53%)</td>
</tr>
<tr>
<td>Optometrist</td>
<td>34 (34%)</td>
<td>28 (30%)</td>
<td>30 (38%)</td>
</tr>
<tr>
<td>Diabetes Educator</td>
<td>18 (18%)</td>
<td>31 (33%)</td>
<td>17 (21%)</td>
</tr>
<tr>
<td>Dietitian</td>
<td>9 (9%)</td>
<td>26 (28%)</td>
<td>23 (29%)</td>
</tr>
</tbody>
</table>

1.3 Beliefs and attitudes about, and satisfaction with CDMS (Collected at T3 n=80)

Generally, participants 68/80 (85%) felt the GP adequately explained what CDMS was and its purpose, and 72/80 (90%) indicated the GP adequately explained what the GPMP entailed (Inner East Primary Care Partnership 2007; Shortus et al. 2007; Australian Government 2009). However, fewer 52/80 (65%) liked the GP using computers to help manage their diabetes (Infante et al. 2004; Consumers’ Health Forum of Australia 2007).

Regarding CDMS, 49/80 (61%) agreed that the GPMP developed through the CDMS improved their control of diabetes, and 50/80 (62%) felt that the CDMS helped them comply with their GPMP. Fewer, 23/80 (29%) indicated that the CDMS call centre (provided by Diabetes Australia – Victoria) was helpful, but around half 41/80 (51%) were unsure about the call centre. This low response could reflect the reported low use of the Internet and mobile phones, or the low contact between patients and the call centre (Consumers’ Health Forum of Australia 2006; Consumers’ Health Forum of Australia 2007).

While 50/80 (62%) indicated they understood that one of the benefits of a TCA was that it enabled patients to access Medicare Rebates for allied health professional services, of importance is that 10/80 (12%) neither agreed nor disagreed with that statement, suggesting these patients may not be aware of the availability of rebates or may not need the rebates to manage their diabetes (Australian Government 2010a).

Similarly, only 31/80 (39%) finding reminders and alerts helpful, and 6/80 (8%) felt there were too many reminders. These figures need to take into account the reported low use of the Internet and mobile phones by this cohort.

Of the 80, 58 (73%) indicated they understood the purpose of the GPMP and TCA, but few 8/80 (10%) indicated that viewing their GPMP, TCA and health information on the Internet was helpful (California HealthCare Foundation 2010). This again suggests that lack of use of the Internet may have a significant impact, particularly when 13/80 (16%) indicated they found using the technology difficult (Consumers’ Health Forum of Australia 2007; Greenhalgh et al. 2010). Nonetheless, 53/80 (66%) of respondents agreed they would recommend that CDMS be made available to others with diabetes.

Of importance for future research, the majority of participants in this cohort 68/80(85%) indicated they did not mind answering the questionnaire that was used for evaluating the project and could be contacted for further involvement in this or other research.

1.4 Sharing of health information electronically and privacy (collected at T3 n=80)

Collected at T3 only, of the 80 participants, the majority 66/80 (84%) indicated they were comfortable with who had access to their health information, felt fully informed, were
comfortable with the nature and extent of information sharing that takes place, understood how their privacy and personal information would be protected within CDMS and were confident their personal information would stay private. But from a privacy perspective, fewer 56/80 (69%) indicated they would be willing to participate in projects that involved sharing information (Consumers’ Health Forum of Australia 2005; Consumers’ Health Forum of Australia 2006; Australian Health Ministers’ Advisory Council 2009; Nash et al., 2009; Robertson et al. 2010). Overall, males were more likely to agree/strongly agree, as were those 65+.

Table 4 - Sharing of health information electronically and privacy (collected at T3)

<table>
<thead>
<tr>
<th>Question</th>
<th>Agree Strongly Agree</th>
<th>Male</th>
<th>Female</th>
<th>Age &lt;65</th>
<th>Age 65+</th>
</tr>
</thead>
<tbody>
<tr>
<td>I was comfortable that all HPs could see their health information on the computer</td>
<td>66 (82.5%)</td>
<td>42</td>
<td>24</td>
<td>28</td>
<td>38</td>
</tr>
<tr>
<td>I was fully informed as to the range of health professionals and others who have access to my information.</td>
<td>68 (85%)</td>
<td>41</td>
<td>16</td>
<td>26</td>
<td>42</td>
</tr>
<tr>
<td>I am comfortable with the nature and extent of information sharing that takes place to develop a care plan for me.</td>
<td>66 (82%)</td>
<td>42</td>
<td>24</td>
<td>28</td>
<td>38</td>
</tr>
<tr>
<td>I understand how privacy of my personal information will be protected within the Chronic Disease Management Service.</td>
<td>69 (86.25%)</td>
<td>39</td>
<td>30</td>
<td>26</td>
<td>43</td>
</tr>
<tr>
<td>I am confident that my personal information will stay private</td>
<td>68 (85%)</td>
<td>40</td>
<td>28</td>
<td>28</td>
<td>40</td>
</tr>
<tr>
<td>Based on the way my privacy was managed by the CDMS, I would be willing to participate in other projects that involve sharing of my info</td>
<td>56 (80%)</td>
<td>34</td>
<td>22</td>
<td>25</td>
<td>31</td>
</tr>
</tbody>
</table>

2. SEMI-STRUCTURED INTERVIEWS (N=10)

2.1. Communication

All ten participants reported they were informed by their GP, with the majority indicating the information was ‘brief’ and “…it was a study to see how people coped with diabetes and to become more familiar with some of the solutions (Pt1)”. Nine indicated the purpose and requirements were explained clearly and the tenth explained the GP had misplaced the documents; “…but when found, were completed and forwarded to the research team (Pt10)”. Nine felt they were involved in the development of their GPMP, the tenth explaining; ‘… it wasn’t explained to me that I was supposed to make the appointments (Pt10)’. The majority (8/10) felt the GPMP was developed specifically to meet their diabetes management needs, ‘…because there are different people you can see and [the GP] thought it would be best to see certain people like the diabetic educator and the podiatrist and the optometrist (Pt1)’, and “… he asked me about it and I responded. I think I felt a part of it, yeah (Pt7)”. The majority felt that having a care plan didn’t help them communicate with their GP because they already had a good relationship with their GP. One patient felt the plan assisted with communication with the diabetes educator; “… but then I know her (Pt10)”. Another mentioned the pharmacist; “… yes it’s certainly helped with the pharmacist (Pt2)” (Robertson et al., 2010).
2.2. Self-reported allied health service utilisation

Opinion was divided regarding whether sharing information electronically helped participants access other health professionals; some felt; “...yes it helped manage Diabetes Educators and increase allied health professional’s communication among each other (Pt6)”, but others thought “...no, I was seeing those other people before he [GP] had the care plan (Pt7)”.

2.3. Beliefs and attitudes about and satisfaction with CDMS

The majority felt there was benefit from having their diabetes and health information shared electronically with other professionals, “...so that when I go to see the podiatrist or the diabetic educator or whatever they’ve got access to it all, I’m quite happy about that (Pt2)”. The majority indicated they felt that sharing health information electronically had no impact on what information they disclosed when they visited the doctor (Infante et al. 2004; Adaji et al. 2008), “...No I just like to feel that the information they’ve got is correct that’s all (Pt8)”. Others felt there was a positive impact, “...yes, because having it in a system like this, I think there’s more likelihood of your GP keeping track that you are seeing these other health providers and reminding you that you need to... (Pt2)”.

Generally participants did not agree that sharing information electronically had an impact on their diabetes care, but three did because; “...I think a lot of it is a very personal matter and obviously the whole self-discipline is just paramount (Pt2)”. For another, “...it helps remind you to keep on the ball” (Pt4), and for the third “...it’s easy for health professionals to confer, especially the pharmacist (Pt5)” (Australian Health Ministers’ Advisory Council 2009).

Less than half agreed that sharing health information in this way meant they did not have to repeat information every time a referral was made by health professionals; as one patient commented; “...I still keep repeating it (Pt9)” (Robertson et al. 2010). Similarly, less than half felt that having a care plan improved the way the GP managed their diabetes care because; “...any assistance is helpful (Pt6)”, but the majority either saying ‘no’ or were ambivalent; “...it should, I couldn’t tell you whether it does or not but it should (Pt9)”. Nonetheless the majority felt that having a care plan improved their understanding of their role in managing their diabetes; “...it makes me aware of certain foods that I had questions about, which was good (Pt1)”.

Half had a home medicines review (HMR) as part of their management plan; “...I’m on nine different medications so our chemist has recommended strongly that I get a review to see the interactions (Pt 1)”. The reasons varied for why patients hadn’t had an HMR. Some felt it was unnecessary because; “...I know how to manage my medications already (Pt7)”. Others had tried but “...but it hasn’t worked out. I think the last time [the pharmacist] was scheduled to come I had the stroke and was gone [to hospital] (Pt9)”.

Of those who indicated they had a computer in their home, half had not looked up their care plan; “...I didn’t know I could, should I look it up? (Pt3)”, and two had; “...yes once and had challenges with the passwords (Pt10)”. After the password challenges were dealt with; “...the system was easy to navigate, but there was a load of rubbish in there (Pt10)”. This suggests patients may perceive using Internet programs as difficult, the program is not useful, or they may lack interest in seeking and/or accessing their personal health information (Greenhalgh et al. 2010).

Only two patients had received an SMS and one a telephone call. For one patient; “initially the SMS’s were occasional, but there has been a lot in the last few weeks (Pt10)”. There were problems with the time of the message; “...which came about 1.15pm for a 10am appointment ... there needs to be a set time to send out emails because I don’t turn on my computer every day and there weren’t emails for weeks (Pt 10)”. When the messages were received; “...the content was OK (Pt10)”.

PATIENTS USE OF, ATTITUDES TO, AND BELIEFS ABOUT WEB-BASED CARE PLANNING (GPMPS, TCAS AND SUBSEQUENT REVIEWS) 68.7
2.4 Electronically sharing health information and privacy

While the majority felt sharing information electronically did not make a difference to their sense of privacy, two were less certain; “... I assumed it was on kind of an anonymous (Pt 7), and “... well I think it would (Pt 9)”. Another felt that the system; “... some people mightn’t like the privacy aspect of it (Pt2)” (Consumers' Health Forum of Australia 2006; Australian Health Ministers' Advisory Council 2009).

DISCUSSION AND CONCLUSION

One clear message from the data was that the use of CDMS as a communication tool to help manage patient health may not be optimal because of patients’ limited use of the Internet and mobile phone for managing their health issues throughout the intervention period and/or patients not having an interest in using electronic health records (Greenhalgh et al. 2010). This suggests the uptake of the use of electronic equipment by patients may impede the introduction of programs such as CDMS for managing health (Consumers' Health Forum of Australia 2005; Centre for Primary Health Care and Equity 2006; Consumers' Health Forum of Australia 2006; Greenhalgh et al. 2008; Australian Health Ministers' Advisory Council 2009; Martin et al. 2009).

Nonetheless, it is important to note that the responses to the questionnaire and the semi-structured interviews were similar, particularly around important matters such as patients having the process explained to them adequately (Consumers' Health Forum of Australia 2006; Inner East Primary Care Partnership 2007; Shortus et al. 2007; Australian Government 2009; Australian Health Ministers' Advisory Council 2009), feeling that there were improvements to the management of their diabetes as a consequence of using CDMS, particularly around being able to access Medicare item numbers (Australian Government 2010a). While participants indicated support for the concept of electronic transfer of medical information (Adaji et al. 2008; Khambati et al. 2008; HealthConnect SA 2009; Wikipedia 2010) and the subsequent benefits such as improved control of their diabetes (Infante et al. 2004; Consumers' Health Forum of Australia 2006; Consumers' Health Forum of Australia 2007), some reported they still had to repeat personal and health information to health professionals. Of importance was the patients maintaining their trusting relationship with their GP and other health professionals involved in their management and care (Australian Primary Health Care Research Institute (APHCRI) 2006; Martin et al. 2009), because, for some, sharing health information electronically impacted on what information they disclosed when they visited the doctor (Infante et al. 2004; Adaji et al. 2008). While opinion on sharing of health information electronically was generally positive, some expressed concern about their privacy and the security of their health information (Consumers' Health Forum of Australia 2005; Consumers' Health Forum of Australia 2006; Australian Health Ministers' Advisory Council 2009; Nash et al. 2009).

Notwithstanding the challenges, the patients generally reported their experience with CDMS was positive.

CONFLICT OF INTEREST

Nil for all authors.

ACKNOWLEDGEMENTS

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Development, Department of Human Service and Multi Media Victoria, and the consortium partners.

The research team extends its sincere gratitude to the participating GPs, their staff, the patients, allied health professionals, and others who participated in or supported the project in some way.

REFERENCES

Adaji A; Schattner P; et al. 2008. 'The use of information technology to enhance diabetes management in primary care: a literature review'. Informatics in Primary Care 16(3): 229-237.


Hartigan, PA; Soo, TM; et al. 2009. 'Do Team Care Arrangements address the real issues in the management of chronic disease?' Medical Journal of Australia 191: 299-100.


Henderson, J; Britt, H; et al. 2006. 'Extent and utilisation of computerisation in Australian general practice.' Medical Journal of Australia 185 (2): 84-87.
This paper provides an overview of the telecommunications policy environment in Canada. Like Milner's (2009) article on New Zealand, this paper offers insights on international approaches to telecommunications policy. Canada's telecommunications history reveals a mix of private and public sector investment in regionally-based service providers. Canada did not have a single, publicly owned telecommunications carrier as was the case in Australia. Liberalisation of the telecommunications marketplace encouraged the development of competing infrastructures, with cable companies (traditionally focused on broadcasting distribution) and telephone companies now both providing wireline and wireless, voice, Internet and television services. Competition for wireline services remains regionally based, while wireless providers compete nationally.

Although competition is intense, the broadband and wireless markets are highly concentrated. Competition in these markets has not resulted in extensive consumer choice, low prices or innovative services. Most Canadian consumers have access to broadband connectivity, but uptake rates now lag other OECD countries, for services that are slower and more expensive than those available in many other locations. Mobile phone penetration in Canada is on par with that of developing nations. The paper explores the characteristics of Canada's telecommunication markets, discusses the policy environment and notes that government has not offered a vision of a digital future for Canada.

INTRODUCTION

This paper provides an overview of the telecommunications policy environment in Canada. Like Milner's (2009) article on New Zealand, this paper offers insights on international approaches to telecommunications policy. Canada's telecommunications history reveals a mix of private and public sector investment in regionally-based service providers. Canada did not have a single, publicly owned telecommunications carrier as was the case in Australia. Liberalisation of the telecommunications marketplace encouraged the development of competing infrastructures, with cable companies (traditionally focused on broadcasting distribution) and telephone companies now both providing wireline and wireless, voice, Internet and television services. Competition for wireline services remains regionally based, while wireless providers compete nationally.

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A BRIEF HISTORY OF TELECOMMUNICATIONS IN CANADA

The Bell Telephone Company of Canada was established in 1880. Three members of the board were from the American Bell Telephone Company and by 1882, almost 50% of the shares in the Canadian company were held by American Bell (beginning a history of American investment in the Canadian telecommunications sector that continued for the next century). The Bell Telephone Company of Canada had a monopoly across the country, with exclusive rights to construction on railway rights of way. 'Unprofitable rural territories' were ceded to local companies (Babe 1990, 75), with Bell consolidating its operations in the provinces of Ontario and Quebec. Over time, regionally based telephone companies emerged, some competing with Bell (which often refused to provide long distance connections to these competitors). Some regional companies were held privately (including British Columbia Telephone, later named BC Tel, which was controlled by US company GTE). Others were publicly owned, either by municipalities or by provincial governments. For much of the twentieth century, the telephone companies in Alberta, Saskatchewan and Manitoba were owned by the provincial governments.

Canada's telephone companies operated as regional monopolies, supervised by federal, provincial or municipal agencies. Most telephone calls between regions were transmitted through the United States until the 1931 formation of the TransCanada Telephone System (later named Telecom Canada and then Stentor). This alliance of Canada's largest telephone companies coordinated telephone service across the country, and represented their common interests in regulatory discussions. International service was provided by the Canadian Overseas Telecommunications Corporation, a crown (government owned) corporation and the Canadian member of Intelsat, renamed Teleglobe Canada in 1975. Teleglobe was privatised in 1987. In 1998, rules for routing international traffic were eliminated, removing Teleglobe's monopoly on international calls, and allowing domestic calls once again to be routed through the US (Babe 1990; Industry Canada 2005).

In the 1960s several groups proposed the construction of a satellite service, to provide telecommunications and television services across the country. Telesat Canada was created in 1969, owned by the federal government, telecommunications companies and private investors. The company was expected to operate on a commercial basis, but was established as a 'carrier's carrier,' meaning it could only provide services to existing terrestrial carriers. This approach removed the possibility of competition between the satellite carrier and terrestrial carriers (who owned a large share of Telesat), and the terrestrial carriers had little incentive to shift traffic off their terrestrial networks onto the domestic satellite service. Telesat was not profitable, and when additional capital was needed to upgrade its satellites it was proposed that the company become a member of the TransCanada Telephone System (TCTS). This suggestion was rejected by the regulator on the grounds that it was not in the public interest, but the federal government overruled the regulator and allowed Telesat to become part of TCTS. The federal government sold its shares in Telesat in 1992, and Telesat's monopoly on domestic and trans-border satellite carriage ended in 2000.

REGULATION AND MARKET LIBERALISATION

In 1976, the jurisdiction of the Canadian broadcasting regulator was expanded to include federally regulated telecommunications companies. The Canadian Radio-television and Telecommunications Commission (CRTC) is an independent organisation that reports to federal parliament through the Minister of Canadian Heritage. The CRTC's mandate is 'to ensure that both the broadcasting and telecommunications systems serve the Canadian public' (Canadian Radio-Television and Telecommunications Commission 2009a). Policy decisions are made to achieve the objectives of the 1991 Broadcasting Act (Canada 1991) and the 1993 Telecommunications Act (Canada 1993).

Before 1993, the telecommunications sector was governed under the 1906 Railway Act. The 1993 Telecommunications Act recognised that telecommunications have 'an essential role in
the maintenance of Canada's identity and sovereignty' and laid out federal legislation to
govern the telecommunications sector. The act set policy objectives to develop a
telecommunications system that would 'safeguard, enrich and strengthen the social and
economic fabric of Canada and its regions.' This system should render 'reliable and affordable
telecommunications services of high quality accessible to Canadians in both urban and rural
areas in all regions of Canada.' Telecommunications policy should enhance 'efficiency and
competitiveness' of the Canadian telecommunication sector, promote 'ownership and control
of Canadian carriers by Canadians,' and encourage the use of Canadian transmission facilities.
The Act also notes that telecommunications policy should aim to stimulate research,
development and innovation around the provision of telecommunication services in Canada,
'respond to the economic and social requirements of users of telecommunications services'
and 'contribute to the protection of the privacy of persons' (Canada 1993, Section 7).

By encouraging 'increased reliance on market forces for the provision of telecommunications
services' and requiring that policy must ensure that 'regulation, where required, is efficient and
effective,' the 1993 Telecommunications Act continued the liberalisation of the Canadian telecommunication sector begun in the late 1970s when the CRTC allowed competition in
the data services market. Decisions in the 1980s and 1990s opened the market to further
competition. In 1992 the long distance telephone market was opened to competition, and in
1997 competition was introduced in local telecommunications markets. The CRTC forbears
from regulating telecommunications markets that it considers to be competitive, including
retail Internet services and mobile services (Canadian Radio-Television and Telecommunications Commission 2011b). Wholesale Internet access markets are regulated.

In 2006, as a result of an extensive review of telecommunications policy in Canada (Telecommunications Policy Review Panel 2006), the federal government issued a policy
directive to the CRTC further entrenching the role of the market in delivering
telecommunication services. This policy directive requires the CRTC to:

I) rely on market forces to the maximum extent feasible as the means of achieving the
telecommunications policy objectives, and

II) when relying on regulation, use measures that are efficient and proportionate to their
purpose and that interfere with the operation of competitive market forces to the
minimum extent necessary to meet the policy objectives (Governor in Council 2006).

While policy is to rely on market forces, Canada's telecommunications market is not open to
foreign competitors. The 1993 Telecommunications Act imposed strict Canadian ownership
requirements for operating a telecommunications carrier in Canada. 80% of a carrier's voting
shares must be held by Canadians (for holding companies investing in carriers two-thirds of
their voting shares must be held by Canadians), and at least 80% of the members of the board
of directors must be Canadian (Canada 1994). These are among the most restrictive foreign
ownership rules in the OECD (Organisation for Economic Co-Operation and Development 2011b). Reviews of telecommunications and competition policy have called for more

Foreign ownership restrictions on satellite carriers were removed in 2010 (Clement 2010).
The current federal government has indicated that further questions of foreign ownership will
'receive renewed government scrutiny' (Government of Canada 2010, 17). A consultation on
foreign investment in the Canadian telecoms sector closed in July 2010 (Industry Canada
2010b) but no additional changes to the current policies have been initiated.

STRATEGIC DIRECTION

Canada does not have a digital economy strategy or a national broadband plan. In 2009, then
Industry Minister Tony Clement announced that the government of Canada intended to
'regain its leadership position in the digital economy' (Clement 2009). In 2010, the
government held a consultation on the Digital Economy, receiving more than 250
submissions from organisations and individuals. Priority areas for strategic action include the
development of a 'world-class digital infrastructure' and ensuring that all Canadians have 'digital skills' (Government of Canada 2010). It was anticipated that a Digital Economy strategy would be released in early 2011, but an election and change of Minister have delayed this release. As such, Canada has no explicit strategic approach for further development of Canada's telecommunications infrastructure, leaving it to market forces to determine the nature of services on offer to Canadians.

TELECOMMUNICATIONS IN CANADA TODAY

The telecommunications market in Canada today is dominated by large telecommunications and cable companies operating in regional markets to provide telephone and Internet services. These companies also operate as broadcast distribution undertakings to provide television services, and some also own television stations and/or other media assets. In the telecommunications market (comprising Internet, wireless, wireline voice and data and private line services) five incumbent telephone companies (telcos) generate about two-thirds of total revenues (Canadian Radio-Television and Telecommunications Commission 2011b). The western incumbent telco Telus was formed through the privatisation of Alberta Government Telephones and a later merger with BC Tel. The incumbent in the province of Saskatchewan, SaskTel, remains government owned. In Manitoba, Manitoba Telephone Systems was privatised and later acquired Allstream to become MTS Allstream. Bell Canada remains the dominant carrier in Ontario and Quebec. Bell Canada Enterprises also controls Bell Aliant, formed by the merger of the four provincial incumbents in eastern Canada. The telco incumbents compete with each other for business customers, but each serves its own geographic region in the residential wireline voice, television and fixed line Internet market. The telcos offer television services using satellite or IPTV (Internet Protocol Television).

Canada's cable companies (cablecos) were among the first in the world to offer hybrid-fibre coax (HFC) broadband services, beginning in late 1996 (Lie 2003). Cable companies also offer voice over IP (VoIP) home telephone service to compete with the wireline service offered by telcos. The top five cable companies generate about 30% of telecommunications revenues (Canadian Radio-Television and Telecommunications Commission 2011b). Like their telco competitors, the cable companies are regionally based. Shaw operates primarily in Western Canada, Rogers in Ontario, Cogeco in Ontario and Quebec, Videotron in Quebec, and Eastlink in Eastern Canada. Cable companies do not compete with each other in providing residential television, Internet or VoIP home phone service.

Competition in the Canadian residential broadband market is primarily between the incumbent telephone company and the cable company in each geographic region (facilities-based competition) in what has been labeled as the 'battle for the broadband home.' For instance, in Western Canada, telco Telus competes with cableco Shaw. In Ontario, telco Bell competes with cablecos Rogers and Cogeco, but in Quebec Bell competes with Videotron. Bell, Rogers and Telus dominate the national wireless market. About half of Canadian households bundle their local phone service with internet, mobile, and/or television. In so doing, households make a choice as to whether they will obtain their telecommunications and television services from a cableco or from a telco. Households that do not bundle their services may choose to combine services from a wireless carrier, local telco or cableco, and from resellers. Only about 2% of telecommunications revenues are generated by the top five resellers. The resellers typically offer Internet and wireline phone services. In 2010 Canadian cablercos generated two-thirds of their revenues from telecommunications services, while telcos generated less than 7% of their revenues from broadcasting services (Canadian Radio-Television and Telecommunications Commission 2011b).

The two sections below describe Canada's broadband and wireless markets, discussing the nature of services on offer and efforts by governments to encourage infrastructure development and increase competition within markets.
BROADBAND

The broadband market in Canada is characterised by competition between the regional telco and the regional cableco. Most Canadian households have a choice of DSL or cable broadband; 96% of households have access to at least one fixed line service. 70% of Canadian households subscribed to a broadband service offering download speeds of 1.5 Mbps or higher in 2010, with just over 50% subscribing to speeds greater than 5 Mbps. In 2010, 56% of households purchased their broadband from a cableco (some of which offer DOCSIS 3.0 speeds), and 38% from an incumbent telco (typically offering DSL, although VDSL/fibre-to-the-node service is now available in some parts of the country) (Canadian Radio-Television and Telecommunications Commission 2011b).

Wireless broadband services have not been widely adopted. As of December 2010, Canada was ranked 24th in the OECD for wireless broadband subscriptions. Most of Canada's wireless broadband subscribers access this service on their smartphones, rather than through standalone data plans (OECD 2011b).

Canadians were early adopters of wireline broadband (second only to Korea among OECD countries until 2004), but in the past few years Canada's position as a broadband leader has eroded. OECD data show other countries overtaking Canada in terms of broadband adoption, while Canada's prices remain relatively high (Organisation for Economic Co-Operation and Development 2011a). Akamai's quarterly reports show faster Internet speeds in many other countries (Akamai 2011).

In 2010, a House of Commons committee investigating foreign ownership in the telecommunications sector concluded:

The recent performance of the Canadian telecommunications industry is, on the whole, unsatisfactory. In particular, the Committee considers that the relatively low level of wireless phone penetration and the disappointing progression of broadband penetration in recent years are symptomatic that all is not well in Canada's telecommunications industry (in terms of pricing, services offered, and the competitive environment in general). (Standing Committee on Industry Science and Technology 2010, 41)

The 2010 Berkman Center for Internet and Society report on international broadband policy described Canada as a 'weak performer,' noting that a pricing study demonstrated the highest prices and lowest speeds were on offer in countries like the US and Canada where facilities-based competition was dominant (Benkler et al. 2010). Canadian broadband providers disputed these findings. (Goldberg 2010)

Most Canadian residential broadband plans are subject to download caps. For instance, entry level plans offered by Bell and Rogers in Ontario have a 2 gigabyte per month download limit. Customers who exceed their bandwidth cap on these entry level plans are charged an additional usage charge of $2.50 or $5 per gigabyte. Additionally, many of the incumbent telcos and cablecos throttle customers' broadband connections. This practice, to manage network congestion, is allowed by the CRTC's policy on Internet traffic management practices (Canadian Radio-Television and Telecommunications Commission 2009b) but at least one ISP has been found to be violating this policy in its application of bandwidth throttling (Openmedia.Ca 2011).

Although Canada's regulatory environment requires that telcos and cablecos provide competitors with access to their facilities on a wholesale basis, independent providers only serve about 6% of the retail market (Canadian Radio-Television and Telecommunications Commission 2011b). The Berkman Center report describes Canada's unbundling policies as 'weakly implemented.' van Gorp and Middleton (2010) conclude that Canada's facilities-based competitive environment has not resulted in effective competition (defined by the ACCC as allowing competitors to hold 'a reasonably sustainable market position', Australian Competition & Consumer Commission 2009).
It is difficult to get information on the Canadian wholesale broadband market. Data on the number of telco exchanges where competitors have installed their own equipment is not readily available, nor is there general information on the numbers of unbundled lines in service. Evidence provided in CRTC hearings suggests that the most common form of wholesale broadband is what is known as the 'aggregated ADSL access service.' This service allows a competitor (access seeker) to connect to customers' premises by establishing a single point of interface with an incumbent telco (Canadian Radio-Television and Telecommunications Commission 2008). For instance, a competitor could serve any customer on the Bell network in Ontario and Quebec by connecting to the Bell network in a single location. This avoids the cost of co-locating in multiple exchanges, but means that the competitor cannot manage the speed of the connection or otherwise differentiate the services on offer. Canada's cablecos are also required to allow third party Internet access (TPIA) to their broadband networks. For many years, competitors found it difficult to establish wholesale relationships with cablecos, but this arrangement is becoming more common now (in part because of regulatory changes to facilitate access).

The relationship between competitors and the incumbents from whom they buy wholesale services is often contentious. It is difficult for competitors to compete with incumbents when providing service over the incumbents' networks (see Middleton and Van Gorp 2009, for discussion of some of the challenges). Incumbents argue that competitors should build their own networks if they are unhappy with the services available to them on a wholesale basis. Competitors do want to invest in their own infrastructure, but need to establish sufficient revenues and a strong customer base first, by selling services over incumbents' networks. The incumbents' terms are often not favourable to their wholesale customers. For instance, incumbents can impose traffic management practices on their wholesale networks (bandwidth throttling), restricting speeds at certain times of day. It took several years for competitors to get access to the same speed tiers that were being offered by incumbents to their own retail customers (competitors only had access to slower speeds). There is a current dispute over billing practices in the wholesale market, with competitors seeking flexibility to price their services in ways that would differentiate them from the incumbents.2

As noted, many Canadian households buy their telecommunication services in bundles. Competitors are able to offer VoIP telephone services and Internet access. CRTC regulations do not require telcos or cablecos to offer wholesale access to multicasting (to deliver IPTV), noting that the wholesale access regime is designed to provide access to Internet services (Canadian Radio-Television and Telecommunications Commission 2010). While Internet and television services are different, competitors' Internet offerings may be less attractive when not bundled with television or wireless services, meaning that the decision to exclude wholesale access to multicasting does have an impact on the competitiveness of the retail Internet access market.

The CRTC has not been successful in establishing a competitive wholesale market for broadband services. Regulatory decisions that would encourage competition have been appealed repeatedly (delaying their implementation), reversed or sent back to the regulator (by government) for reconsideration. The incumbent telco/cableco duopoly does offer most Canadians a choice of copper (DSL/VDSL) or HFC broadband connectivity, but at comparatively high prices for bandwidth capped plans. Telcos and cablecos do compete intensely with each other, resulting in quite different competitive conditions in various regions across the country. There are some competitors attempting to challenge the duopoly to deliver more internationally competitive, faster, affordable, innovative broadband services to Canadians, but with just 6% market share their impact has been limited.

Canada has no national broadband plan to articulate a vision for the sort of broadband connectivity that should be available to Canadians in the future. There are no specific plans for extending or improving connectivity to Canada's unserved and underserved rural and remote areas, or for encouraging improvements to broadband offerings in urban areas. Earlier recommendations for the development of a national broadband infrastructure have not been pursued. A 2001 taskforce recommended federal investment of $6 billion to extend broadband connectivity to all Canadians by 2004. While noting that broadband speeds would need to
evolve over time, this taskforce recommended that the network should provide symmetrical 1.5 Mbps connectivity as its initial target speed (National Broadband Task Force 2001). The 2006 Telecommunications Policy Review Panel also called for additional federal investment in broadband, recommending the development of a ubiquitous Canadian access network to deliver on the policy objectives of providing affordable access to telecommunications services in all parts of the country (Telecommunications Policy Review Panel 2006).

As part of an economic stimulus package in 2009, the federal government committed $225 million for expansion of broadband connectivity in rural and remote regions, noting that 22% of rural households did not have broadband connectivity (Industry Canada 2009). Funding was not available in all regions of the country however, as provincial or territorial programs were already in place to extend broadband connectivity to households and businesses in Nova Scotia, New Brunswick, Prince Edward Island, Saskatchewan, Yukon and eastern Ontario. In eligible regions, federal funding would provide up to 50% of the project cost, with the expectation that the remainder of the funding would come from other levels of government or the private sector. Additional federal funds were available from other sources for First Nations (aboriginal) communities. Eight years after Canada's National Broadband Taskforce recommended defining broadband in symmetrical terms, the target speeds for the 2009 project were 1.5 Mbps for downloading and 384 kbps for uploading (i.e., a much lower upload speed than recommended in 2001), and the project did not aim to connect all Canadians.

The 2009 program has funded some additional broadband capacity in the country, but at the end of 2011 there is still no master plan in place to guide further development of broadband networks in Canada. Satellite broadband service should be able to reach all Canadians, but even with the recent launch of a satellite that will support faster speeds, prices are higher than in urban areas (Xplornet 2011). The Province of Nova Scotia is considered by the federal government to offer 100% connectivity, but does so at speeds of 1.5 Mbps, using fixed wireless technologies in rural and remote locations (Province of Nova Scotia 2011). In contrast, a project in eastern Ontario funded by three levels of government is aiming to provide connectivity at speeds of 10 Mbps to 85% of that region (Eastern Ontario Regional Network 2011), with a completion date of 2013. In the province of Alberta, the 'SuperNet' offers next generation fibre connectivity to more than 400 communities (connecting schools, government offices and health care facilities, Alberta SuperNet 2010), but fast residential broadband is not available in all communities.

The CRTC recently noted that continued rollout of broadband infrastructure should be guided by market forces (as per the policy directive it was given in 2006), supplemented by targeted government funding for public/private partnerships to extend connectivity where the private sector will not invest. The Commission concluded that 'it would not be appropriate at this time to establish a funding mechanism to subsidise the deployment of broadband Internet access services,' but did decide that it would be in the public interest to set target speeds for broadband access. The proposed target speeds are 5 Mbps download and 1 Mbps upload (actual speeds), to be available to all Canadians by the end of 2015 (Canadian Radio-Television and Telecommunications Commission 2011d). There are no targets for next generation broadband capacity, and no nationwide plan for network upgrades.

WIRELESS

The dominant national players in Canada's wireless market are Bell, Telus and Rogers. The national players also operate discount brands (Virgin, Koodo, Fido and Chatr). Some telcos offer wireless services on a regional basis (e.g. SaskTel, MTS Allstream) and there are a few mobile virtual network operators. 99% of the population has access to 2G or 3G service (which covers only 20% of the country's geographic area), and 97% are within the 4G network footprint. The three operators are now rolling out LTE (long term evolution) networks in Canada's major cities. Despite the ubiquity of mobile phone networks, mobile phone adoption in Canada is on par with developing nations, with about 70 subscriptions per 100 population (as compared to 101 per 100 in Australia). More than 100 countries have
higher mobile phone penetration rates than Canada (International Telecommunication Union 2011).

OECD data show that Canadian mobile customers pay high prices for low and moderate usage levels (often twice as high as comparable services in Australia in 2009), and average revenue per user for Canadian mobile providers is among the highest in the OECD (Organisation for Economic Co-Operation and Development 2011b). Many Canadian mobile plans charge users for making long distance calls, and also for services like voicemail and call display. It is difficult for customers to switch providers as phones are typically sold locked to a specific network provider, and customers frequently sign three-year contracts.

An auction of AWS (Advanced Wireless Services, 1700 and 2100 MHz bands) in 2008 had an explicit objective of increasing competition in the Canadian wireless market. Set aside were used to ensure that new entrants could obtain spectrum (Industry Canada 2010a). Cable companies Videotron and Shaw both purchased spectrum. Videotron now offers mobile service in its regional market, allowing for 'quadruple play' (wireline and wireless voice, Internet and television) bundling. Shaw recently decided not to build a cellular network, choosing instead to build out a Wi-Fi network in partnership with Cisco to meet anticipated demand for mobile data services (Shaw Communications and Cisco 2011).

Two other companies are building out national mobile networks using spectrum acquired in the 2008 auction. These companies are new entrants to the wireless industry in Canada, and do not offer wireline broadband, wireline voice or television services. WIND Mobile (part of the Globalive group) was the first to launch, in late 2009. Mobilicity launched in mid-2010. Both WIND and Mobilicity are building their networks across the country, starting in the major population centres. A third new entrant, Public Mobile, is currently offering service only in Toronto and Montreal. The CRTC reports that the new entrants' networks now reach 50% of the Canadian population (Canadian Radio-Television and Telecommunications Commission 2011b). All of the new entrants have roaming agreements with the major carriers to provide connectivity across the country.

The new entrants are changing the market by offering lower pricing and shorter contracts, and it appears that they are having some impact in making the Canadian mobile services market more competitive. The new entrants are expected to have 5% market share by the end of 2011 (Convergence Consulting Group 2011), a percentage that will likely increase as Canadians' current mobile phone contracts expire and they are free to switch providers.

The new entrants do face challenges however. They are competing against bundled services offered by the incumbent cablecos and telcos, and have limited brand recognition. Because the AWS bands are not widely used for mobile services the market for AWS devices is small. Popular phones like the iPhone are not available for AWS. US operator T-Mobile also uses AWS spectrum, and devices available to the Canadian operators were often first available in the US. Handsets that work on the major Canadian carriers' networks do not work on the new entrants' AWS networks.

New entrants have promoted fixed pricing in their services, but as in other countries there continue to be many complaints from Canadian mobile customers about wireless pricing and bill shock (Commissioner for Complaints for Telecommunications Services 2010; Janigan 2010). The Competition Bureau has powers to investigate anti-competitive practices including price fixing, abuse of dominant market position and deceptive marketing practices (Competition Bureau 2011). The Bureau published guidelines for investigating abuse of dominance in the telecommunications sector in 2008 (Competition Bureau 2008) and has taken action against telecommunications companies for misleading advertising of the price, speeds and quality of their services. There are also provincial initiatives in place (Quebec, Manitoba) or under consideration (Ontario) to amend consumer protection legislation to require plain language contracts and to reduce penalties for terminating contracts.

Foreign ownership restrictions have kept international wireless operators out of the Canadian market. Various reviews of the Canadian telecommunications market suggest that opening
the wireless market to foreign competitors would offer benefits to Canadians. For instance, the 2006 Telecommunication Policy Review Panel noted that:

The major multinational wireless operators have brought significant new technology transfers, capital, marketing and management know-how to the U.S. and most other OECD countries — but they are not able to participate fully in Canadian markets. Based on the experience of other countries, it seems difficult to dispute that their presence would significantly improve the range, quality and pricing of wireless services available to Canadians. (Telecommunications Policy Review Panel 2006, p. 11-20).

The 2010 parliamentary committee report on ownership rules reached a similar conclusion, observing that 'foreign ownership restrictions disproportionally penalise new entrants and smaller players through their effect on the cost of capital; this in turn lowers the ability of new entrants and smaller players to pose a competitive threat to large incumbents' (Standing Committee on Industry Science and Technology 2010, p. 41). As noted earlier, the government has not yet responded to the consultation process initiated in mid-2010, leaving the question of changes to Canada's foreign ownership rules unresolved.

The foreign ownership question is germane to plans for auctioning the 700 MHz spectrum band. Analogue broadcasting was switched off in Canadian major centres on August 31, 2011 (Canadian Radio-Television and Telecommunications Commission 2011c). A consultation on the policy and technical framework for auctioning the 700 MHz spectrum band freed by the digital television transition closed in February 2011. This spectrum will be allocated for the provision of 'commercial mobile systems,' with a view to encouraging 'the continued growth of wireless broadband, leading to lower prices and improved quality of service for end-users, as well as enhanced opportunities for innovation and investment' (Industry Canada 2010a, p. 2). No auction date or policy framework has yet been announced, but it is anticipated that the auction will take place in late 2012.

**DISCUSSION**

The Canadian government aspires to restore Canada's leadership position in the digital economy. The assessment of Canada's telecommunications markets offered here suggests that the current approach is unlikely to realise this objective. Specifically, although facilities-based competition in the broadband market has encouraged network rollout, the broadband services on offer across the country could be described as average (or as legal scholar Michael Geist suggested in 2009, 'not awful'). The broadband duopoly does not enable effective competition, and regulatory actions to open the market to further competition have not had the desired results. Efforts to increase competition and encourage innovation in the wireless market have been slow to take hold, and may explain Canada's lagging wireless uptake rates. The absence of international carriers in the Canadian market has likely hindered innovation.

Recent high-level meetings at the OECD and the ITU, and the work of the ITU/UNESCO Broadband Commission for Digital Development, continue to advance the case for broadband as a fundamental driver of social and economic benefit. While the preferred model for broadband infrastructure development appears to be a market-driven one (OECD 2011a), the Canadian experience suggests that highly concentrated markets do not fully deliver the anticipated competitive outcomes of choice, affordability and innovation in broadband and wireless services.

The Canadian telecommunications market provides basic connectivity, but the focus of private sector providers is on building infrastructure and selling profitable services that make use of this infrastructure (for instance, the need to compete with the cable companies to deliver entertainment content is driving telco investment in next generation networks that support IPTV). The private sector does not appear to have a vision for the use of broadband networks as enablers of broader socio-economic benefit, as envisaged in ongoing discourses of e-health, e-learning, smart grids, and trans-sectoral services (Broadband Commission for Digital Development 2011). While the private sector can play a role in enabling such services,
it is up to government to take the lead in articulating a vision for a broadband-enabled society, building on its recent public consultations and policy reviews.

The 2006 Telecommunications Policy Review Panel offered many recommendations for improving Canada's telecommunications policy environment. It suggested clearer articulation of the social objectives of telecommunications policy, and recommended making competition in the telecommunications market more efficient, strengthening the powers of the CRTC, enhancing the rights of telecommunications consumers and ensuring that all Canadians have access to affordable, reliable broadband services. These recommendations have not been incorporated into Canada's telecommunications policies. Inaction on the digital economy strategy, on the review of foreign ownership in the telecommunications sector, and on the development of a policy framework for the upcoming 700 MHz spectrum auction suggest that Canada's quest for leadership in the digital economy is stalled. The spectrum auction is of enormous importance, as it will shape the mobile broadband market for the next generation. A vision of Canada's digital future is needed to guide the spectrum allocation. This broadband vision should be accompanied by a plan that charts a course for the development of next generation networks in Canada, outlines the opportunities for all Canadians to benefit from improved broadband connectivity and articulates concrete actions to encourage digital literacy and bridge the digital divide.

CONCLUSION

This paper offers a high level overview of the telecommunications policy environment in Canada. It describes a liberalised telecommunications market in which multiple providers compete in highly concentrated market segments. There is of course more complexity in this environment than can be conveyed in a brief paper, but the general conclusion is that, as compared to many other OECD markets, the Canadian telecommunications market delivers slower, more expensive broadband and more expensive wireless services.

The Canadian telecommunications market offers an interesting contrast to the Australian one. Differences between the two countries are stark, particularly regarding the provision of wireline broadband connectivity, and in the take-up of wireless broadband services. Canada's hands-off, market driven approach has fostered the development of two competing broadband infrastructures (very different from the approach now underway in Australia with the construction of the National Broadband Network). In Canada, similar services are offered on both platforms, meeting the basic connectivity needs of Canadians. Infrastructure upgrades are being driven by competition among private sector providers, with a particular focus on the delivery of television programming, rather than by a grand vision of broadband as public infrastructure that can boost national productivity, enhance health and educational outcomes, encourage social cohesion and better environmental outcomes (Australian Government 2011).

Despite various consultative processes to shape a digital economy strategy, there is no concrete vision of a broadband-enabled society in Canada. Unlike in Australia, the Canadian government has not taken a strong leadership role, nor has it committed to the development of next generation broadband infrastructure as a national priority, choosing instead to leave the shaping of the digital economy to the private sector. Time will tell whether one approach is better than the other.

REFERENCES


Benkler, Yochai; Faris, Robert; Gasser, Urs; Miyakawa, Laura; Schultzze, Stephen. 2010. 'Next Generation Connectivity: A Review of Broadband Internet Transitions and Policy from around the World'. Cambridge, MA: Berkman Center for Internet & Society, Harvard University.


Ottawa: Telecommission Directing Committee.

International Telecommunication Union. 2011. 'Measuring the Information Society'.

and Results-Based Regulation'. Ottawa: Public Interest Advocacy Centre.

Telecommunication Union.

Middleton, Catherine A; Van Gorp, Annemijn F. 2009. 'How Competitive Is the Canadian
Residential Broadband Market? A Study of Canadian Internet Service Providers and
Their Regulatory Environment'. Telecommunications Policy Research Conference;
Arlington, VA.

Milner, Murray. 2009. 'Playing the Telecommunications Game in New Zealand: The
Evolving Story of Telecommunications Public Policy in New Zealand'.


OECD. 2011a. 'Communiqué on Principles for Internet Policy-Making – OECD High Level
Meeting on the Internet Economy'. Paris: OECD.

OECD. 2011b. 'OECD Wireless Broadband Subscriptions Per 100 Inhabitants, by
Technology, December 2010'. Accessed 3 September 2011. Available from:

Openmedia.Ca. 2011. 'It's Official: Gamers Have Caught Rogers Violating Internet Openness

Organisation for Economic Co-Operation and Development. 2011a. 'OECD Broadband

Organisation for Economic Co-Operation and Development. 2011b. _OECD Communications
Outlook 2011_. Paris: OECD.

Pavri, Vera. 2009. 'What You Say Is What You Get: Policy Discourse and the Regulation of
Canada's First Domestic Communications Satellite System'. _Technology and Culture_ 50
(3): 569-585.


Shaw Communications; Cisco. 2011. 'Shaw and Cisco to Establish Extensive Wi-Fi Network
in Western Canada'. Accessed 23 October 2011. Available from:

Standing Committee on Industry Science and Technology. 2010. 'Canada’s Foreign
Ownership Rules and Regulations in The Telecommunications Sector'. Ottawa: House
of Commons Canada.

Taylor, Gregory. 2010. 'Shut-Off: The Digital Television Transition in the United States and


ENDNOTES

1. Information in this section is drawn from Babe 1990; Information Canada 1971; and Winseck 1997.


3. The CRTC recently set out a regulatory framework for vertically integrated companies in the broadcasting and telecommunications sector (Canadian Radio-Television and Telecommunications Commission 2011a).

4. All dollar amounts are Canadian dollars. In October 2011, $1 Canadian = $0.94 Australian.

5. Documents from CRTC hearings on Internet Traffic Management Practices (Telecom Public Notice CRTC 2008-19), Wholesale High-Speed Access Services (TNC CRTC 2009-261) and Usage Based Billing (TNC CRTC 2011-77) demonstrate the conditions imposed by incumbents on their wholesale customers. These conditions make it very difficult to develop innovative, competitive offerings when relying on wholesale access to incumbents' networks.

6. In 2009, the CRTC ruled that WIND Mobile's parent company Globalive did not comply with Canada's foreign ownership restrictions. This decision was overturned by the federal government but appealed to the Federal Court. The Federal Court then supported the CRTC's initial ruling, only to be overruled on appeal (Federal Court of Appeal 2011), settling the matter that WIND Mobile is eligible to provide services in Canada.

7. See Taylor 2010, for analysis of Canada's digital television transition.


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Peter Gerrand has been a Professorial Fellow in telecommunications at the University of Melbourne since 1996. Before that he was Professor of Telecommunications at RMIT University (1993-96), following 22 years as an industry researcher and executive in Australia and Europe. His career achievements include co-designing the ITU's SDL (Specification and Description Language) (1973-80); leading the development of Australia's current telephone numbering plan (1991-93); and building Australia's first international Internet domain name registrar, Melbourne IT, as founding CEO (1996-2000). His awards include the 1998 ATUG Charles Todd Medal ‘for outstanding contributions to the telecommunications industry’ and an Australian Centenary Medal in 2003 ‘for outstanding service to science and technology particularly to public science policy’. His PhD thesis (2008) on ‘Minority Languages on the Internet’ has been published by VDM Verlag. He is an Adjunct Senior Research Fellow at Monash University's School School of Languages, Cultures and Linguistics, and an Honorary Research Fellow at La Trobe University's School of Historical and European Studies.

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GERARD GOGGIN
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Gerard Goggin is Professor of Media and Communications in the Department of Media and Communications at the University of Sydney. He is the author of, among other books, Global Mobile Media (Routledge, 2011). His research focuses on digital media, and is located at the intersection of media, communication, and cultural studies. The distinctiveness of Gerard’s work lies in its pioneering analysis and theorisation of new media forms, technologies, and cultures — especially mobile phones and mobile media, and the Internet. Gerard's research
seeks to bring cultural and media theories, concepts, and methods to the study of new technologies, especially digital, networked, and convergent technologies. It seeks also to cross-fertilise media and cultural research with approaches from other disciplines such as disability studies, and social studies of science and technology, and in so doing expand the reach and rigour of the field. Gerard has an abiding interest in policy and regulation, and is interested to combine and integrate policy-inflected modes of inquiry into media and cultural research. Increasingly his research is moving from focussed studies of particular new media phenomena to a general rethinking of media and culture, and their associated policy and regulatory formations. Gerard is author of over 110 refereed papers and book chapters, and author or editor of 11 books. From 2006-2009 Gerard was editor of the premier media studies journal Media International Australia. In 2005 Gerard was awarded the Human Rights Arts Non-Fiction Award for his book, Disability in Australia, co-authored with the late Professor Christopher Newell.

Gerard holds a PhD in Literature from the University of Sydney for a thesis entitled Turbulent Preceptors: Mentoring, Maternity and Masculinity in Mary Wollstonecraft, William Godwin and Percy Bysshe Shelley. His undergraduate studies were in English literature and Indonesian at the University of Melbourne, where he graduated with a B.A. (Hons) in 1986. Gerard has held academic appointments at Southern Cross University, University of Queensland, and previously at University of Sydney (2006-2007, as an ARC Australian Research Fellow). In 2007, he was a visiting professor at the Centre d’Estudis Australians, Universidat de Barcelona. Most recently, Gerard was Professor of Digital Communication and deputy-director of the Journalism and Media Research Centre, University of New South Wales. As well as his academic work, Gerard has a strong background in policy, industry, and community engagement dating back to the early 1990s, when he was Policy Advisor at Consumers Telecommunications Network. From 2002-2008, Gerard served as Deputy Chair and public member of the Telephone Information Service Standards Council, the industry self-regulatory body for premium rate voice telecommunications services. He was a founding board member of Australian Communications Consumer Action Network (established in 2009). Currently Gerard is a member of the Australian e Research Infrastructure Council (AeRIC)

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Brett Hutchins is Co-Director of the Research Unit in Media Studies at Monash University. His recent journal articles appear in Media, Culture & Society, Convergence, Journalism: Theory, Practice & Criticism, and Information, Communication & Society. He is the co-author of the forthcoming research monograph, Sport Beyond Television: The Internet, Digital Media and the Rise of Networked Media Sport (Routledge 2012).

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Vanessa Hutley has worked as a lawyer in the creative industries for over a decade. She has been responsible for the development of intellectual property protection programs in Australia, New Zealand and the South Asia Pacific region. Vanessa is the General Manager of Music Industry Piracy Investigations (MIPI), which represents both independent and major record labels and songwriters and music publishers. Vanessa is responsible for overseeing MIPI's education, advocacy and enforcement programs.

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Dr Fiona Martin lectures in Convergent and Online Media, with the Department of Media and Communications at the University of Sydney. She researches online media diversity and the history of public service media online.

Fiona Martin joined the Media and Communications department in 2008 after more than eight years teaching journalism, radio and media production at Southern Cross University. A graduate of the University of Technology Sydney, Fiona worked first as a journalist/producer in community radio and then for ABC Radio networks, including Radio National and 702 Sydney. She has also been a freelance radio documentary maker, a multimedia and theatre sound designer and has written for regional newspapers and magazines, as well as academic journals. Her interest in online publishing led to the cross-media documentary series Re-imagining Utopia (2003) and a doctoral thesis on the emergence of an interactive multimedial ABC (2008). Fiona's publications include chapters in Virtual Nation: the Internet in Australia (2004) and 'New media, new audiences' in Media and Communications In Australia (2006). A reformed cyberfeminist, Fiona is interested in the expressive, pedagogical and political uses of online and new media technologies and in documenting the impact of participatory media on mainstream media production and publishing.

Scott McQuire is Associate Professor and Reader in the School of Culture and Communication at the University of Melbourne and a member of the Executive Committee of the Institute for a Broadband-Enabled Society. In 2004, he co-founded the Spatial Aesthetics program for interdisciplinary research linking media, urbanism, art, and social theory. He is the author and editor of 7 books including *The Media City: Media, Architecture and Urban*
Space (2008), which won the 2009 Jane Jacobs Publication Award presented by the Urban Communication Foundation, and the Urban Screens Reader (2009, co-edited with Meredith Martin and Sabine Niederer. Scott is an active researcher who has been a Chief Investigator on six Australian Research Council funded projects. He has also received funding from the Australia Council for the Arts, and has undertaken research consultancies for the Communications Law Centre, the Australian Film Commission and the Australian Key Centre for Media and Cultural Policy. His current research includes several projects exploring interactive applications for large screens in public space.

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Catherine Middleton holds the Canada Research Chair in Communication Technologies in the Information Society at the Ted Rogers School of Management at Ryerson University in Toronto, Canada, where she researches the development and use of broadband and mobile communications technologies, with specific interests in mobile devices and fixed and wireless broadband networks. She is also interested in how Canadians use (or don't use) the Internet in their daily lives.

Dr. Middleton is a member of the GRAND Networks of Centres of Excellence project, and is the Leader of the New Media Challenges and Opportunities research theme. She also leads the GRAND Digital Infrastructures project.

Dr. Middleton's article (with Wendy Cukier) titled 'Is Mobile Email Functional or Dysfunctional? Two Perspectives on Mobile Email Usage' won the 2007 Stafford Beer Medal for best paper in the European Journal of Information Systems, and her article 'Who Needs a 'Killer App'? Two Perspectives on Content in Residential Broadband Networks' was awarded the Australian Committee on Computation and Automatic Control (ANCCAC) Award for best paper in an Australian Computer Society publication in 2002.

Dr Middleton holds the degrees of B. A. (Queen's), MBA (Bond University, Australia), and Ph. D. (York).

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Bjorn Nansen works as a sociologist of digital technologies. He has written about media geographies and temporalities, digital labour and play, family media use and negotiation, technical embodiment and online fraud. His papers have featured in *Environment and Planning D, Time & Society, Continuum* and the *Telecommunications Journal of Australia*. He is currently employed as a Research Fellow at the University of Melbourne and is working on projects looking at broadband use in the home, and children’s digitally-mediated play and wellbeing.

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Chris Pavlovski is the Chief Architect, Technology and Innovation for IBM Australia. He is a member of the IBM Academy of Technology and an IBM Distinguished Engineer. He has a PhD in Cryptography, has 40 referred journals and conference papers, and has worked on commercial projects in over 14 countries world-wide.

His projects primarily include emerging technology solutions in Smart Grids, Energy & Utilities, and Telecommunications. He has pioneered several solutions in multimedia service delivery, smarter energy systems and mobile solutions. He continues to work on research and development projects and collaborates with industry and academia in defining solutions for the market.

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Jane Perrier is the General Counsel, Intellectual Property for Telstra Corporation Limited, a position she has held for the past 11 years. She provides strategic IP legal advice and related procedural support to Telstra’s Australian businesses and its overseas subsidiaries and partners.

As Australia’s leading telecommunications and information services company, Telstra’s IP issues are diverse and complex. Telstra’s IP portfolio encompasses its operations across fixed line, mobiles, broadband, information, transaction, search, Pay TV, online and mobile content and value added services. Telstra also is a licensor and licensee of IP rights and plays a notable role in national debates over internet copyright protection, trade mark practice and the development of IP law in Australia and via international treaties.

Jane is a legal practitioner and registered Trade Mark Attorney. She is a member of the Australian Institute of Patent and Trade Mark Attorneys and the Intellectual Property Society of Australia and New Zealand. Jane is a former appointee to the federal government’s Advisory Council on Intellectual Property (ACIP) and a past president of the Australian industry IP body, AMPICTA.

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Leon Piterman is Professor of General Practice Department of General Practice, Monash University. His clinical and research interests lie in the areas of cardiovascular disease, mental health and medical education. As a medical educator he is responsible for establishing Australia’s largest and most successful Diploma/Masters Program in Family Medicine which has now produced over 1000 graduates nationally and internationally since 1994 and contributed significantly to capacity building in academic general practice. In addition the medical conferences he has organised since 1988 have attracted over 3000 delegates and enhanced Monash’s profile as a major provider of continuing medical education. His other major contribution has been the development of clinical audit instruments to measure the effectiveness of educational interventions in changing practitioner behaviour and in monitoring patient health outcomes.

He is a member of the Panel of Examiners of the Australian Medical Council and sits on or Chairs a number of University and professional Committees related to research, teaching or educational administration. He maintains limited clinical practice having previously been in full time clinical practice from 1977 – 1992.

He has been awarded the Faculty’s Silver Jubilee Prize for Medical Education, the RACGP Faulding Prize for Research and the Hong Kong College of General Practice Prize for Research.

He currently holds a number of NHMRC and other government and industry grants with a total value in excess of $2.5 million. He has published over 90 refereed papers, book chapters and co-edited the text “General Practice Psychiatry” released in October 2006.

In 2006 he was awarded the Member of the Order of Australia for service to family medicine through distance education for doctors in remote areas, to research and student training, and to international medical education.

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Scott Rickard is currently employed as a Senior Researcher at the Smart Services CRC, Swinburne University of Technology. She has previously held industry positions in public relations and multimedia, and academic teaching positions in media and communications.

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Rowan Wilken is a lecturer in media and communications at Swinburne University of Technology. His present research interests include broadband in the home, digital technologies and culture, mobile and locative media, old and new media, and theories and practices of everyday life. He has published extensively on mobile media, and is author of Teletechnologies, Place, and Community (Routledge, 2011), and co-editor (with Gerard Goggin) of Mobile Technology and Place (Routledge, 2012, forthcoming).

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