

## Communications Research and Strategy Forum

**Title: Future of the Internet: The Smart Internet 2010 Project**

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### Introduction

*Smart Internet 2010* was an 18-month project of the Smart Internet Technology CRC that examined Internet futures from a user-centred perspective. This paper presents an overview of the project and draws upon the substantive 170 page report launched by the Hon. Senator Helen Coonan at the ICT Outlook Forum on 1st September 2005 in Sydney. The investigation's research questions, 'Schools of Thought' conceptual framework, and knowledge domains of social networks, open source and digital games will be discussed. The CRC research team interviewed over 35 international experts and consulted over 180 relevant secondary sources.

The origins of the *Smart Internet 2010* project reside within a CRC management discussion in 2003 that involved researchers and sponsors about the need to construct a credible and imaginative research report about Internet futures. The group recalled the fine work conducted by the National Telecommunications Planning Unit in the early 1970s about "planning new services for markets that do not exist, complex technologies that are rapidly changing, and a socio-economic environment which widely agreed is becoming unstable and turbulent." After two and a half years of thorough investigation the NTP's seminal report *Telecom 2000* was delivered in December 1975.

A quarter of a century later the original Project Director of *Telecom 2000*, Tony Newstead, in hindsight reviewed their remarkably astute findings. Newstead added: "the main benefits of such wide ranging studies flow not so much from forecasts made as from insights gained along the way." Though there are some important differences between the methodology and approach of *Smart Internet 2010*, and its forerunner, *Telecom 2000*, their overall objectives are comparable.

### Rationale

*Smart Internet 2010* forms part of the major research program undertaken by the Smart Internet Technology Cooperative Research Centre. This major collaborative research centre was established in 2001 and involves leading communications corporations, notably Telstra, select small and medium enterprises, nine Australian universities, the Government of New South Wales, and the Commonwealth Government. The Smart Internet Technology CRC's mission statement is "to capitalise for Australia the outcomes of fundamental research and development of the future of the Internet and global connectivity." Its focus was originally constructed around five major research and development programs – Natural Adaptive User Interfaces, Smart Personal Assistants, Intelligent Environments, Smart Networks, and User Environments.

The prime emphasis of *Smart Internet 2010* was to try to make sense of the likely complex changes related to Internet futures from a user perspective. *Smart Internet 2010* integrates human factors with key technology frameworks for the future.

*Smart Internet 2010* offers an analysis of the way the Internet might evolve from the perspective of its end-users in the coming years. The prime research questions addressed were:

- **What might the Internet be like in 2010?**
- **What positions are taken by different people and institutional interests about the future of the Internet?**
- **What are the possible outcomes for end-users towards 2010?**

The report was compiled by researchers of the User Environments program team based at Swinburne University of Technology of the Smart Internet Technology CRC. Major contributions were also sought from other researchers within the CRC from several other Australian universities, and from some senior members of the corporate sponsors. Expert opinion from other contributors was also sought from external contributors to this project, and expert other opinion was drawn upon in interviews.

The project examined how end-users might interact with the many possible Internet innovations during the next few years. It explored the possible benefits that may follow for the users, as well as examining likely major changes for the Internet as a whole by 2010. The approach to the report was designed in part to provide CRC stakeholders with models of future patterns of user needs that could influence new product and service development. The report was also designed to provide valuable insights for sponsors to enhance their understanding of the business and social environment towards 2010. It was also developed with the intention to act as a vehicle for the integration of research projects within the CRC. *Smart Internet 2010* also synthesises rich insights from overseas interviewees who are ‘thought leaders’ in their respective domains, and includes relevant coverage of global and industry trends.

### **Schools of Thought**

The project team does not pretend to be able to predict the future. However, it has examined a range of key social, economic, cultural, and technological variables that are most likely to be important forces for change in the next few years in the context of possible changes to the Internet in the future. Although several different approaches were canvassed for this project it was decided on the basis of considered advice that the prime framework would *not* be either quantitative forecasting, or scenario based planning. Instead, a conceptual model about the construction of Schools of Thought was chosen.

Essentially a School of Thought distils the rich insights of expert opinion within a particular field in a way that provides integrated common thinking. In this project each School of Thought offers different visions of possible futures for the Internet. Each reflects a viable ‘living strategy’ for a group with largely shared norms in the contemporary information and communications environment.

Schools of Thought are not written as creative original narratives or scenarios of possible futures, but as alternative critiques that outline positions held by the

adherents suggesting possible future outcomes. A School of Thought ought to be viewed as a *constellation* of individuals with shared mind-sets rather than as a tightly-knit group.

One value of the Schools of Thought is that they ought to challenge conventional ‘groupthink’ (Irving Janis) and offer multiple mind-sets about the way things might eventuate in communications in 2010. Telstra Research Labs, a CRC Partner, draws upon this process to inform its innovation and planning strategies.

Communications Futures (CF) frameworks provide the Smart Internet Technology CRC with a strategic perspective that enables projects to track international trends, scope Internet futures, examine user needs, and forecast or design new applications and services. Sceptics who reject the value of Communications Futures work are invited to offer their alternative approach as to how the major players in ICT who are making huge new capital investments for networks, sometimes in the order of billions of dollars, might best do their strategic planning and thinking for the long term.

The authors and editorial team of the *Smart Internet 2010* report attempted to make sense of the Internet’s competing narratives, practices, and technological breakthroughs by grouping these perspectives across four interconnected ‘Schools of Thought’. This conceptual framework has been developed as an interpretive tool that acts to reveal the positions, assumptions, biases and insights from a range of leading thinkers.

The editorial team for this project constructed four original Schools of Thought:

- 1. Adaptive User Environment**
- 2. Not The Smart Internet**
- 3. Rich Media**
- 4. Chaos Rules**

Each of the four schools is a conceptual lens that articulates the driving forces for change, and leading actors within; i.) its own school, ii.) the Internet space, and iii.) the global system within which these dynamics take place.

The authors of *Smart Internet 2010* constructed four Schools of Thought: Adaptive User Environment, Not The Smart Internet, Rich Media, and Chaos Rules. Each has champions and exemplars who articulate and promote its unique perspective. Each School of Thought is written in an accessible and engaging way to enable widespread participation in these key debates about the future of the Internet.

In summary these are the positions taken regarding the Internet towards 2010 within each of the four Schools of Thought:

### **1.) Adaptive User Environment**

An overriding assumption here in the context of the Internet for 2010 is that those creators, suppliers, and service providers who invest in understanding the complexity of human factors, and who apply their knowledge about the end-user interaction with the Internet, are generally the most likely to succeed. The best new technologies and services will be those that are created, designed, constructed, and marketed in ways

that will be highly *adaptive* to human needs in the Internet environment of 2010. A shift in thinking is now underway to conduct social and cultural investigations into the wider contexts of usage in which communications occurs. Critical factors that now drive uptake decisions are whether the prospective services enhance a person's lifestyle, and/or fulfil personal needs, and whether the service is cost effective and affordable in the long term. So investigations should move 'upstream' and into the conceptualisation stage rather than 'downstream' at the testing stage. This paradigm puts the users at the centre of the development thinking.

## **2.) Not The Smart Internet**

The proponents of this School of Thought advocate that a simple, user-friendly, and culturally appropriate Internet is the best option by the year 2010. The title, 'Not The Smart Internet', sets out to challenge advocates who wish to build a new array of technologically driven Internet applications, some of which may be based merely upon their 'smartness' or the 'quick fix'. Rather, what is more important is a functional, low-cost Internet that hides operational complexity and meets the social and communication needs of its users. Proponents of this School view most technologically advanced devices to access the Internet as little more than expensive systems that lock users in to walled gardens of proprietary standards and preferred partner agreements. They advocate open standards for audiovisual content and devices for the future and are critical of products that tether users to narrow service offerings. It may be better in the future to concentrate on addressing the shortcomings and problems related to the operation of the present Internet rather than investing in, and building, a new Internet for the elites. We need an Internet that offers basic services for all.

## **3.) Rich Media**

This School of Thought is primarily driven by technological innovation in a world where there are a plethora of devices, applications and services feeding off the Internet by 2010. Its members are not inherently deterministic in their approach to 2010, but are increasingly aware that 'smart' also means that technology innovation has to be developed within a context of relevance and usefulness to a diversity of markets, people, contexts, and places. Increasingly personal communications have shifted away from a paradigm of a single person using a single device, to a multi person/multi device scene where people use an array of devices - i.e., a desktop pc, a laptop pc, a personal digital assistant, a mobile phone, and an MP3 player. And in a rich media environment, more and more people are able, and also can afford, to access the Internet, via a workstation, mobile phone, a PDA, or some other appliance. Therefore, as we approach 2010, more and more people will access a wide array of Internet based services irrespective of their dependence on a particular technology or a certain mode of connectivity. It's the 'any content, any device, any format, anytime' paradigm for the Internet by 2010.

## **4.) Chaos Rules**

This School of Thought is primarily concerned with an Internet in the future that may be in a continual state of decay and worsening disorder. Chaos is defined here in a variety of ways. 'Chaos' is a contested concept. Microsoft's Bill Gates contends the Open Source (OS) software movement is 'chaotic' and threatens the free market. OS advocates Richard Stallman and Cory Doctorow counter-argue that Microsoft's oligopoly and software design processes are the key underlying problems. Exponents

of this School of Thought widely share a sceptical pessimism about the robustness of Internet services that may be ruined by ‘spam’ junk emails, rogue hackers and viruses. They distrust the utopian visions of a ‘high-tech’ society because an over-reliance on information technology also creates pathologies and vulnerabilities. Chaos Rules advocates believe Internet futures will be dominated by a negative utopian vision they describe as Digital Dystopia. The root cause of this vision is the Internet’s chaotic and decentralised nature as a communications infrastructure. The extremists argue that some of the problems can never be solved and that the Internet may collapse by 2006.

The overriding theme across these four Schools of Thought is the range of possible futures of the Internet from the users’ perspective. They are designed to scope the multiplicity of views about the way the Internet might be by the year 2010, and to highlight strong differences of opinion. Schools of Thought differ from econometric forecasting and scenario planning by drawing upon the richest insights from experts, specialists and participants working in the Internet space. These Schools of Thought were written for decision-makers, product developers, strategic analysts, and members of the CRC research community.

### **Key Knowledge Domains**

The domains selected for the *Smart Internet 2010* project were seen as important sites of social, economic and technological transformation towards 2010. Understandably, decisions about commission and omission were difficult. In line with the broader aims of speculating on the contours and patterns of the Internet 2010, the ‘exemplar chapters’ were thematically grouped into three subject areas; *People, Technology and Society*.

Each of these domains stands alone as a detailed research study that can be read separately. The Schools of Thought framework adds new layers of meaning to each chapter by revealing the relationships between the multitude of actors, institutions and discourses shaping the future of the Internet towards 2010.

The following discussion will present an overview of three key chapters on social networks, open source and digital games from the *Smart Internet 2010* report that were presented to the Communications Research and Strategy Forum in Sydney between 21-22 November, 2005.

### **Social Networks**

Online communities have existed since the early days of email, bulletin boards, and IRC (Internet Relay Chat) channels. Sherry Turkle’s research on ‘negotiated identities’ and Howard Rheingold’s work on the ability for ‘virtual communities’ to re-enchant the public sphere, display optimism about the empowering potential of life in ‘cyberspace’. Internet-based communications have always been used for social networking, whether through early online communities such as the WELL (Whole Earth ‘Lectric Link) or text-based role-playing adventure games like MUDs (Multi-User Dungeons), and MOOs (MUD Object Oriented).

In the wake of the dotcom crash the Internet is moving into a more mature phase of development. For those with privileged access, the Internet has become part of the background to life in the 21<sup>st</sup> century. After more than a decade of widespread uptake, people are being socialised into taking the Internet for granted, leading to higher degrees of new media literacy as users grow accustomed to the changing social environment. Canadian social network analyst Barry Wellman has charted this evolution of the Internet as a social phenomenon, and has shown how it plugs into existing social structures and maps onto everyday life (Wellman & Hogan, 2004).

Wellman makes the important distinction that “attention now focuses on the broader questions of the ‘Internet in society’ rather than on ‘Internet societies’.”<sup>1</sup> There is growing potential for the Internet of 2010 to cater to a wide variety of social practices as the cost of hardware falls and the ubiquity of mobile phones increase, along with the growth in WiFi and broadband connectivity which collectively provide more access points.

Since 2003 a new wave of primarily American startups have re-ignited enthusiasm in dotcom firms by designing Social Networking applications that enable users to communicate via the Internet in new ways. Social Networking can be defined as any set of activities that enable many-to-many social interactivity to take place via ICTs, whether via the Internet, mobile, PDA or any other device. The first batch of Social Networking Services (SNSs) like Friendster, LinkedIn, and Orkut became major attractors for a range of early adopters. These included workers in the high-tech industries, political activists, and various interest groups who quickly recognized the potential for Social Networking tools to augment real-time social interactions. Weblogs or Blogs are web diaries that streamline online publishing for non-technical users. Wikis are simple applications that allow users to update Internet content in real-time, provide feedback, and enable collaboration across distributed teams. Sites like Meetup.com provide social tools for “communities of practice” to facilitate face-to-face meetings across cities the world over.

Online Social Networking is gaining ground as an important global trend, for those with access to such technology, towards new networked models of social interaction that weave in, out, and around to form the very fabric of the Internet. Clay Shirky, a professor at New York University and an authority on Social Networking software simply defines it as “software that supports group interaction.”<sup>2</sup> The radical nature of Social Networking software, notes Shirky, lies in its many-to-many two-way mode of communication that transcends point-to-point and two-way media like telephone and email and one-way outbound models of traditional broadcasting such as television and radio.<sup>3</sup> Stowe Boyd, consultant with Corante Business Intelligence, believes that for applications to qualify as ‘social software’ they must provide at least one of the following: 1.) support for conversational interaction between individuals or groups; 2.) support for social feedback; 3.) support for social networks.<sup>4</sup>

What distinguishes Social Networking applications from their two-way predecessors is a combination of factors including a mature web infrastructure, the emergence of web-native platforms like Blogs (personal web-diaries), Wikis (web pages any user can edit), and ubiquitous access among certain groups of users.<sup>5</sup> Taken together with ease of use, these factors enable any user to develop or hook into group-forming

networks, whether mobilised strategically or ad-hoc, depending on the nature of the project and the needs of the people in question.

The viral nature of online social networks augurs a future power shift as users begin to embrace the 'collective intelligence' of their surrounding social environment. Some early adopters have begun a move away from traditional media sources and rely on their network of friends, family, and fellow travellers for reviews, feedback and advice about the latest movie, book, restaurant or ISP.

Online Social Networking 'crossed the chasm' in 2003 during the lead-up to the US Democratic Presidential primaries, when Howard Dean's supporters began to spontaneously use Meetup.com for political campaigning. Meetup.com provides a free service which enables users to facilitate face-to-face meetings between people with shared interests. Dean backers from across the United States started using Meetup.com to rally support on and offline and aid in fundraising efforts. This novel approach to grassroots political campaigning was unique in its ability to create a space for a new generation of younger voters to coalesce and provides a model for future Social Networking innovations.

Social Networking tools signal another phase in a long line of network-enabled applications. The new class of social tools available are distinctive for enabling users to visibly articulate connections between groups of friends, colleagues, and sometimes strangers. Beyond technical considerations social tools cannot function without a proper system to represent user identity and mediate trust between different members of each diverse community formation.

To work effectively Social Networking systems rely on trust and reciprocity, the social glue that binds take-up of Internet-related applications and services. Social relationships play a fundamental role in determining which products to buy, which merchants to transact with, and which political candidate to vote for. Informational pressure, deceitful conduct, and the challenge of evaluating quality, have spurred the development of reputation management systems. Slashdot, eBay, ePinions, Amazon, and Google all make use of collaborative filtering, user-recommendation engines, or shared judgements of quality. These reputation systems provide early examples of how future users may form communities of interest, whether comprised of friends, strangers, buyers, or sellers, and how they rely on cooperative forms of social interaction.

Beyond the carefully scripted press releases and hyperbole typical of Internet companies, few of the consumer-focused Social Networking Services profiled have performed well in the marketplace. The business-oriented service Ryze<sup>6</sup> and the personality quiz site Tickle<sup>7</sup> are the most notable startups working in this space to have turned a profit. Any new Internet service will attract sceptics who question evangelists' claims of potential future growth. Some pundits like Andrew Orlowski, a dour Internet columnist for *The Register*, have deridingly accused Social Networking of being a short-lived fad, an unfortunate return to 1990s hysteria whipped up by Silicon Valley venture capitalists and the media.<sup>8</sup> Unsurprisingly, certain quarters of the Internet community project an aura of reticence in order to atone for sins of the past.

Social Networking sites employ a number of common business models to capture the attention of target audiences in what has become a highly competitive marketplace. Early networking sites like Friendster offered users the chance to participate for free in the hope of scaling quickly enough to reach a tipping point attractive to advertisers. Many dating (www.match.com) and reunion (www.australiansreunited.com.au) sites offer free registration in the hope of enticing users to subscription-based packages that incur a nominal payment to access value-added services. As with all commercial membership-based services, Social Networking companies engage in varying degrees of data mining. Getting users to upload their personal details and network of contacts gives marketers access to a data goldmine aiding the process of demographic profiling to determine likely markets for new services.

Despite critics dire forecasts, blogs, wikis and online social networking services have continued to build sizeable user communities. The blog search engine company Technorati is currently tracking over 17 million blogs in the United States market alone. The blogosphere is experiencing phenomenal growth with over 80,000 blogs created daily according to data from July 2005.<sup>9</sup> This sector's importance was recently validated by News Corporation's decision to purchase the hip social networking site MySpace.com for US\$580 million, part of Murdoch's strategy to capture the Internet advertising market.<sup>10</sup> In wiki related developments, the collaborative knowledge site Wikipedia contains over 700,000 English-language articles and maintains a growing base of over 400,000 registered users.<sup>11</sup> These figures illustrate the rapid rate at which many social networking tools are being adopted by millions of users around the world.

### **Open Source**

Critics used to dismiss the Open Source movement as little more than an idealistic crusade perpetrated by hackers bent on changing the world. Today there are few who doubt the power of Open Source to shape the Internet of tomorrow. Industry stalwarts like Microsoft continue to experience a number of setbacks amid the growing use of Open Source software like Linux, with fiscal 2005 sales expected to be down from gains of earlier years.<sup>12</sup> According to a 2004 Forrester Research report, nearly 50 percent of the companies surveyed were deploying Open Source applications, citing "lower acquisition costs, lower total cost of ownership and greater flexibility" as the top reasons given.<sup>13</sup> Open Source is changing the way companies do business, igniting legal battles over the 'information commons' and making inroads into the lucrative government software market.

A growing number of public, private, and community organisations are taking advantage of Open Source software and organisational models for cost reduction, collaborative authoring, and scalability purposes. Open Source maven Con Zymaris leads the industry body Open Source Victoria (OSV), a lobby group that proselytises the benefits of Open software to business and government. So far OSV's message has been heard loud and clear and received ringing endorsement in the form of a A\$50,000 grant from the Victorian Government. OSV received the money to help strengthen its industry cluster of 80 supporting firms, which it will do by encouraging the use of Open Source through its advocacy and information referral service. OSV is targeting public sector institutions, having already held discussions with the Victorian

Education Department in an attempt to undercut Microsoft's stranglehold on educational software.<sup>14</sup>

The economic benefits of Open Source are providing both public and private sector organisations with the means to cut IT spending costs. In 2003-2004 Telstra trialled Linux-based software as an alternative to the Windows operating environment in an attempt to halve its A\$1.5bn technology budget.<sup>15</sup> Recognising the potential threat, the software giant came to the party in a deal that saved Telstra millions, highlighting the extent to which Open Source is forcing Microsoft to discount large contracts. Open Source has even infiltrated that bastion of bureaucracies, the Australian Tax Office, which is in the process of developing an Open Source software policy. A positive report on Open Source software (OSS) prepared for the ATO by the Gartner Group suggested the "ATO develop a policy not only for the use of Open Source software, but a policy that would allow it to take advantage of the OSS development as a means of reducing costs."<sup>16</sup>

Media scholar Siva Vaidhyanathan in his book *The Anarchist in the Library* (2004) characterises the battle for the commons as an age-old struggle between contending forces of anarchy and oligarchy.<sup>17</sup> As our information systems become more complex argues Vaidhyanathan, the dynamic between 'hackers' (anarchists trying to pry open the system), and big business and government (oligarchs that have an interest in making information scarce) is driven to ever increasing extremes of attack and counter-attack.

Into this milieu enter Lawrence Lessig, Professor of Law at Stanford University. Lessig has built a formidable reputation as an Intellectual Property expert, a strong advocate of Open Source development, and the most vocal critic of the current US copyright regime. Lessig paints a compelling picture of the future confronting global society if commercial interests are given free reign to enclose the information commons backed by the full power of the law.

Lessig has absorbed the insights from the Free and Open Source Movements and widened the IP parameters beyond software, to encompass music sampling, book publishing, and even scientific research. He mounts a strong set of arguments against the invocation of copyright law and punitive legislation that restrict public access to cultural resources that he believes should remain public domain.

Lessig and his supporters established the 'Creative Commons' initiative ([www.creativecommons.org](http://www.creativecommons.org)), the focal point of a new licencing framework that broadens creative boundaries for producers, artists, and authors. Creative Commons licences provide protection within the framework of domestic copyright legislation but add new provisions to meet the demands of today's creative industries. Creative Commons has become a global movement in its own right. The most famous cases of creative works using Creative Commons licenses include author Cory Doctorow's science-fiction books and the music of Brazilian Minister of Culture, Gilberto Gil.<sup>18</sup>

Closer to home, Professor Brian Fitzgerald, Head of Law at Queensland University of Technology, leads the small team charged with the task of porting the Creative Commons licence to Australia. This process was completed in January 2005 and adds Australia to a growing list of countries forging a reformed IP agenda. During an

interview Fitzgerald outlined how current legal disputes over filesharing highlight the necessity to balance the need for economic reward with freedom of expression: “The big argument at the moment with file sharing software is that copyright owners are saying: ‘We want to protect our copyright material and what you’re doing is unlawful.’ The user side of the argument is that ‘this is innovative technology and what you’re doing is using copyright or IP law to stifle innovation.’ So on one side you want to stop copyright infringement but the collateral damage here is going to be innovative technology.”<sup>19</sup>

These very arguments are taking place around the world in real-time, with judges acting as de facto policeman for the media and entertainment industries. The recent shutdown of sites linked to content using the p2p client BitTorrent at the behest of the Motion Picture Association of America (MPAA,) is reminiscent of the treatment meted out to Napster. At the start of 2005 record company lawyers were attempting to have the p2p application Kazaa held liable for breach of copyright in the Australian Federal Court. This strikes Fitzgerald as an inappropriate way to deal with copyright infringement: “The analogy is that if a gun manufacturer sells a gun and someone shoots someone, should they be liable for the unlawful act that has occurred with the item which could lawfully be used but has in this instance been unlawfully used? Should the people who make the technology carry all of the blame in this instance? That’s something the courts will have to grapple with in the confines of copyright law.”<sup>20</sup>

The 2004 Australia-United States Free Trade Agreement (AUSFTA) harmonises Australian legislation with the world’s strongest Intellectual Property regime. These changes have been vehemently rejected by Australia’s creative industries and consumer groups for imposing harsh penalties on the fair modification of copyrighted content, devices, and applications. The Australian Government’s copyright agenda involves the incorporation of contentious reforms including the extension of copyright duration, the criminalisation of copyright infringement, and the anti-circumvention provisions of the Digital Millennium Copyright Act.<sup>21</sup> This situation is further exacerbated in Australia by the lack of any fair use provisions similar to those protected under United States legislation.

Open Commons champions caution against legislation that gives market forces the power to fully enclose the commons, which they argue is neither inevitable nor good for business. From a libertarian perspective, the ability to legislate Internet architectures that blindly protect Intellectual Property but forsake the free exchange of ideas has the effect of restricting legitimate research and critique.

Such architectures of control also stifle economic prosperity by preventing artists, entrepreneurs, and other creative risk-takers from drinking at the well of collective human culture built up over centuries. Lessig cites Walt Disney’s adaptation of the Brothers Grimm stable of fairytales, such as Snow White and Cinderella, as expressions of the sort of adaptive creativity to be celebrated. Disney was able to swim freely in an Open Commons, to borrow characters and storylines from elsewhere, reinterpret them and create new art forms that continue to thrill generations of audiences. As Lessig writes, “Disney ripped creativity from the culture around him, mixed that creativity with his own extraordinary talent, and then burned that mix into the soul of his culture. Rip, mix, and burn.”<sup>22</sup>

Technological innovation arises out of experimentation and modification, yet the recent Australia-US Free Trade Agreement (AUSFTA) does not bode well for creative producers or end-users towards 2010. Roger Clarke in commenting on the recent FTA has written that: “Innovation is seldom achieved by one organisation making a massive breakthrough, but by many organisations and a great deal of ongoing interaction. Rather than ‘one person standing on the shoulders of giants’, most progress is achieved by hordes of busy elves.”<sup>23</sup> Extension of copyright terms and anti-circumvention legislation exposes creative risk-takers to a greater degree of criminal offences. The architecture of the Australian Internet mandated through the AUSFTA, locks down the information commons and a number of possible futures along with it.

The Free and Open Source movements emerged from the hacker culture of earlier programmer communities. More recently Do-It-Yourself (DIY) media technologies have given anyone with access the ability to become a producer. This has spawned an entirely new understanding of authorship and content production in film, games, software, television, and music. Add deconstruction, new media literacy, and social networks to the mix, and within three decades from the VCR to podcasting, a new media ecosystem was born. As the Internet becomes the platform for a range of everyday practices, issues like file sharing, device tethering, mod chips, and mash-ups take centre stage for millions of users around the world.

When DJ Danger Mouse (a.k.a. Brian Burton) mixed rapper Jay-Z’s *Black Album*, with the Beatles *White Album*, to make the *Grey Album*, he gained global acclaim along with a cease-and-desist order from EMI. Under the provisions of the US Digital Millennium Copyright Act such mash-ups are illegal, and supporting stores and websites were ordered to stop selling the album. Despite these setbacks the *Grey Album* has been widely downloaded (<http://www.illegal-art.org/audio/grey.html>) and received critical praise, with Entertainment Weekly naming it the “#1 Album of the Year” for 2004.<sup>24</sup> The fallout over the *Grey Album* sheds light on the creative challenges facing artists wanting access to an information commons constrained by an IP regime that exclusively favours copyright owners.

The flowering of Open Source software, DIY media, and ‘remix culture’, is no fringe activity performed on the margins of society. These developments are part of a much broader social trend that Charles Leadbeater and Paul Miller have dubbed the *Pro-Am Revolution* in a report for UK think-tank DEMOS. The report defines Pro-Ams (professional-amateurs) as “innovative, committed and networked amateurs working to professional standards.”<sup>25</sup> These enthusiasts are a result of demographic shifts that have given many in the West increased time for ‘serious leisure’ activities that include everything from Linux programming to fan-based production in computer games like *The Sims*. Pro-Am groups are also known to employ Open Source organisational models of knowledge transfer between expert and novice members.

Yochai Benkler, Professor of Law at Yale University has explored the socio-economic transformations wrought by these set of changes which he describes as ‘commons-based peer production’. According to Benkler, the emergence of self-organising, grass-roots projects like Linux is leading to a “third mode of production in digitally networked environments.”<sup>26</sup> Examples of this new form of production

abound throughout the Internet. Projects like the peer-reviewed Wikipedia ([www.wikipedia.org](http://www.wikipedia.org)) have attracted thousands of online 'Pro-Ams' keen to share their knowledge of every topic imaginable.

Writer Julian Dibbell has documented the trials and tribulations of the players that inhabit the networked role-playing game *Ultima Online*. These 'fan-based production' communities buy, sell and trade virtual goods like weaponry, houses, armour and magical powers that exist in the game only. One man reportedly paid US\$750 on eBay for a house produced by a fellow gamer.<sup>27</sup> Such trends are only set to intensify towards 2010 as the information commons expands to encompass more aspects of daily life in all its forms.

David Rooney from the University of Queensland would like to see the development of a parallel creative economy that gives grass-roots producers an opportunity to share their work with a wider audience. Rooney is part of a team that won an ARC grant to build ACRO (Australian Creative Resources Online), a searchable Internet database with 10 terabytes of server space.<sup>28</sup> Users can search the archive and preview audio, video, or stills, and can download the selected resource. The service provides basic information about the copyright attached to the work through Creative Commons licences to see what rights have been reserved. Most of the material is on an attribution licence and is provided on an open resource basis.

ACRO represents merely one of at least several thousand 'communities of practice' around the world embracing 'open access' resource models. In the educational sphere, MIT's OpenCourseWare (<http://ocw.mit.edu/>) initiative allows free Internet access to a large cross-section of course materials. In the world of academic journals, 'open publishing' has spawned a renaissance in peer-reviewed scholarly research. The BBC became the first major broadcaster to release free digital content through its Creative Archive to British tax-payers. Independent film-maker Robert Greenwald made the interviews from his documentary *Outfoxed* (2004) available through the Internet under a Creative Commons licence.

These developments reflect a shared commitment to the Open Source values of collaboration and knowledge transfer. Colin Steele from the National Scholarly Communications Forum (NSCF) has argued that "prosperity in a knowledge economy depends as much, if not more, on knowledge distribution power than it does on knowledge production power."<sup>29</sup> Creative Commons has moved Open Source beyond software to provide opportunities for innovation and prosperity wherever the Internet can be utilised as a distribution platform. Many stakeholders are embracing the benefits of Open Source as others seek to destroy it through stifling legal and economic mechanisms. New uses for open technologies and systems are being developed everyday and these battles will continue to be fought towards 2010.

### **Digital Games**

Digital Games have moved from the margins to become vital to the entertainment economy. PricewaterhouseCoopers forecasts that global revenues for the Entertainment Economy "will increase from US\$1.2 trillion in 2003 to US\$1.7 trillion in 2008."<sup>30</sup> Videogames and hardware sales will contribute US\$30 billion in

revenues; they surpassed North America's film exhibition revenues in 1999.<sup>31</sup> China, India, and Russia will be high-growth markets between 2005 and 2010.

The industry's preferred vision is of a broadband-enabled game console integrated into the entertainment area of a smart home.<sup>32</sup> The centrepiece of games growth to 2010 will be next generation consoles—Microsoft's Xbox 360 and Sony's PlayStation 3—which are scheduled for release in Q4 2005 and Q1 2006 respectively.

Key drivers for the videogames industry include: inter-firm competition in the console market; design innovations in consumer electronics; new platforms; and marketing channels. Key risks include content piracy; intellectual property debates; outsourced manufacturing delays; 'disruptive' technologies like peer-to-peer networking; regulatory impacts on videogame violence, censorship, and cross media ownership; standards wars; and technological obsolescence. These drivers and risks demand that videogame companies develop 'environmental scanning' capabilities, to anticipate marketplace disruptions and to seize opportunities for future growth.

The Australian industry generated A\$100 million in export revenues in 2002 and its global reach will continue to 2010.<sup>33</sup> Most companies work on a 'fee-for-service' basis with United States and European game publishers. clusters, such as Multimedia Victoria's 'Game On' clusters policy and Queensland's 'Creative Industries' initiative. Evelyn Richardson, the Games Developers Association of Australia's (GDAA) executive director, notes that "we are known internationally for our creative talent and for delivering value for money."<sup>34</sup>

Whilst Australian companies have established a global reputation for game development and on-time project delivery, Australia does not yet have an internationally competitive publisher. Paul Boustead, a Smart Internet Technology CRC researcher, urges companies to develop their own content for franchise development, royalties, and to "get a better cut of the profits."<sup>35</sup> Marcus Westbury, co-founder of the FreePlay independent games conference believes the industry also overlooks the importance of independent developers for content innovation, mobile platforms, and as a potential workforce.<sup>36</sup>

The House of Representatives surveyed further opportunities for industry development and released its report in June 2004.<sup>37</sup> Local firms need government help to purchase Software Development Kits that will provide technical specifications for the next generation consoles. The GDAA is also lobbying the Federal Government for a 10BA-style scheme for games development and urging closer links with venture capitalists and other entrepreneurial sources. "Talking to local games developers, many feel that venture capital options are increasing," notes CRC researcher Paul Boustead.<sup>38</sup>

The Office of Film and Literature Classification's (OFLC) failure to adopt an 'R' rating for games has been criticised. The OFLC's decision means that some overseas-produced games cannot be currently sold in Australia. Marcus Westbury notes this creates a ridiculous situation "where players can avoid national regulatory boundaries by downloading games from online."<sup>39</sup> Clear education pathways are needed for games designers, developers, and programmers in order to meet a projected shortfall

of staff in the near-term. The local industry needs courses that are action-learning oriented and project-based rather than single units on game graphics and physics.

Further development opportunities include continued tradeshow representation at the Games Developers Conference and E3; synergies with film, television, and other creative media industries; creating links between industry developers and cultural activities/precincts; creating an entrepreneurial and risk-taking culture for successful game franchises and licencing; enabling a supportive cultural infrastructure for local firms; and generating alternative sources for access to capital. To become an internationally competitive 'industry of the future' Australia's videogames sector needs a holistic 'whole industry' outlook.

The videogames industry has 'lessons learnt' from creativity and game production that can be applied to other industries. Games development requires an 'innovation culture' that is forward-looking, entrepreneurial, and favours execution over endless strategising. Major developers like Sony and Electronic Arts have adopted Agile and eXtreme Project Management (APM and XPM) techniques. User-centred design must also be integrated into the games development process at the conceptual stage rather than as an after-thought.

*Games Studies* is an emerging academic discipline that examines videogames on their own terms. It represents a critical shift beyond cognitive, film, literary, and semiotic traditions to provide a context for videogames as 21st century media. Games Studies provides new concepts, insights, and tools that enable the development of games with a user-centred focus rather than technology upgrade cycles. Key theorists include Michael J.P. Wolf, Eric Zimmerman, Katie Salen and Espen Aarseth; many of whom write for *Game Studies* journal (<http://www.gamestudies.org>). The journal's disciplinary perspectives include aesthetics, narratology, ludology (the study of game-play), political economy and user-centred design. These insights also underpin effective game design and playability testing.

*Digital Culture* provides a broader context than just technology to understand the world that videogames and players co-evolve within. Its emergence mirrors the Internet's mutative shift from being a technology infrastructure to becoming embedded within society. Digital Culture contexts create new spaces for user-driven innovations and digital lifestyles. Digital Culture draws on the rich legacy of cybernetics scientists, avant-garde artists, and counter-culture movements.<sup>40</sup> It is often equated with Cyberpunk writers like William Gibson (*Neuromancer*) and Neal Stephenson (*Snow Crash*), with 'rave' dance culture and postmodernism, and with Generation X and Y youth subcultures. Marketers tap into this for new products, and the 'cool-hunting' will continue.

**Smart Internet 2010** has identified the following as critical areas for high-growth strategies to 2010. These range from technological innovations that are product-centric to consumer-driven innovations that may 'disrupt' current industry strategies.

*Massively Multiplayer Online Games* (MMOGs) may be the videogame industry's biggest 'wild card' to 2010. Sony's *EverQuest*, LucasArts' *Star Wars Galaxies*, and Linden Labs' *Second Life* are recent successes; Maxis' *The Sims Online* has been a surprise mega-flop. The key to success is giving players true interactivity in an

MMOG world, and continued investment in network infrastructure. The fusion of MMOGs and social networks, with an understanding of Games Studies, will empower players, and create novelty via ‘emergent’ actions, hazards, and randomness. Sony and other firms have lost millions creating ‘immersive’ game-worlds and infrastructures. Game developers discovered that players had their own goals in MMOGs and that new phenomena unexpectedly emerged. Insights from ‘network theory’ (small worlds, small-scale networks), artificial life and synthetic ecology (‘swarming’ and ‘cascades’) will provide scientific frameworks to design MMOG worlds and interact with game players. These frameworks provide a paradigm that goes beyond rules-based machine learning, and will be widely utilised in large-scale games development beyond 2010.

*Mobile Games* will continue to be important revenue drivers in the near-term. Mobile games development revives the ‘retro’ model of small developer teams rather than the development of larger projects. New developers may gain experience with mobile games and then move into designing games for consoles and other platforms. This employment pathway mirrors the relationship between ‘indies’ and ‘majors’ in the film and music industries.

*Location Based Games* use a mobile phone’s functions (including GPS, Bluetooth® and camera) in variations of ‘Capture the Flag’, ‘Treasure Hunt’ or problem-solving. This new genre combines elements of Massively Multiplayer games, social networks and wireless mobile networks. Team-based versions of games enable online participants to collaborate with players in the real-world locations. Location Based Games have been a compelling service for ‘early adopters’ in the United States, Europe, and Australia. When combined with action learning techniques, Location Based Games become a powerful tool for situation-based education.

The videogames industry pioneered how *Social Networks* are utilised. Designed as a social experience, Sony and other firms believe they are the ‘killer app’ for Massively Multiplayer Online Games such as *EverQuest* and *Ultima Online*. In the near-term, social networks will drive the integration of the Internet with next generation consoles. Microsoft’s Xbox 360 capitalises on player communities to create new levels and game objects, which can be sold and traded via Xbox Live. Social networks will further blur the boundaries between gamers and developers, and change industry development processes to 2010.

Control of player-created intellectual property will continue to be a major barrier to mass uptake.<sup>41</sup> Mark Finn believes the games industry will develop different strategies to the music industry: “Unlike [commercial] music, game-players can create their own content in some realms. It’s just going to throw the whole intellectual property issue wide open.”<sup>42</sup> Current models range from complete control (Sony’s *EverQuest*) to ‘bounded’ creation (BioWare’s *Neverwinter Nights*). Open Source collaboration and Creative Commons licences offer one resolution, yet few firms are forward-looking enough to shift from product-centric to customer-centric strategies.

Major game franchises like *Doom* and *Grand Theft Auto* have drawn on *Genre Knowledge* from films, television, and literature to gain mass appeal. Games Studies theorists argue that genre knowledge would differentiate Australian videogames from the unoriginal content that floods the marketplace. “The input of people with expertise

in film studies, particularly genre studies, would be fantastic for the games industry,” Mark Finn argues. “Any new form of knowledge will give them a different spin.”<sup>43</sup>

‘Auteur’ Designers have taken these insights further. Shigeru Miyamoto (*Donkey Kong, Legends of Zelda*), Will Wright (*SimCity*), Sid Meier (*Civilization*) and Peter Molyneux (*Populous, Black and White*) have all used interdisciplinary knowledge from the humanities and sciences to create their bestsellers. Australian firms need to adopt similar strategies during their conceptual research in order to create best-selling franchises and protect their intellectual capital. Gender-inclusive design is an emerging area that addresses diversity issues in the videogames industry. It provides industry with pro-active strategies to reframe the videogame violence debate, develop participatory alternatives, and to more effectively manage political risks.

For the full report visit the Smart Internet Technology CRC site to access the Executive Summary and complete *Smart Internet 2010* Report.<sup>44</sup>

Feedback will be welcomed.

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