



Australian Government

National Office for the Information Economy

**THE IMPLICATIONS OF THE EMERGENCE OF BROADBAND
DISTRIBUTION MEDIUMS FOR THE PRODUCTION OF
DIGITAL CONTENT AND APPLICATIONS**

A Report from Convergent Consulting Pty. Ltd.



... when decisions matter

December, 2003

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2. Executive Summary

Broadband is booming. By July 2003, Australia possessed over half a million subscribers, with a growth rate in excess of 100% p.a. This high-growth story is being repeated in many countries around the world. In particular, countries such as South Korea, Canada, Hong Kong, and the USA have already achieved broadband diffusion rates of over 15% – well in excess of Australia's current 4% level.

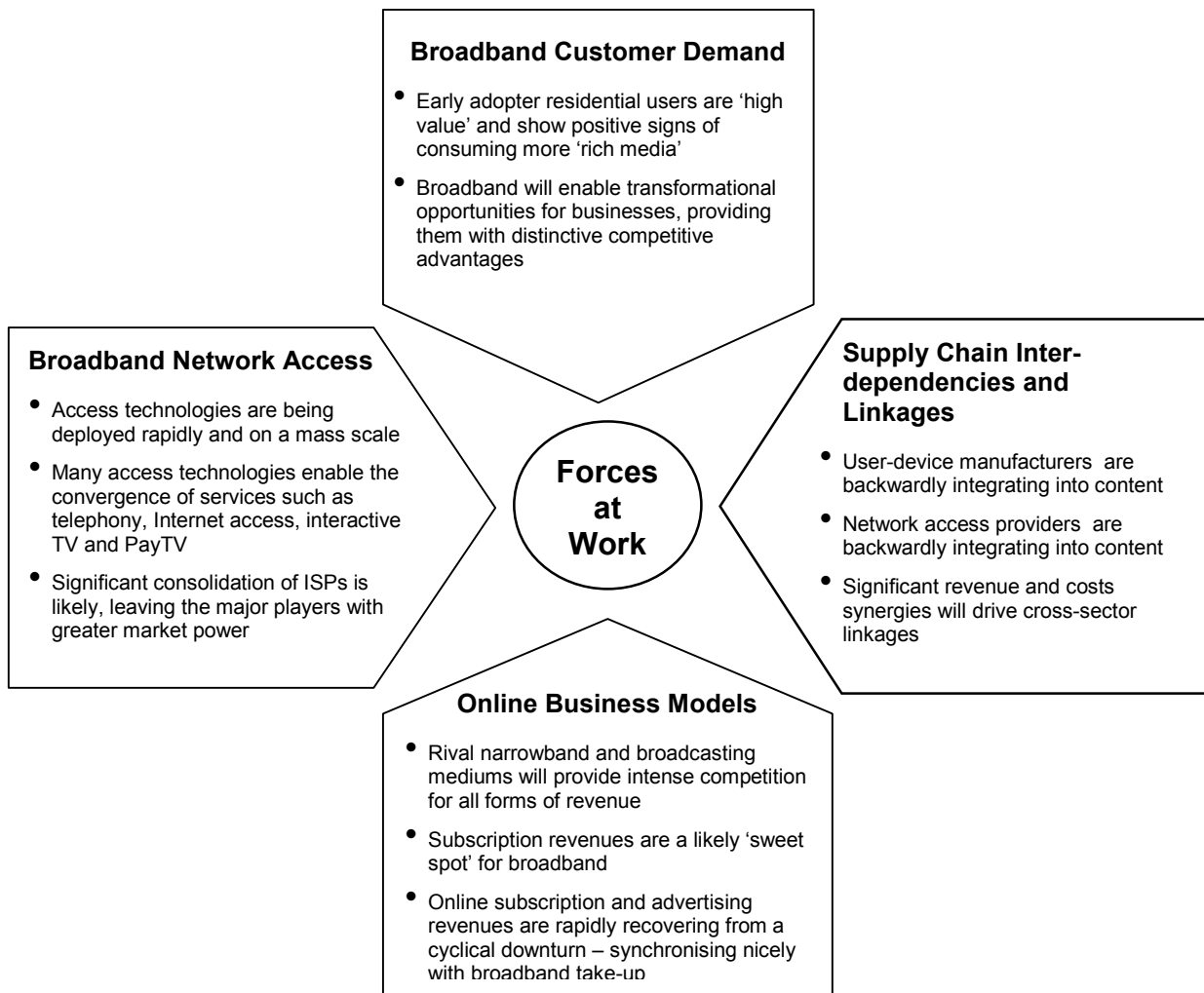
The aim of this report is to identify the opportunities that this rapid emergence of broadband distribution mediums will present for Australian digital content and applications developers. The report also identifies important firm and industry strategies that must be addressed in order to exploit these opportunities.

Our analysis consisted of three major phases.

1. Analyse Forces at Work
2. Develop Perspectives of the Future and Understand Uncertainty
3. Develop and suggest Firm and Industry Level Strategies

2.1 Forces at Work

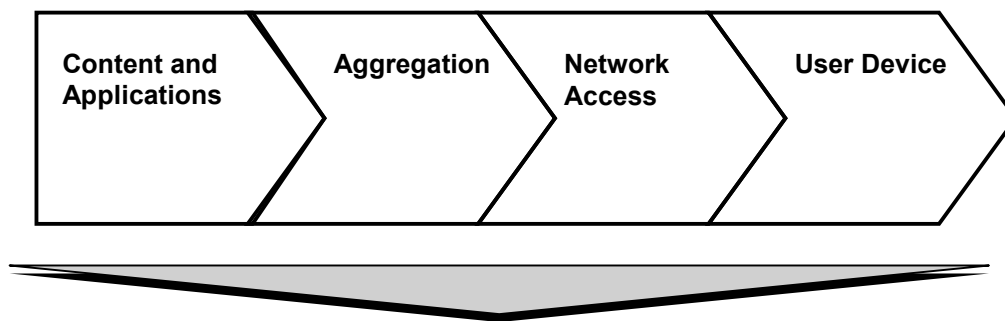
Figure 2.1.1 Forces Driving Change in Existing Industry Value-Chains and Market Structures



Content and applications markets have traditionally been controlled by a few powerful downstream distributors, such as large media firms and electronics game publishers. However, the rapid deployment of broadband has the potential to significantly disrupt the industry distribution-chains and market structures that currently honour these distributors with their market power. This, in turn, will potentially create exciting new opportunities for digital content and applications developers to bypass distributors altogether, or to find new more attractive distribution arrangements. Figure 2.1.1 summarises a number of the broadband forces working towards this disruption.

The advent of broadband-distribution can benefit all players in the value chain. Most importantly, compared with narrowband, it improves the bargaining power of content and applications owners, network access and user-device players. As a result, we will witness a number of alliances between broadband players across the value chain, as each player attempts to position themselves for emerging opportunities. Further, we expect this to be a constantly evolving process as new technologies and market developments continually reshape distribution strategies and alliances.

Figure 2.1.2 Generic Broadband Value-Chain



- The broadband value-chain is likely to be considerably more integrated than narrowband in which content, aggregation, network access and devices have tended to remain as discrete entities
- The value stakes in broadband will be much higher, as costs (c.f. narrowband) are much higher, and cannibalisation of existing services (e.g. PayTV, telephony) is a distinct possibility
- High revenue and cost synergies between adjacent industries such as film, television, telecommunications and gaming will drive considerable cross-sector linkages
- Broadband products and solutions are likely to be considerably more complex than narrowband, and will involve closer collaboration between firms all along the value-chain, as well as those involved in the industry verticals served (e.g. education, health, etc.)

2.2 Perspectives of the Future and Understanding Uncertainty

The ‘forces at work’ will be instrumental in determining the future opportunities for digital content and applications developers. Overall, we see broadband opportunities falling into the five areas outlined in Figure 2.2.1.

The emergence of these opportunities will be subject to certain risks and uncertainties that are difficult to predict in advance. For example, for the ‘new packaged and bundled product offerings’, described in Figure 2.2.1, we expect there will be various discrete ‘alternative futures’ for the types of distribution relationships that content developers could possibly strike up with partners. The futures include broadband distribution relationships that offer an end-user service that:

1. bundles content and access (e.g. ‘3’);
2. provides unbundled content (e.g. ABC Online, F2);
3. bundles content and devices (e.g. Xbox live); or
4. bundles content, network access and devices (e.g. interactive TV).

Figure 2.2.1 Major Opportunity Areas

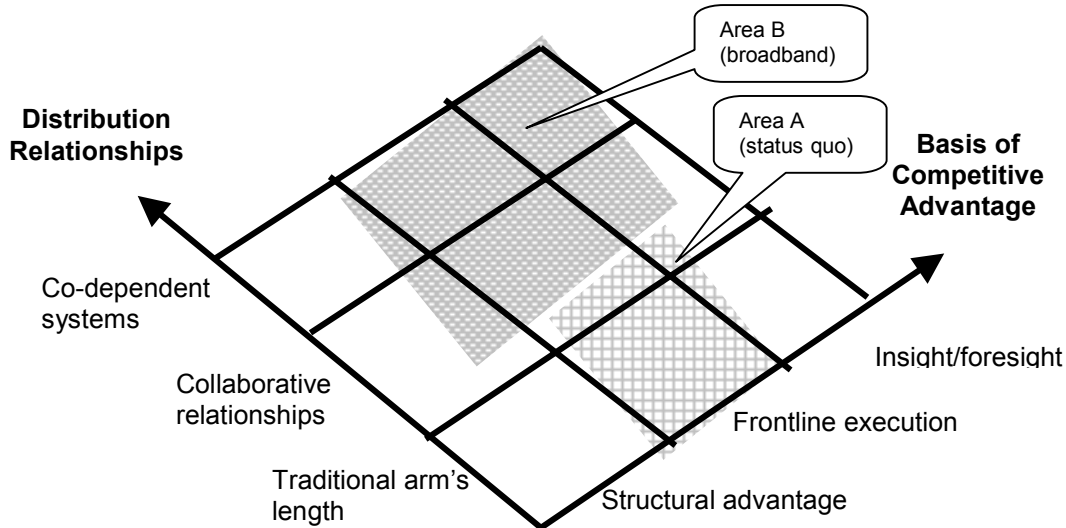
	<u>Description</u>	<u>Examples</u>
New distribution channels for existing products	Broadband used to provide an alternative distribution channel with more functionality and/or lower costs than offline equivalents	<ul style="list-style-type: none"> • Direct music and video download sites • BigPond's online AFL, ARL, Rugby coverage
New packaged and bundled product offerings	Broadband facilitates the bundling and/or integration of content, network access and user-devices	<ul style="list-style-type: none"> • Bundled access & content (e.g. '3', BigPond) • Bundled devices and content (e.g. Xbox Online, TiVO)
New synergistic cross-sector linkages	The revenue and cost synergies between online broadband content and other sectors such as TV, Film and Games will drive new linkages	<ul style="list-style-type: none"> • TV show web-sites (e.g. Walking with Beasts) • Simultaneous Film and Game production and releases (e.g. The Matrix)
New products	Broadband's functional capabilities, such as always-on, enable a new range of products	<ul style="list-style-type: none"> • Online multi-player games • IP telephony • Video conferencing
New solutions driving productivity and transforming existing industries	Broadband enables existing industries to fundamentally transform existing business models and processes	<ul style="list-style-type: none"> • e-Education • Online financial services • e-Health • online advertising

2.3 Firm and Industry Level Strategies

Firm and Industry level strategies have been developed using the framework depicted in Figure 2.3.1. The distribution relationships a firm possesses, and its chosen basis of competitive advantage, are the two key factors used for developing strategies.

With the rapid diffusion of broadband distribution systems, we suggest Australian digital content and applications firms will need to migrate their modus operandi from Area A (the current status quo) to Area B.

Figure 2.3.1: Distribution Relationships and Basis of Competitive Advantage



Distribution Relationship Strategies

A move to the broadband distribution will increase the level of co-dependency and collaboration required between firms involved in this new distribution medium.

The establishment of a 'co-dependent system' is highly contingent on the development of industry-wide business rules and technical standards. By way of illustration, the interactive games industry is an example of an existing co-dependent system in that individual games developers know that their games must be developed under well-specified technical standards and that they undertake this development under well-established commercial arrangements with games publishers. To achieve a similar co-dependent system, in the broadband environment, developer firms should now be investigating innovative ways to create industry standards and business rules, for the deployment of broadband content and applications, within their target markets. This can be achieved through many mechanisms, including championing likely sources of industry leadership, collaborating with each other, and by developing in-depth knowledge of the industries which firms wish to serve. The Learning Federation case study in Appendix A.2, is a good example of the way in which a co-dependent system has been recently established in Australia.

The establishment of 'collaborative relationships' involves developing a high degree of trust between firms, as firms must rely upon each other to contribute complementary competencies to a common task that is usually ill-defined and risky. This often tends to happen more cogently when firms are of a similar size, and stem from different industries. For example, partnerships consisting of a vertical industry specialist (e.g. tourism, health, etc), coupled with a firm possessing creative content and application skills can be a powerful combination in developing new broadband solutions.

Competitive Advantage Strategies

Firms will have the opportunity to selectively establish new forms of structural advantage, particularly in the areas of infrastructure ownership and process ownership. This latter area will provide the opportunity for firms to 'move up' the value-chain from 'just producing content', to actually owning a business process that they manage on behalf of clients.

The risky process of developing new broadband products and solutions, will reward those firms with superior industry foresight and insight. This foresight/insight might include local market knowledge that allows the firm to anticipate demand for new products, or specific technical knowledge that allows the firm to provide important views as to the future market dynamics and competitiveness.

Finally, we expect that firms will need to refresh their frontline execution skills in order to maintain a competitive advantage. These skills will include the ability to: manage the large projects associated with broadband content production; implement new methods of exploiting and managing copyright assets; manage cross-sector linkages; and develop new sources of revenue including, subscriptions and advertising.

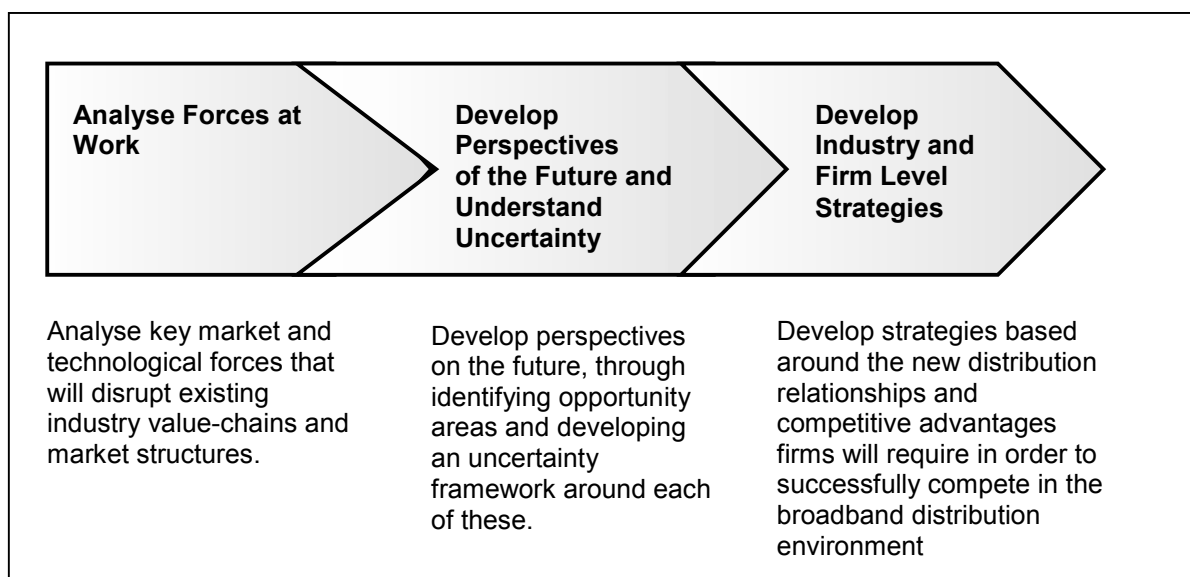
3. Methodology and Approach

In order to achieve the objectives of this consultancy, we considered it important to strike a balance between gaining information from desktop market research (i.e. research reports and published literature) and through direct industry consultations.

This approach was based on our view that, while research reports and other published literature on broadband are widely available, these sources often failed to address country specific contexts and the practical limits that apply to most small to medium size firms participating in the digital content and applications industry. For this reason, we consulted extensively with industry to ensure that the Australian context was woven into our analysis and that practical (actionable) strategies and initiatives were produced. Those consulted during the process are listed in Appendix B.

The structuring of our analysis (which coincides with the format of this report) is outlined in Figure 3.1.1.

Figure 3.1.1 Three Phases of our Analytical Approach



Further, in order to illustrate various issues, we conducted an in-depth analysis of how two particular sectors are dealing with broadband distribution opportunities and challenges. These sectors are: Interactive Games and Education and Training

3.1 Disclaimer

This consultancy examines a limited number of firms, and sub-segments, within the digital content and applications market. Our analysis and conclusions are based upon a limited set of qualitative and quantitative data, which may, or may not, have universal applicability. As such, it would be a mistake to generalise and prescribe specific interventions for any firm or market sub-segment (based on the experience of another) without first considering the full context of its position. Further, due to the forward looking nature of this report, in an industry that is undergoing significant technological, market and regulatory changes, any conclusion or recommendations in this report should be treated as purely speculative.

This report reflects the independent views of Convergent Consulting. It should not be taken to necessarily reflect the views of NOIE, The Federal Government, or any of the industry participants interviewed.

In writing this report, and arriving at its conclusions, Convergent Consulting has relied on the accuracy of the information provided to it by third party resources and those industry participants interviewed. It should be understood that Convergent Consulting has not audited, or verified the accuracy of this information.

4. Introduction

4.1 Definitions of Broadband

Precisely defining broadband network access has generally been considered somewhat problematic. In particular, much debate has been given to the minimum speed at which a broadband service should be provided. Some analysts consider anything faster than dial-up modem speeds (56kbps) to be broadband, while others think true broadband should be considered to be at least 2-10 MB per second (i.e. around the speed of a typical office LAN). Further complicating matters is that some access services, such as ADSL, are asymmetrical in the speeds they offer (i.e. the upload and download speeds of the service are different.) Given this report is about content and applications, and not network access services per se, we have elected to side-step this debate and, instead, have chosen to merely define broadband network access by the four critical features that affect the use of broadband as a distribution medium for content and applications. These features are:

- always-on connectivity;
- high-speed transmission - greater than that made possible by narrowband technologies;
- two-way functionality - enabling interactivity by users; and
- capacity to simultaneously carry multiple content and/or applications.

These four features strongly influence the nature of broadband content and applications, as well as affect the way they can be distributed. To illustrate, we provide the following examples:

- 'always-on' connectivity allows applications that require continuous and synchronous transmission, such as IP telephony;
- high speed transmission allows for video and audio-streaming (which at 2MB and above, begins approaching the quality of broadcast television);
- two-way functionality allows users to control what they see and when; and
- the capacity to simultaneously carry multiple content and/or applications on a single distribution medium brings about the possibility of both technical, and commercial, convergence of services.

Note also, for the purpose of this report, we take a 'technology neutral' approach to broadband distribution. For example, we consider broadband distribution systems can be fixed wireline (e.g. xDSL, HFC cable), fixed wireless (e.g. satellite) or mobile wireless (e.g. 3G, 802.11)

4.2 Australian Digital Content and Applications Industry

As highlighted throughout the Stage 1 and Stage 2 of the Creative Industries Cluster Study, the content and applications industry structure tends to be highly fragmented at the creative-production end of the value-chain, and highly concentrated (bottlenecked) at the distribution end.

Content distributors are typically endowed with key tangible and intangible assets that provide them with significant sources of market power. For example, these assets include:

- Brands and mastheads (e.g. ABC Online, Yahoo!, CNN.Com);
- Proprietary technology platforms (e.g. game-station consoles, conditional access systems in PayTV set-top-boxes, search engines);
- Capital intensive infrastructures (e.g. warehouses, retail outlets, cable networks);
- Regulatory/Legal protection (e.g. gaming licences, television licences);
- Collaborative relationship networks (e.g. advertising agencies, film and music distributors);
- Economies of scale and scope (e.g. vertical and horizontal integration across multiple media markets); and
- Specific market knowledge and networks (e.g. Bloomberg).

In contrast to the powerful position of a small number of distributors, the creative-production end of the value-chain is highly fragmented and possesses considerably less market power. There are currently between 3,500 and 7000 interactive multimedia development companies in Australia, with the vast majority employing less than 20 people¹. The precise boundaries and structure of this part of the industry is difficult to define and quantify, as firms tend to work across industries and participate in many activities beyond the development of just content and applications. Thus, it remains a relatively unquantified component of the Australian economy.

The content and applications produced by these firms covers an extremely wide, and ever-expanding, range of uses and activities, including: corporate websites, online media properties, e-learning curricula, interactive advertising, film and TV post-production, news gathering, and interactive games. Clients include the types of content distributors mentioned above, as well as government, corporate businesses, and educational institutions, who also possess a high demand for digital content skills and applications.

With the possible exception of the in-house content development teams within large integrated media, publishing and distribution companies, the vast majority of digital content and applications development work is completed on a fee-for-service basis. That is, the industry is predominantly a professional service industry reliant on winning project-based work that is outsourced from the likes of publishers and media firms. Given these fee-for-service arrangements, intellectual property rights (IPR) are, by and large, retained by the commissioning organisation and not the creative production firm. These IPR arrangements, coupled with the intensely competitive nature of the industry, tend to put natural limits on the ability of these small developer firms to gain scale and leverage, without taking on the substantial financial risk involved in investing in their own IPR and/or distribution channels.

It is worth noting that Australia's content and application developers have been developing 'media rich' interactive digital content for decades. This 'broadband-like' content has typically been distributed via magnetic media, optical media (e.g. CD and DVDs), broadcasting platforms and narrowband file sharing.

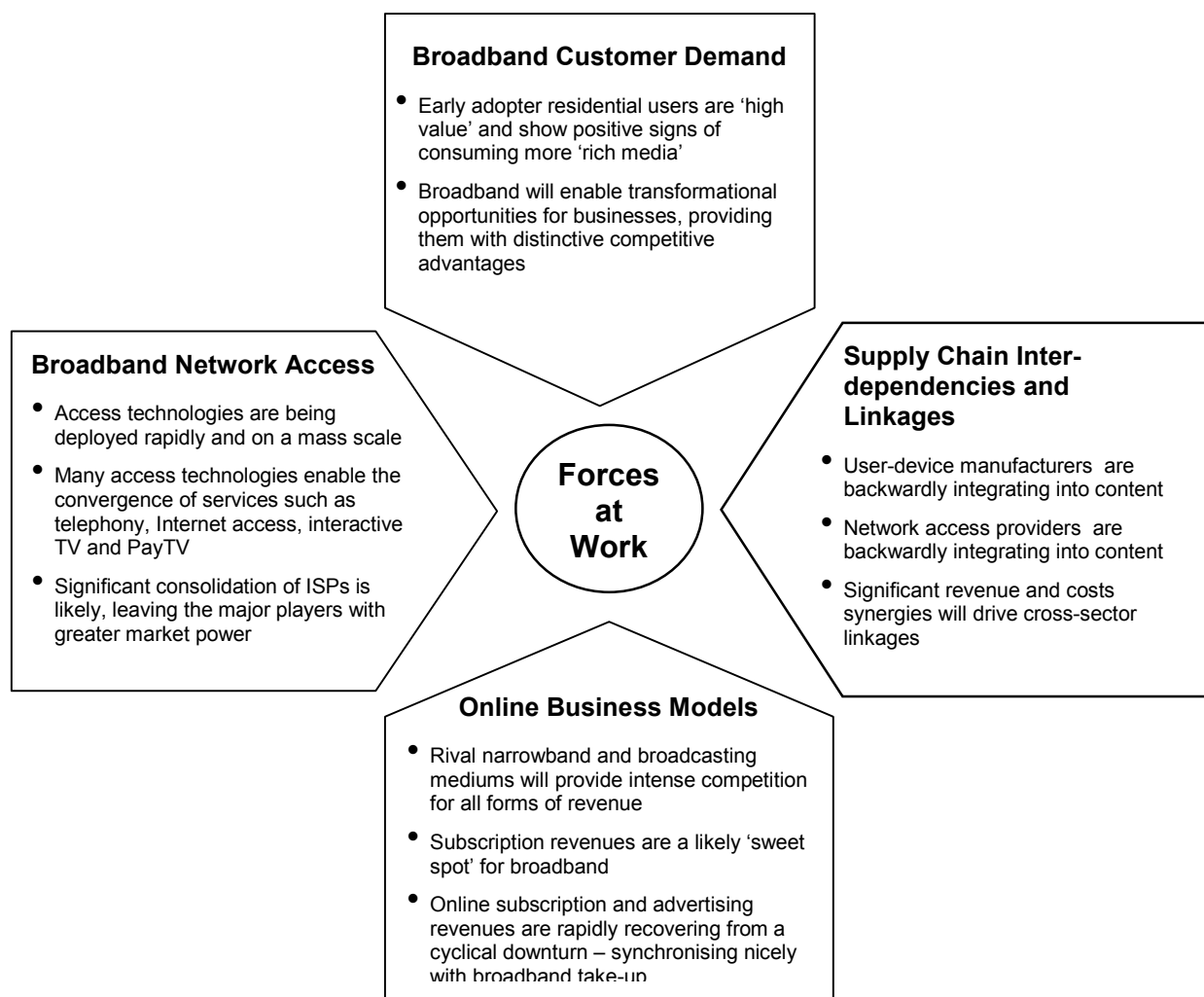
¹ Source: AIMIA and ABS
Convergent Consulting

5. Analyse Forces at Work

In this section, we analyse the key market and technological forces that will disrupt existing industry value-chains and market structures. These forces can be loosely grouped under the four the following four areas:

- Broadband Network Access
- Broadband Customer Demand
- Broadband Supply Chain Inter-dependencies and Linkages
- Online Business Models

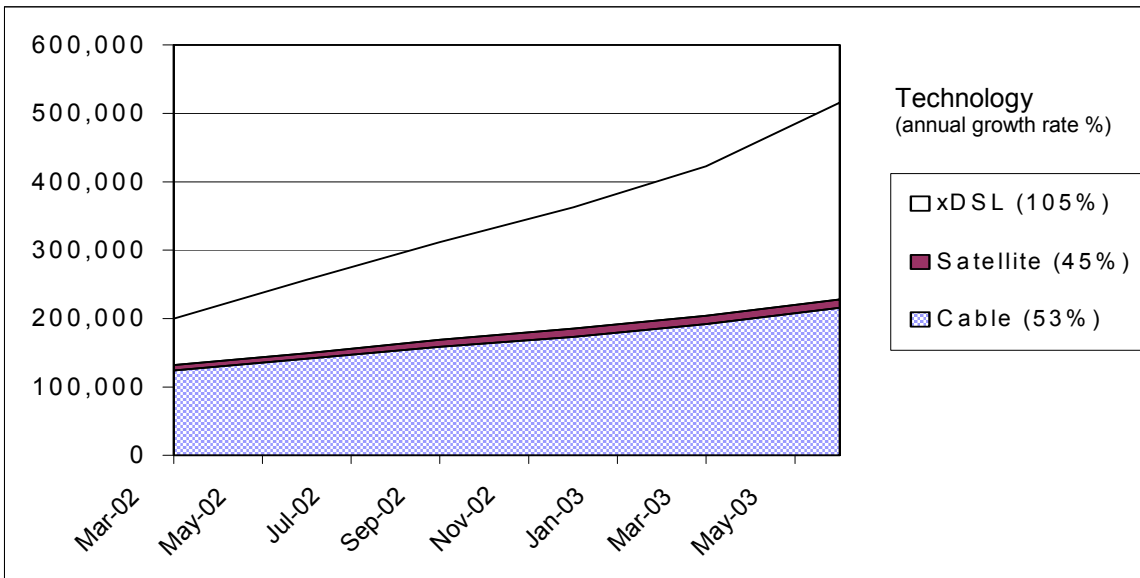
Figure 5.1 Forces Driving Change in Existing Industry Value-Chains and Market Structures



5.1 Broadband Network Access

According to the ACCC's latest quarterly survey, as of June 30, 2003, Australian fixed-line broadband take-up stood at 517,000 subscribers. This number represents more than double the number of subscribers from a year earlier, or an annual growth rate just in excess of 100%. As can be seen from Figure 5.1.1, the bulk of this rapid growth has been due to the take-up of xDSL, as an access technology.

Figure 5.1.1: Australian Broadband Subscribers by Access Technology (June, 2003)



Source : ACCC

Note, the ACCC figures do not include mobile cellular based broadband services, such as 3G, nor local 'hot spot' wireless access services, such as WiFi (802.11) and Bluetooth, or Wireless Local Loop (WLL) services. It is understood that these services are still in an early growth phase, meaning absolute subscriber numbers are still relatively small. For example, as of June 30, 2003, 3G subscribers in Australia numbered around 43,650².

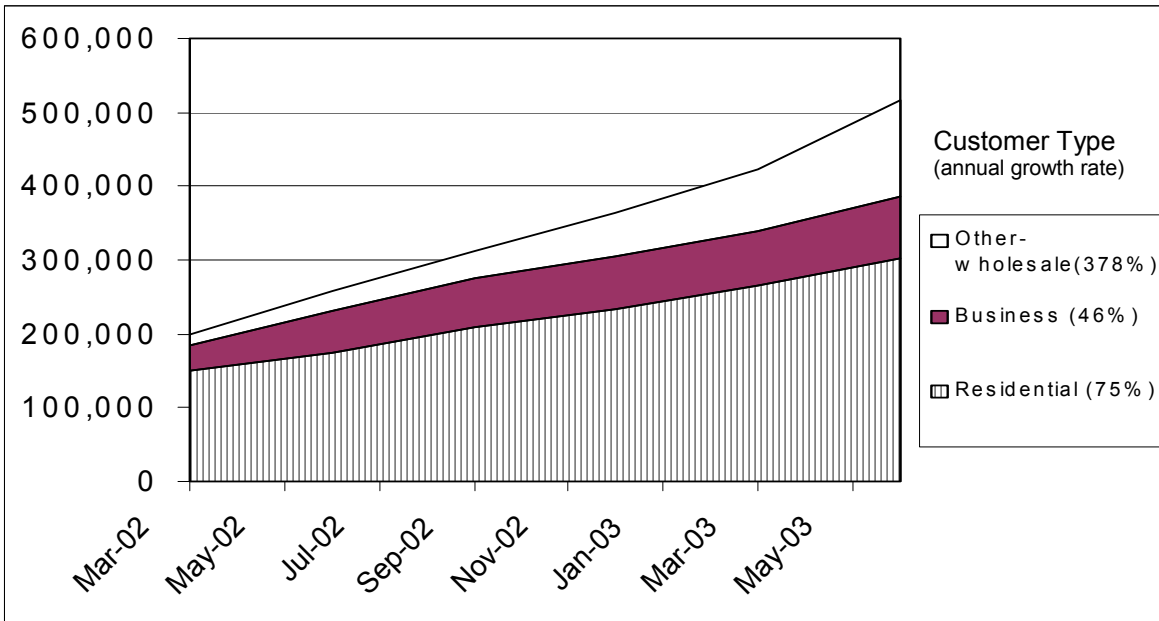
Looking at diffusion rates from a customer segmentation perspective, the ACCC's figures, shown in Figure 5.1.2 indicate that all segments are growing strongly, although the residential and 'other'³ customer market segments lead the business market. Having said that, there is considerable industry conjecture as to whether the ACCC's business/residential split in subscribers does not significantly over-state residential subscribers numbers and growth rates, and under-state business subscribers, by the corresponding amount. This is thought to come about as many small office, home office (SOHO) type businesses 'make do' with the lower cost, residential broadband products which, under the ACCC's methodology of data collection would count them as residential subscribers. In contrast to the ACCC's estimates, the Pacific Internet Broadband Barometer, (which is based on an actual direct survey of businesses), claims that around half of Australia's broadband connections are business connections. We note other business surveys, such as the annual Yellow Pages survey, tend to back up Pacific Internet's estimates.

It is also worth noting that there is a considerable 'blurring of the boundaries' between business and residential (consumer) use as many people use the Internet at work for personal use, and vice versa in the home environment. One recent survey by ComScore Media Metrix estimated that 21% of all US Internet users primarily access the Internet from work.

² Source: Ovum

³ The ACCC believe that 'other' category mainly consists of wholesale customers (e.g. resellers, who sell to both business and residential markets)

Figure 5.1.2: Australian Broadband Take-up by Customer Type (June, 2003)



Source : ACCC

The penetration of broadband across customer segments is indicated in Table 5.1.3. As can be seen, broadband is quickly reaching ubiquity in the corporate and medium-sized firm markets (100+ employees). However, the majority of small businesses, continue to access the Internet via a dial-up modem, with around one-third currently possessing broadband access. According to Pacific Access, the small business sectors with the greatest level of broadband penetration are IT (56%), Finance and Insurance (46%) and Property/Business services (45%); while the Retail and Wholesale trade sectors are now beginning to show the highest potential for accelerated broadband take-up.

Table 5.1.3 Australian penetration rates for various customer segments

Customer Segment	Connected to Internet	Connected via Broadband
Residential	54%	11%
Small Business	82%	28%
Medium Business	98%	60%
Corporate	99%	90%+

Source: 2003 Yellow Pages Business Index, NOIE, Allen Consulting Group

In the residential market at the end of 2002, the take-up of broadband was around 11% of all Internet connections, or around 4% of total households. This 4% penetration rate puts Australia well behind many other countries, such as Canada (29%), the US (16%) and Japan (16%), as highlighted in Figure 5.1.4. Much detailed analysis (and media coverage) has been dedicated to assessing this situation and, as such, we do not propose to explore this issue further in this report. Suffice to say that, despite a slower start to broadband deployment than many may have wished for, many analysts confidently predict that broadband will gain a critical mass of subscribers over the medium term. For example, Deutsche Bank estimate that by 2008 broadband penetration will reach 28% and, importantly, in that year, broadband connections will exceed the number of narrowband Internet connections, for the first time. The OECD⁴ is also quite optimistic about the worldwide diffusion of broadband access, and notes that the current diffusion rate for broadband is actually faster than those for cellular mobiles and narrowband Internet access, at the equivalent stages of their market development.

One major impediment to broadband take-up will be the availability of suitable network access technologies. In Australia, the two most popular network access technologies, cable and ADSL, are currently restricted in their availability to around 35% and 70% of homes respectively. While other access technologies, such as ISDN and satellite, provide much closer to 100% population coverage, these

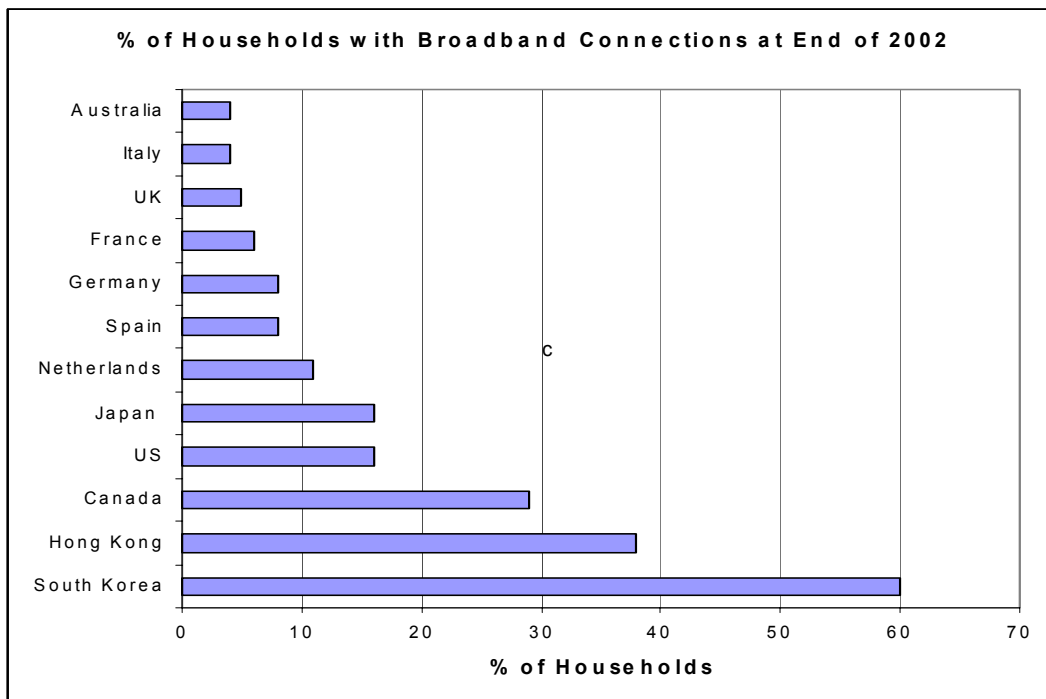
⁴ OECD ICCP Broadband Update, October 2003
Convergent Consulting

services are either more expensive and/or possess significant technical limitations, compared with Cable and ADSL technologies.

An interesting feature of the ascendancy in broadband access will be the simultaneous decline in narrowband access. This phenomenon is expected to have significant ramifications for the 550 companies that currently make up the Internet Service Provider (ISP) industry. These factors include:

- The potential for significant industry consolidation.** The advantages delivered by ‘economies of scale’ for broadband services is generally much greater than that for narrowband (i.e. greater fixed infrastructure investment is required). This required investment is likely to keep many under-capitalised ISPs out of the broadband market and/or drive them into partnership with broadband wholesalers, such as Telstra. As evidence of this effect, we note that Telstra currently possesses 72% market share for broadband (combining its retail and wholesale customers), while in the narrowband market its share is only around 25%⁵. Even after removing wholesale revenues, Telstra still control 48% of the broadband retail market.
- The potential for greater bundling of access, with content and applications.** Given that many of Australia’s largest broadband access providers are also telecommunications carriers, content and applications are very likely to be used by access providers to improve their investment returns on costly broadband access network deployments and to protect their legacy voice and data revenues. For example, ‘exclusive’ content and applications can assist in differentiating the carrier’s offering, growing average revenue per subscriber (ARPU) and reducing churn. This bundling of network access with content is sometimes known as a ‘walled garden’.

Figure 5.1.4 International Broadband Diffusion Rates



Source: e-Marketer

As can be seen from Table 5.1.5, on a global basis, broadband diffusion has hit a critical mass of consumers with 59 million worldwide subscribers at the end of 2002. It is noteworthy that growth has been achieved despite quite a severe global economic and ICT turndown in 2001 and 2002.

⁵ Source: Deutsche Bank
Convergent Consulting

Table 5.1.5: Broadband Subscriber Statistics by Region, CY2002

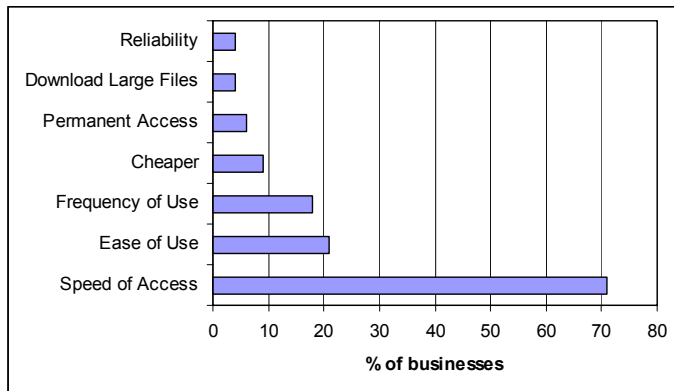
Region	2002 Subscribers (millions)	2002 Rates	Growth
North America	24.1		52%
Asia Pacific	17.0		N/A
Europe	9.6		107%
Japan	7.6		169%
Latin America	0.5		N/A
	58.9		

Source: Morgan Stanley

5.2 Broadband Customer Needs

Most of the Australian and international surveys we reviewed⁶, covering both business and residential broadband customers, consistently indicated faster Internet access speed as the primary reason for converting from narrowband to broadband Internet access.

Figure 5.2.1: Australian Businesses – Reason for Broadband Connection



Source: Yellow Pages Business Index, 2003

A McKinsey & Company survey⁷ of 1600 broadband households across eight countries revealed that speed of access (76%), always-on connection (47%) and not tying-up the phone line (47%) were the most important reasons for connecting to broadband.

These surveys would suggest that, at this point in time, neither residential, nor business users, are subscribing to broadband in order to specifically access new broadband content and applications. These facts notwithstanding, 'early adopter' broadband Internet users present quite a different demographic and user profile, compared with narrowband users. As can be seen in Table 5.2.2 broadband subscribers spend much more time online, visit many more web pages, are wealthier, and are generally more willing to purchase goods, information and services in an online environment.

Table 5.2.2: Broadband Internet Users vs. Narrowband Users

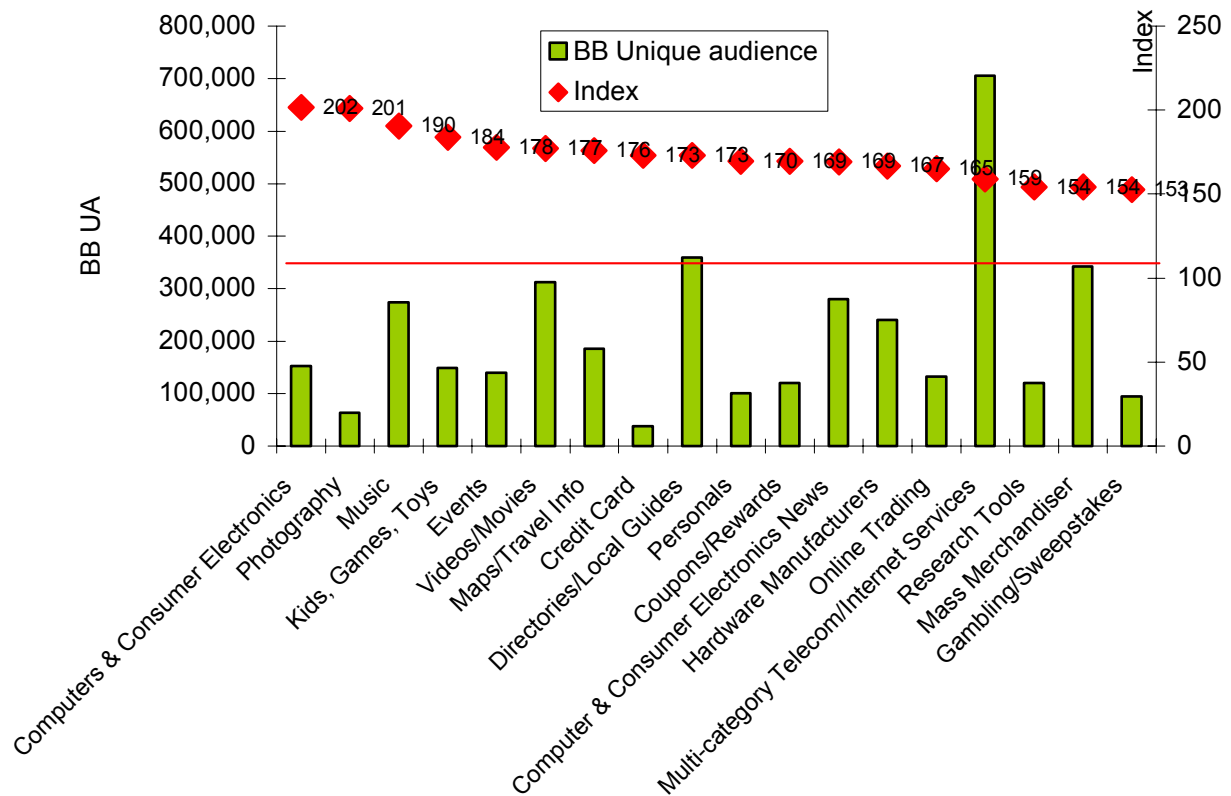
	Narrowband	Broadband	Variation
Time Online (hours per week)	8	17	+112%
Pages views per month	792	1620	+104%
Annual Income of over \$US75,000 ⁸	20%	40%	+100%
Purchasing Spend ⁸ (\$US)	555	868	+64%

⁶ Yellow Pages Business Index, McKinsey & Company, BCG, Pacific Access

⁷ McKinsey Quarterly

⁸ Based on US Consumers

Figure 5.2.3 Content Categories that are targets for Australian Broadband users (Home only)



Source: AC Nielsen (<http://www.acnielsen.com.au/news.asp?newsID=231>)

Figure 5.2.3 is useful in that it highlights the absolute usage patterns of broadband users (measured by the BB Unique Audience⁹) and the relativity between Broadband users and all Internet users (measured by the Index¹⁰).

What do these figures tell us about Broadband users' interest in content and applications? Even though Broadband users visit the content categories between 1.5 and 2 times as often as the 'average' Internet user, it needs to be understood that broadband users are online more often, and stay online for longer, than the 'average' user anyway. Having said that, we do note that a number of the top Index categories, such as photography, music, kids/games/toys, events and videos are all 'content rich' type of applications, suggesting that Australian broadband users show a slight, or emerging, preference to access and utilise these 'content rich' applications, compared to what they access in the narrowband environment.

This slight, but emerging, preference for content rich applications in Australia, is pretty typical of the experiences of other countries such as Canada, UK and the USA. In South Korea, however, which has the world's highest broadband penetration rate, this tendency for broadband users to access 'content rich' categories is much more pronounced. As indicated in the case study (see Figure 5.2.4), this phenomenon was led by the popularity of online computer games. However, Koreans are also using broadband to

⁹ Measured as unique visits to a web site

¹⁰ The Index is the primary indicator used to identify content categories with a higher proportion of broadband users. The Index is 100 times the proportion of broadband users that visited a category relative to the proportion of total users that visited it.

purchase and exchange music, video and photographic images, as well as make telephone calls and establish active communities of interest.

Figure 5.2.4: Case Study: South Korea

South Korea is something of a broadband phenomenon. Even though South Korea's Internet penetration is around 57% (i.e. quite similar to many OECD countries), 90% of these connections are through broadband, compared with, for example, 11% for Australia, and 20% for the US. What makes this achievement all the more remarkable is that this high rate of broadband diffusion has been achieved in the space of four years (Prior to 1998, both broadband and overall Internet penetration in South Korea were negligible). In all, this makes South Korea an interesting crucible for analysis, not only for these high broadband penetration rates, but also because many Korean Internet subscribers leap-frogged narrowband access completely.

According to Izumi Aizu, from the Asia Network Institute, South Korea's high rate of broadband up-take is often, superficially, ascribed to heavy handed Government intervention. After all, according to Aiza, Japan and Singapore have similar policy frameworks but have less success, while Hong Kong, which takes a free-market approach, has the second highest broadband penetration rate behind South Korea.

While there is little doubt Government policy frameworks and initiatives have been supportive of broadband deployments in South Korea, it is also clear that this is only one of a number of drivers that have contributed to its success. According to a number of analysts, such as Boston Consulting Group, Aizu and e-Marketeer, these drivers have come together in something of a 'perfect storm' scenario for South Korea, which has included the crucial role played by content and applications developments. Some of these drivers include:

- The ability to 'test drive' broadband. This was largely supported by the proliferation of the 'PC Bang' - Internet cafes exclusively designed for Internet game services (there are now around 20,000 such cafes in Korea). These highly popular games have now also migrated to the home environment;
- Low access costs for 'real' broadband. While monthly subscription rates are not significantly different in South Korea to many other countries (in fact are often higher), South Koreans generally enjoy much greater bandwidth, per dollar spent, and are not restricted by 'capped' download limits.
- High installed base of PCs and computer literacy. More than 70% of households have a PC, while educational policies have ensured that all public schools offer PC training.
- A high interest in online communities. South Koreans appear to enjoy forming online communities. The dramatic uptake of competitive 'massive multi-player' games is the leading example of this phenomenon. However, there is also strong interest in all sorts of communities from the political to the hobbyist. According to Aizu, "Netizen" is a common word for Korean people, and online bulletin boards and online communities are very popular among ordinary citizens who want to speak up and communicate.
- A strong interest in online activities outside the world wide web. Non web-browser-based applications such as games, file exchange, music, image and movie downloads are very popular.
- Attractive substitute products and services. Inexpensive Internet telephony, popular portal sites with auctions, online shopping or search engines, Internet TV and movie programs. Internet and broadband are now becoming an integral part of daily life for the average Korean.

Overall, these statistics paint an interesting picture for broadband. On the one hand, they suggest that a good majority of 'early adopter' residential subscribers, in Australia, do not take-up broadband in order to specifically gain access to new content or applications. On the other hand, once connected to broadband, these subscribers demonstrate an emerging bias towards a greater usage of 'content rich' applications. Further, if, and when, Australia follows the South Korean path, then this trend towards 'content rich' applications may very well accelerate quite dramatically.

In contrast to the residential market, which shows some early signs of adopting more sophisticated broadband-enabled content and applications, the business market, generally, remains focussed on using the Internet to extract productivity gains.

According to a Yellow Pages survey¹¹ of small and medium business (SMEs), the most essential application on the Internet was email (identified by 78 per cent of businesses connected to the Internet). The next most essential applications were Internet banking (58 per cent), looking for information about products and services that businesses might buy (56 per cent) and getting reference information or research data (55 per cent). Interestingly, these were the only Internet applications that were identified by a majority of SMEs as essential business applications. In terms of non-SME firms, The Allen Consulting Group¹² notes that Australian businesses with 100+ employees, view these same applications as important, but also add that the use of the Internet for promotion and marketing, making purchases, and accessing government services were also important.

In the same report, the Allen Consulting Group noted that overall there is a negative relationship between adoption rates and the level of sophistication of Internet technology and applications, as summarised in Table 5.2.5. That is, the more sophisticated the Internet technology and/or application, the lower the adoption rate. This finding of a negative relationship is consistent with other findings in Australia from the ABS and overseas studies on the adoption of Internet technologies and applications by businesses.

Table 5.2.5 Internet Technology and Application Adoption Rates

	Internet Connectivity	Website Presence	Online Purchasing	Online Sales	E-learning
Percentage of Total Aust. Businesses	95	72	55	48	21

Source: Allen Consulting Group: Built for Business II, Beyond Basic Connectivity

In sum, it would seem that Australian businesses' initial online focus is on improving the productivity of existing business processes, rather than transforming them. Firms have essentially exploited the 'connectivity' of the Internet, through such applications as email and information-exchanges, to lift the productivity of their existing work processes. The distinction between productivity and transformation-based change was highlighted in a report prepared by Ovum for NOIE¹³ which noted:

"Productivity is the efficiency with which inputs are converted to outputs." whereas,

"Transformation is the change in orientation and capacity of firms and maybe expressed in many forms including

- *the change in skill levels and skill mix of employees*
- *changed business objectives and aims of the firm*
- *expanded range of services and capabilities*
- *changed business model"*

It would seem likely, that once the 'low hanging fruit' of this first wave of productivity gains has been made by firms, the next wave of change will stem from the more sophisticated content and applications that will be required to drive transformational change. That is, technology (including broadband) will be used to transform existing business processes and models. This next wave of transformational change is also likely to drive home competitive advantages to those firms which execute such changes successfully as, unlike the productivity based gains, transformational gains are much more difficult for competing firms to replicate.

¹¹ Yellow Page eBusiness Report, July 2003

¹² Built for Business II, Beyond Basic Connectivity

¹³ Productivity and Organisational Transformation, NOIE/Ovum, Feb 2003
Convergent Consulting

5.3 Broadband Supply Chain Inter-dependencies and Linkages

5.3.1 Broadband Access Devices

To date, the personal computer (PC), with an installed base of 66% of Australian households, and 84% of businesses¹⁴, has been the predominant device used by broadband users to access the Internet. This arrangement is a natural extension of the usual narrowband access arrangements, in which the PC was the device dedicated to such functions as 'surfing the Internet' and accessing email.

By contrast, other devices in the home, such as the television, set-top-boxes and games-consoles have not possessed all the necessary hardware (e.g. hard-disk drives, memory, modems and/or microprocessors) to challenge the PC as an Internet-access device. As such, the function of these devices has generally been restricted to their traditional specialist functions.

We see two major developments that will serve to alter this situation

1. Consumer devices are being provided with 'PC like' intelligence and are Internet compatible. That is, devices such as games-consoles, personal video recorders (PVRs), set-top-boxes (STBs), video-cameras and personal music players are increasingly being installed with PC hardware components that enable them to function much like a PC or, at the very least to interface with a PC connected to the Internet. This rapid development in device technology, coupled with innovative online content development strategies by device owners/manufacturers, is rapidly leading to the bundling of devices and online content, customised for specific use on that device. Some examples of these bundles are outlined in Figure 5.3.1.1.

Figure 5.3.1.1 Device and Content Bundling Strategies

<u>Company</u>	<u>Proprietary Device</u>	<u>Online Content</u>
Apple Computer	MP3 player (iPOD)	MP3 music store (iTunes)
TiVo	PVR	TiVo film and TV subscription service
Sky (UK)	Intelligent STB	OpenTV (interactive TV service)
Nokia	N-Gage (wireless games console)	Games
Microsoft	Xbox	Xbox Live (Games)

It is noteworthy that all of the applications illustrated in Figure 5.3.1 (except Apple's iTune service,) require the use of broadband access. This trend is a marked change from the narrowband environment in which the ubiquity of the PC, as the access device of choice, restricted the opportunities available to bundle consumer devices and content.

2. The traditional 'roles' of consumer devices are shifting, and becoming more multi-faceted

Many consumer devices are now capable of carrying out more than one function. For example:

- At last count, Multipurpose Home Players (MHPs) were capable of being a PC, television set, home theatre, stereo system, DVD player, PVR and MP3 player.
- A recent A.T. Kearney and Cambridge University survey of 5,600 mobile phone users in 15 countries shows that 43% own an Internet or WAP-enabled phone and 34% have surfed the Web from their phones, an increase of more than 25% from the previous year. Also, worldwide, 6% of users downloaded and played games on their phones ¹⁵

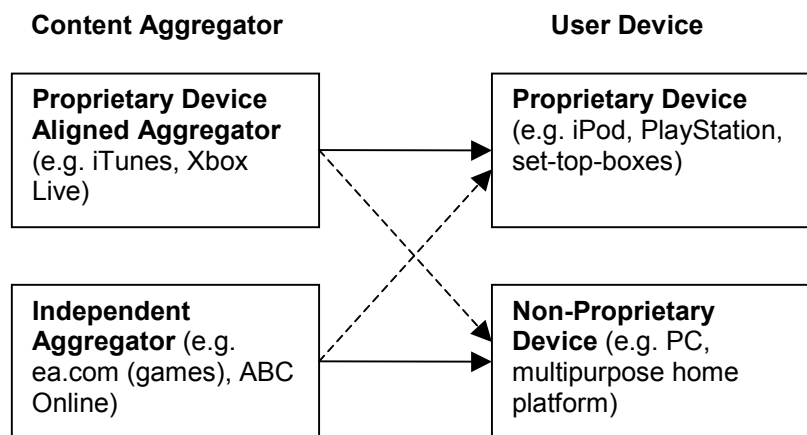
¹⁴ NOIE (http://www.noie.gov.au/publications/NOIE/statistics/pocket_stats.htm)

¹⁵ Source: Cited in 'The Motley Fool' 28/10/03

These two developments create an interesting tension for online content distribution. The first development lends itself towards device owners/manufacturers tightly controlling the aggregation and distribution of content onto their proprietary devices, which in turn will force content owners/developers to form distribution relationships with these firms. In other words, form a tightly integrated distribution chain for content, resembling a ‘walled garden’.

On the other hand, the second development, lends itself towards a disintegrated content distribution chain, where the owners/manufacturers of these devices play little, if any, role in the aggregation and distribution of content. In fact, given the nature of the device, manufacturers would most likely prefer that all forms of content were freely available from any source – thereby increasing the utility and attractiveness of their devices.

Figure 5.3.2 Broadband Content Distribution for various User Devices



How will this tension be resolved? We believe that this tension will continue to exist in the market for the foreseeable future and, as such, no one distribution system will dominate the other. In fact, we expect that a ‘healthy’ inter-play between the two systems, as outlined in Figure 5.3.2, will be necessary to maximise the potential for each. This inter-play is probably best illustrated with a few examples.

When the Apple iTunes music service was first launched it was made available exclusively to iPod/Apple users. Since that time, large components of the iTunes service have also been made available to PC users. One could assume that Apple decided it could make more profits from selling music content to the entire Internet population, than it could from selling a tightly bundled service (e.g. iPod, computer and music) to a more limited number of consumers. In fact, one could hypothesise that, if Apple hadn’t opened up iTunes to PC users, then competitors would have developed alternative music aggregation sites suitable for PC users. Instead, as a result of rapid changes in their distribution strategy, Apple can now claim they possess a very healthy 80% of the online subscription music market. The downside of this new distribution strategy is that Apple may well sell less iPods and computers, as consumers are no longer forced to purchase these in order to access iTunes.

Another example, more fully explored in Appendix A.1, is independent games publisher Electronic Arts (EA) which has aggregated gaming content for online distribution and play. Some of this content can only be distributed and played on proprietary devices, such as the broadband-enabled Sony PlayStation, while other content can be played on any non-proprietary device, such as a PC. Conversely, Sony have publicly stated it plans to make its PlayStation consoles capable of downloading and playing music and possibly movies. Sony have yet to announce whether these services will be provided from independent (third party) content aggregators, or only from Sony itself.

Not all examples so amply demonstrate this interplay. For example, owners of Microsoft’s Xbox live games-consoles can access online content from a Microsoft games site only. Similarly, many interactive TV services are controlled by the PayTV operator who owns the set-top-box (STB) and content

Notwithstanding, we believe that as technologies change, consumer tastes shift, and specific markets develop and mature, every content aggregator and user-device manufacturer will need to continually evaluate and alter their content distribution strategies according to these ever shifting market dynamics.

What are the implications for Australian content and applications developers? Overall, we believe the tension and inter-play between the two distribution systems is positive for developers, as it should increase the level of competition for content, as well increase the number of distribution options.

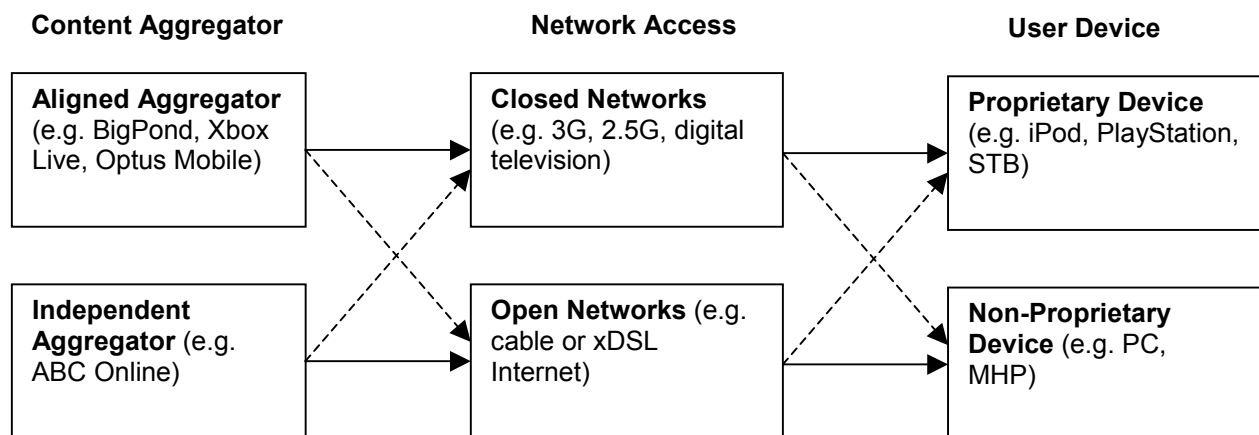
Importantly though, developers will need to continuously monitor these downstream market dynamics when negotiating distribution arrangements, as their interests will not necessarily align with that of the aggregators and user-device manufacturers. For example, if a downstream distributor was initially more focussed on selling user-devices, or network access, rather than content per se (e.g. iTunes original distribution strategy, or with 3G phone networks), then the developer would need to be cautious in agreeing to any 'exclusivity' arrangements, in which the developer wore the risk of content sales volumes.

5.3.2 Broadband Network Access

Despite the innovative and rapidly evolving developments in user-access devices, the bulk of broadband investment has actually been concentrated in the 'Network Access' component of the industry supply chain. Several billions of dollars of capital has already been spent on deploying broadband access infrastructure, such as xDSL networks, HFC cable networks and 3G cellular networks in Australia, with further significant investments likely to follow.

This deployment represents a huge investment by telecommunications service providers, such as Telstra and Optus in their HFC Cable, xDSL, satellite and 2.5G networks, Hutchinson in its 3G network, and many other service providers in their competitive xDSL networks and WiFi networks. Given this massive investment, we expect Network Access players will play a significant role in the distribution of content and applications, not only to maximise their investment returns on broadband access network deployments but also, as mentioned in Section 5.1, to protect their legacy voice and data revenues.

Figure 5.3.2.1 Broadband Content Distribution for various Network Access and User Devices



As illustrated in Figure 5.3.2.1, not all Network Access providers are similarly positioned in the distribution chain. Those that have deployed closed networks¹⁶, such as a 3G network, potentially, possess much stronger market power along the distribution chain – provided they can attract a critical mass of subscribers.

In contrast, an open network, such as a broadband Internet access service, possesses less market power, as the access provider has virtually no technical control over the source of where content and applications are accessed by subscribers. Nevertheless, there are bundling strategies that open network access providers can adopt in order to substantially improve their market power along the distribution chain.

A good example of this strategy is employed by the Telstra BigPond broadband Internet access service. BigPond appears to be progressively moving towards bundling and integrating content with network access by providing BigPond Broadband access subscribers with:

¹⁶ By 'closed network' we mean the network access provider controls the content and applications that can be accessed by its end-users.

- free access to BigPond Broadband content;
- higher download streaming rates for BigPond content; and
- unlimited download limits for downloading BigPond content.

It should be noted that BigPond has not (yet) excluded access to its content for non-BigPond broadband access users, nor has it restricted its own subscribers from accessing third party broadband content. However, the above strategies would certainly sway the incentives towards becoming a BigPond Broadband access subscriber, particularly if the subscriber expected to be continually accessing BigPond's content.

In terms of content expenditures alone, Telstra's BigPond Broadband Service, arguably, represents the most significant aggregation of 'broadband specific' content in Australia. Telstra have reportedly¹⁷, spent \$40m securing the exclusive Internet rights to:

- major sporting events, such as AFL, ARL, Rugby, V8 Super Cars
- major cultural events, such as the Tamworth Country Music festival, and
- over 120 Interactive Games.

Importantly for content and applications developers, BigPond tends to outsource its broadband content development work to a variety of developers, such as Massive, iTV World and specialist games developers.

What are the implications for content and applications developers?

This content and network access bundling strategy, adopted by BigPond, is similar to that adopted internationally by, for example, AOL. It must be remembered, however, that only a few of the very largest broadband ISPs, who need to acquire sufficient market share to generate returns on broadband access network deployments, and defend legacy voice and data revenues, are likely to adopt this relatively expensive strategy. Hence, in Australia, such a bundling strategy may well be largely restricted to BigPond and to the closed network providers, like '3' and Optus Mobile, who are very keen to grow and/or defend market shares. As such, these access providers will form important distribution channels for developers, and it is likely that they will demand exclusivity for content – in order to achieve their goals of differentiating their network access offering.

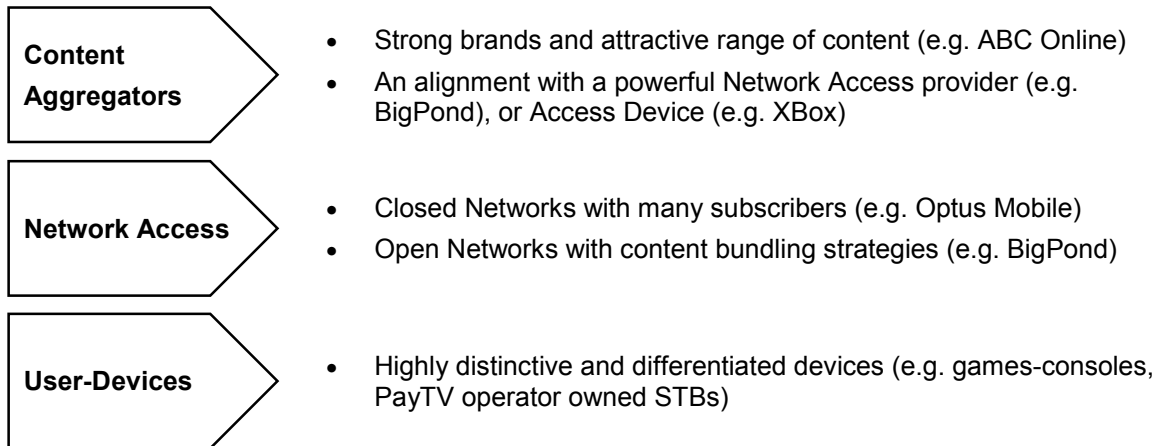
Further, the relationship between access service provider and content supplier is likely be more like that of a PayTV operator and content supplier, in that it is the value of the exclusive content for driving subscriptions, and minimising churn, that is crucial, and not necessarily how often the content is watched, or how useful the application proves to be for end-users.

As mentioned in Section 5.3.1 developers will need to continuously monitor downstream market dynamics when negotiating distribution arrangements, as the interests of aggregators, network access providers and user-device manufacturers will not necessarily align with developers. Indeed, as highlighted in Figure 5.3.3, when one considers the interplay between all three of these downstream distribution players, the market dynamics can become very complex indeed. Notwithstanding, we believe it is possible to identify those distributors with market-power, as outlined in Figure 5.3.2.2.

¹⁷ The Australian Newspaper, October 10, 2003
 Convergent Consulting

Figure 5.3.2.2 Market Power along Distribution Chain

Sources of Distribution Market Power



Notwithstanding the previous discussion on the important and growing role of network access and user-device players in the distribution of content, independent content developers/aggregators exist, who have no linkages to these players.

ABC Online, for instance, has developed a small number of broadband channels, offering video and audio streaming, in an on-demand format. This content is offered on a 'free' and 'open' basis to any broadband user, regardless of their access provider (as presumably expected from a publicly-funded broadcaster). These broadband channels mainly consist of re-purposed ABC television and radio programs, such as the News, Media Watch and Children's shows. The News service, in particular, has been quite popular, with weekly access in June, 2002 at 170,000 (up 500% from the previous year). Given that most content is re-purposed television and radio material, the vast majority of the ABC's broadband content is produced in-house¹⁸.

It is interesting to note that none of the other major media outlets, with well recognised online properties in Australia, such as NineMSN and F2, currently produce significant amounts of broadband content for their sites. In contrast, many other similarly positioned overseas sites, such as BBC Online, CNN and Yahoo! do offer video and audio streaming services (broadband content) which complements their narrowband content. Perhaps this present gap will provide scope for market opportunities in Australia in the near future.

5.3.3 Cross sector Linkages

To date, cross-sector links between different 'vertical industries', such as television, newspapers, online media, games, music, and education have, with some notable exceptions, been relatively uncommon. That is, the available cost and revenue synergies have not been considered large enough to justify either the merging of production and distribution processes (leading to cost savings), or the integration of products (leading to increased revenues). We believe that cross-sector linkages will strengthen with the growth of broadband distribution mediums – due to the greater potential of cost and revenue synergies.

Increased cost synergies

Creating broadband audio-visual works can be a very expensive process. In fact, depending on production quality standards, a broadband production can often be more expensive than film or television production, especially, if interactivity is introduced.

¹⁸ An exception will be the broadband content co-produced with the AFC, under the AFC's \$2 million Broadband Content Development Fund
Convergent Consulting

Given the high costs of directly producing original broadband audio-visual content, commercial producers have two choices.

1. Convert television programs to digital (and perhaps introduce some interactivity). This could be done at a relatively low incremental cost - if the television program was going to be made anyway.
2. Extract sufficient online revenues, through subscriptions, advertising, transactions or cross-selling other products, to cover the cost of original production.

Clearly, the second option is more risky, especially given that television audiences are, generally, an order of magnitude larger than the currently available online broadband audience. This is not to say that all originally produced broadband audio-visual content cannot be made viable but, at this point in time, it is more likely to be used for niche, high-value, purposes, than for general mass market entertainment.

By sharing the production processes with, for example, television, or games production, the incremental costs of broadband content production can be minimised.

A good example of this is the BBC's 'Walking with Beasts' production, which was both a broadcast television series and is available online as a highly interactive broadband experience. Another example, was the American PBS Nova episode "Dying to be Thin", which was made available on demand at the pbs.org web site.

Increased revenue synergies

Interactive broadband content has the potential to complement existing media to drive additional revenues. For example, looking at popular television shows, attracting mass audiences, it could be argued that these shows under-exploit the revenue opportunities that are available to them (i.e. shows are only shown at set times and only exploit one revenue source - advertising). By complementing the television broadcast, with say, a web-site, or online game, it is possible to continue the engagement of the audience between broadcast times and to exploit other revenue sources, such as that available through merchandising or subscriptions. Another advantage of online engagement of audiences is that it is possible to learn more about audience demographics, psychographic, and the like, that may be valuable to advertisers.

Indeed, to date, audiences have demonstrated a great interest in various forms of interactivity provided, including the use of chat-rooms, web-sites and phone-in competitions. Broadband's unique capabilities (e.g. video on demand, rich media experiences etc.), along with the deployment of digital set-to-boxes in both PayTV and free-to-air environments, presents the opportunity to exploit synergies, even further, in new innovative ways.

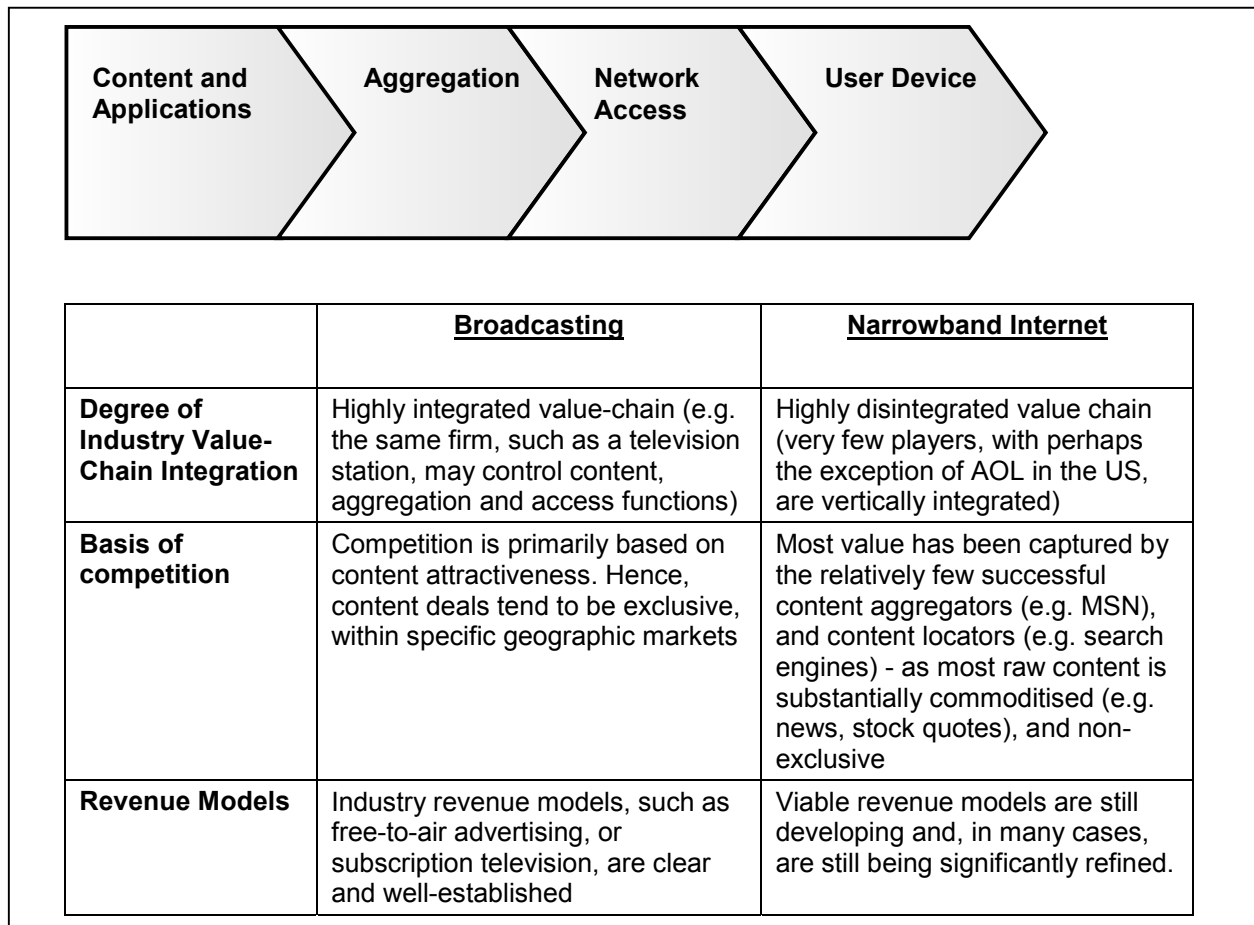
Notwithstanding the above, it must be said that while most industry players agree, in principal, that there are clear benefits to be gained from these cross-sector collaborations, developing the business metrics and building powerful business cases has proved somewhat elusive to date. Much experimentation is being carried out, in particular, in the free-to-air environment by the National Broadcasters in Australia and by the Bell New Media Fund in Canada, and in the PayTV environment by Foxtel and Austar. As will be discussed in Section 7, in order to position themselves for future opportunities, we suggest content and application developers actively participate in this research and development phase of cross-sector collaboration.

5.4 Online Business Models for Broadband

A key issue for many digital content and application developers preparing to exploit broadband distribution systems is how they can establish viable online business models.

As noted in Section 5.1, while the diffusion of broadband access would seem to be inevitably heading towards a critical mass, it still remains a competitive market imperative that commercially viable content and applications distributed via broadband offer a value proposition that is significantly differentiated from existing distribution mediums such as broadcasting, narrowband access and 'bricks and mortar' retail outlets. Figure 5.4.1 outlines some key comparisons between Broadcasting and Narrowband Internet distribution mediums.

Figure 5.4.1: Value Chain Comparisons



Over time, the broadcasting distribution model has proven itself to be a reliable and stable business. Its success stems from the ability of the industry structure to support substantive advertising and subscription revenues. This is partly due to the limited number of channels available in the free-to-air advertising environment, and the limited number of PayTV providers competing in any given territory (i.e. a restricted distribution medium).

In contrast, during the high growth phase of narrowband Internet (i.e. the 'dot com' boom, of the late 1990s) customers became conditioned to expect, at best, their content for 'free' or, at worst, at considerably lower prices than they paid in the offline environment. As a result, there was very little subscription revenue generation. For many organisations, such as financial news services, there was actually an overall reduction in offline (e.g. magazines, news sheets, etc.) subscription revenues, as their customers found more cost effective Internet-based alternatives. The business rationale, at the time, was that content providers had no choice but to follow their traditional offline competitors into the Internet environment, where they would not only be competing against them, but also against a raft of new start-

up 'dot coms'. Pricing pressures became enormous and much content was provided for free, or at substantially discounted prices.

The long term viability of these firms appeared to be based on any, or all, of the following three strategies:

1. replacing subscription revenues with advertising revenues; and/or
2. grabbing such a large market-share that competitors would drop out of the market and some pricing-power would be restored; and/or
3. grabbing such a large market-share that volumes would make up for lower per-unit pricing.

History now tells us that very few 'dot com' firms were successful in executing any of these strategies and many subsequently folded. Advertising dependent businesses (i.e. most dot-coms) were particularly hard hit, as most of the Internet media buyers were themselves Internet-based firms. So once the dot-com bubble bust, up to 80%¹⁹ of advertising revenues were lost, in what became a vicious downward spiral for the industry.

Now that so much industry consolidation has taken place, and more conservative fiscal management practices are in vogue, it would appear that these three strategies are now bearing some fruit, as will be shortly discussed in reference to rebounding advertising and subscription revenues.

Before we do that, it must be said that, identifying specific revenue streams that are currently directly attributable to online broadband content is difficult. To our knowledge there are few, if any, 'stand-alone' broadband content and applications portals in Australia. By stand-alone, we mean broadband content that is not bundled in with access (e.g. BigPond, Optus Mobile, '3'), access devices (e.g. Xbox), narrowband properties (e.g. ABC Online) or e-commerce applications. The propensity to bundle broadband content in this way, makes it very difficult to attribute any specific market revenue estimates for the broadband content itself.

The potential revenue sources in the online environment, available to both narrowband and broadband distribution, are outlined in Figure 5.5.2. Some of these, such as access and referral fees, are reasonably unique to the online environment, while others, such as subscription, advertising, licensing and directory fees, are built on models that are similar to offline industries.

Online Subscription Fees

A number of Australian online properties now charge a subscription fee for access to their online content. These include incumbent media players such as Fairfax (via its subsidiary F2), start-up media players like Crikey.com.au (News and Current Affairs), Yahoo! Personals (matchmaking), Seek (job classifieds) and numerous financial services sites, such as FatProphets (share trading tip sheet).

Very few, if any, verifiable estimates of the size of this market in Australia are available. However, it is possible to make a rough estimate of the Australian market size, based on the figures provided in Table 5.5.3, for the US paid (subscription) content²⁰ market. Assuming Australia has the 70% of the same spend, per person, as the US, then the Australian online subscription market would be in the order of \$60 million p.a.

It is interesting to note that the entire US paid subscription market has an annual growth in the order of 23% p.a. and that niche, but 'high value' content, like business and personal growth are the strongest performers. This is particularly interesting as the survey left out some existing content categories (presumably for ethical reasons), such as pornography and online gambling, that are also known to possess very large online markets. Overall, it would seem that consumers in the US, at least, are increasingly demonstrating a willingness to pay for niche content over the online environment.

Other interesting issues to come out of the Online Publishers Association's 2003 report include:

- the bulk of paid content is through periodical subscriptions (88%), rather than single payment (12%);

¹⁹ Brett Rolfe, DigitalStrategist

²⁰ With regard to Table 5.5.3, we note that the highest value category, Personals/dating, is arguably a classified advertisement. However, these services are generally sold as a subscription and therefore are counted as subscription content under this survey.

- the 23% market growth has predominantly come through increased volume (subscribers), which notably outstrips that of overall Internet subscriber growth (8%); and
- 26% of the online population is engaged in e-commerce, while only 11% in paid content. Thus, there appears to be significant latent potential to convert additional consumers to paid-content.

Table 5.5.3: US Market Spending for Online Paid Content²¹ (\$US millions)

	2002	2003	Growth Rate
Personals/dating	121	214	77%
Business content/investment	139	168	21%
Entertainment/lifestyles	110	102	-7%
Research	50	47	-6%
Community-made directories	44	46	5%
Personal growth	21	46	119%
General news	35	39	11%
Games	36	35	-3%
Credit help	21	20	-5%
Greeting cards	18	19	6%
Sport	14	14.5	4%
Total	609	748	23%

Source: Online Publishers Association

As indicated in Section 5, broadband subscribers are more inclined to purchase goods and services online than their narrowband counterparts. Hence, at least in part, it can be concluded that this recent rapid growth in subscription revenues in the US is due to the recent rises in broadband take-up.

In our view, the advantages of broadband distribution over the narrowband and broadcasting mediums is strongest in the area of subscriptions. Broadcasting suffers from the inability to provide content on-demand and is limited in its ability to provide unlimited 'niche' content channels. On the other hand, narrowband services are slow and suffer from intense competition, that both drags down pricing-power and the quality of content offered. Further, the competitive nature of narrowband portals has revolved around aggregating the widest possible range non-exclusive content (e.g. stock quotes, news, etc), rather than on offering exclusive content per se.

This leads us to conclude that there is an opportunity for broadband distributed content to re-position itself in the minds consumers. This would be achieved by subscription offerings that focus on exclusive, and high-quality content, appealing to niche audiences, not well served by broadcasting or narrowband.

Advertising, Classifieds and Directory/Search Fees

The Audit Bureau of Circulations estimates that the online advertising market in Australia was worth around \$198m, as of June 30, 2003, and was growing at an impressive 30% p.a. This total was shared between General Advertising (\$71m), Classifieds Advertising (\$77m), and Search and Directories (\$60.0 m).

Despite the recent rapid growth, this A\$198m figure still only represents around 1% of the total Australian advertising market. By contrast, in the USA online advertisers have captured 3% of that market. In speaking with representatives from the online advertising industry, the failure to set industry-wide metrics, value-propositions and standard units of transaction has caused considerable market confusion and retarded market growth. Specifically:

- the chosen industry metrics (e.g. click throughs, and page views) used to measure the success of online branding initiatives are inadequate. By contrast, would the success of a TV based branding campaign be solely based on the number of people who were watching the program it was slotted into?
- Online advertising offers a confusing and complex array of product choices (refer Figure 5.5.2), compared with say 30 second television advertising slots or quarter page newspaper advertisements.

²¹ Excludes Pornography, gambling, software downloads and illegal activities
Convergent Consulting

- there is a poor understanding amongst traditional advertising firms and their clients about the power of online advertising, and where it can best fit into entire branding and direct marketing campaigns; and
- conflicting messages are being sent by the online industry about the advantages of the Internet as direct marketing medium, branding medium and sales channel.

In their view, to get Australia's spend rate up from 1% to over 3% in the medium term, these issues must be addressed by the entire online industry.

It will be important that broadband-based advertising not fall into the same position. In fact, it would seem an imperative that the industry not only addresses the above issues, but also ensure that broadband advertising is clearly differentiated from narrowband.

Figure 5.5.2 Online Consumer Generated Revenue Sources

	<u>Description</u>	<u>Examples</u>
Subscription	Periodical, or one-off, fees paid to access content and applications by end-users	<ul style="list-style-type: none"> • Yearly access fees (e.g. Economist Online) • Single transaction for video, or audio (e.g. iTunes)
Brand Advertising	Fees paid to an online media property by a third party for placing an advertisement on the property. Could also include advertorials.	<ul style="list-style-type: none"> • Placement • Sponsorship • Slotting • Pop-up (interstitial)
Classified Advertising	Fees paid to an online media property, or a dedicated classified site	<ul style="list-style-type: none"> • Listing fees on eBay or Seek
Search and Directory Advertising	A fee paid to a search engine, or a directory service to list	<ul style="list-style-type: none"> • Sponsored sites generated by a keyword search on Google
Licencing (copyright sales)	A fee paid to distribute or re-sell content to third parties	<ul style="list-style-type: none"> • On-line record shop royalty payments to artists and/or copyright owners
Referral and transactional	Fees paid to an online media property by a third party for referring customers and/or successfully converting customers	<ul style="list-style-type: none"> • Click-through charges • Sales conversion charges
Online/Offline Cross Subsidisation	Revenue is generated indirectly through a bundled offline subscription, or service	<ul style="list-style-type: none"> • Stockbroking sites offering free online content to regular traders • Media outlets offering bundled offline and online content (e.g. AFR)

In summary, rival narrowband and broadcasting mediums will provide intense competition for most potential revenue sources. While broadband distribution will be able to address a range of revenue sources, subscription revenues will be the 'sweet spot', as this is an area where it provides its strongest competitive advantages over narrowband and broadcasting mediums.

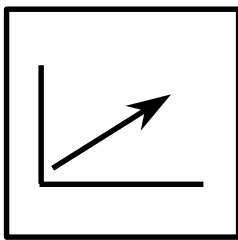
Online subscription and advertising revenues are rapidly recovering from a cyclical downturn, synchronising nicely with broadband take-up. This provides a good opportunity for broadband distribution

firms to establish themselves and re-position themselves away from the 'perception' problems of the narrowband subscription and advertising markets.

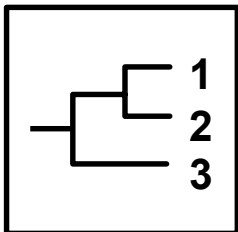
6 Perspectives on the Future and Understanding Uncertainty

6.1 Uncertainty Framework

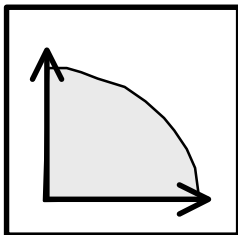
It is tempting, when conducting an industry analysis such as this, to begin forming perspectives as to future market structures and dynamics. However, in this embryonic and evolving industry, no-one can predict, with any certainty, the exact nature of the future market environment. It is more likely, therefore, that successful firm and industry level strategies will evolve out of a collection of progressive initiatives that are based on a sound understanding of inherent market risks and uncertainties. As a consequence, we propose to take the key issues that have evolved from the previous analysis and put them into the context of an uncertainty framework²², described by the four possible development paths below.



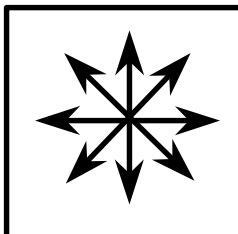
A clear future. The analysis can develop a single view of the future. There may still be some uncertainty, but the industry trends and developments are obvious enough to allow for a single strategic direction. For example, the continued take-up of broadband by businesses and residential subscribers is assured, despite some uncertainties about the pace of this take-up.



Alternative futures. The future will consist of one of a small number of discrete scenarios, but one that cannot be predicted with certainty. For example, whether a games console manufacturer such as Sony or Microsoft, opt to monopolise the distribution of online games, or whether each completely leaves the task to existing publishers.



A range of futures. There are a few dimensions of uncertainty, but the analysis cannot reduce the future to discrete scenarios. It will lie anywhere along a continuum for each dimension. For example, many new device technologies, such as 3G, games-consoles and digital TV face uncertainty over the rate of acceptance in the market. However, we know that each will develop at least some market share and influence.



True ambiguity. There are multiple dimensions of continuous uncertainty. For example, an independent multimedia developer deciding whether to invest in a broadband content title faces multiple dimensions of continuous uncertainty. In addition to the usual degree of uncertainty about demand, the company faces uncertainty about whether powerful incumbent distributors will purchase and promote the title, and whether it can successfully protect its copyright using the Internet as a distribution medium.

²² Adapted from McKinsey and Company
Convergent Consulting

6.2 Perspectives on the Future

In summarising the data provided in Section 5, we believe that several market shaping drivers will result from the developments highlighted. These drivers will be instrumental in determining the future opportunities for digital content and applications developers operating in the broadband environment and are highlighted as follows:

Broadband will be utilised as an important distribution channel for existing digital content and applications, driven by:

- the rapid diffusion of broadband network access (a clear future);
- the rapid diffusion of read/write storage within consumer access devices, such as MP3 players and PVRs (a clear future);
- the benefits of interactive online purchasing tools, such as search, find and compare tools (a clear future);
- the 'efficiency dividends' gained in bypassing offline distribution channels (a range of futures); and
- the opportunity to further exploit copyright assets in new innovative ways (true ambiguity).

Broadband content and applications will be packaged and/or bundled with other services, driven by:

- the need to overcome the shortcomings of existing online business models that have previously failed to capture adequate returns on investment (a clear future);
- the use of 'walled gardens' of exclusive content and applications by access providers (e.g. BigPond, Optus Mobile) to assist them in differentiating their offerings, grow average revenue per subscriber (ARPU), reduce churn and defend the potential loss of legacy communications revenues (a range of futures);
- the deployment of broadband distribution products that technically require the integration of content, network access, and/or user-devices, to provide a single end-to-end solution, such as iTunes, personal video recorders (PVRs) and interactive TV (a range of futures); and
- the convenience of a single relationship for billing and customer service (a range of futures);

Broadband content and applications production will stimulate significant cross-sector linkages, driven by:

- the synergies available in sharing production costs for content distributed across a range of broadband platforms such as digital TV and 3G (a range of futures);
- the synergies and enhancements available in sharing established iconic brands, characters and plots across distribution platforms such as Walking with Beasts and Disney (true ambiguity); and
- convergence in user-device technologies that blur the boundaries between traditional distribution mediums such as television, radio, Internet and CD sales (a range of futures);

Broadband will stimulate the development of new content and applications 'products' for the consumer and business markets, driven by:

- the technical capabilities of broadband, such as interactivity and always-on (a clear future);
- latent consumer demand for interactivity and greater choices, such as anywhere, anytime, anything type access (a range of futures); and
- the diffusion of advanced user-devices, with technical capabilities approaching that of a PC, and the ability to perform multiple functions (a clear future).

Broadband will stimulate the development of new content and applications ‘solutions’ for the business market, driven by:

- the technical capabilities of broadband, such as interactivity and always-on (a clear future);
- the ‘next wave’ of productivity and transformational gains that will be available once businesses complete the ‘first wave’ of connectivity-induced gains (true ambiguity);
- the need to find sustainable competitive advantages that are not so easily duplicated by competitors (true ambiguity)..

These drivers essentially define the major opportunity areas for content and applications developers, as outlined in Figure 6.1.1.

Figure 6.1.1 Major Opportunity Areas

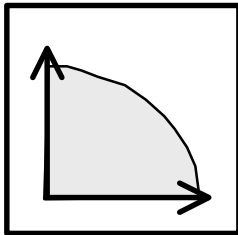
	<u>Description</u>	<u>Examples</u>
New Distribution channels for existing products	Broadband used to provide an alternative distribution channel with more functionality and/or lower costs than offline equivalents	<ul style="list-style-type: none"> • Direct music and video download sites • BigPond’s online AFL, ARL, Rugby coverage
New Packaged and Bundled Product Offerings	Broadband facilitates the bundling and/or integration of content, network access and user-devices	<ul style="list-style-type: none"> • Bundled access & content (e.g. ‘3’, BigPond) • Bundled devices and content (e.g. Xbox Online, TiVO)
New synergistic cross-sector linkages	The revenue and cost synergies between online broadband content and other sectors such as TV, Film and Games will drive new linkages	<ul style="list-style-type: none"> • TV show web-sites (e.g. Walking with Beasts) • Simultaneous Film and Game production and releases (e.g. The Matrix)
New products	Broadband’s functional capabilities, such as always-on, enable a new range of products	<ul style="list-style-type: none"> • Online multi-player games • IP telephony • Video-conferencing
New solutions driving productivity and transforming existing industries	Broadband enables existing industries to fundamentally transform existing business models and processes	<ul style="list-style-type: none"> • e-Education • Online financial services • e-Health • online advertising

New distribution channels for existing products

Much like how narrowband Internet became a significant distribution channel for the music industry, we expect that the additional bandwidth and functionality of broadband will encourage the use of broadband as distribution medium for 'media rich' content, such as audio-visual material, and software applications.

It cannot be taken for granted that the migration to broadband distribution will simply be a matter of substituting one form of media distribution (e.g. CDs and DVDs) for another (broadband downloads). Just as narrowband Internet distribution spawned new standards, technologies and market-packages (e.g. MP3 file formats and online record stores selling new types of licencing rights to the music), a broadband distribution channel may similarly effect the way content is packaged and sold. For instance, business application software may sometimes be distributed by an Application Service Provider (ASP) on a monthly rental basis, rather than through the traditional method of a once-off license fee, followed by the intermittent sale of upgrade packages. As another example, instead of renting an overnight video from the local video-store, consumers may end up purchasing the 'right' to download an MPEG-4²³ video file, directly through their broadband connection. This 'right', in turn, might be configured to enable consumers to play it once only on their PVR, at any time they so choose, or as often as they like (presumably at a higher cost).

In essence, the shift to broadband distribution will be a complex and multi-faceted development, that may often affect how content and applications are packaged and sold. Further, this development will not occur in isolation, as there will be competitive responses from existing distribution channels, who will need to adjust their value-proposition in order to remain competitive with broadband distribution offerings. For example, the local video store may begin offering 'home delivery' and online catalogue services.



In sum, we expect a range of futures will exist. We expect that broadband distribution, along with the re-packaging of the way content rights are sold, will appeal to certain market segments, while other market segments will remain satisfied with existing distribution channels and/or their competitive response to broadband-enabled offerings.

While we expect that these new distribution channels will be slowly and incrementally taken up by consumers over the next 5-10 years, the highly leveraged nature of these business models will mean that the 'first movers' who make the necessary investments in brands, infrastructure and copyright assets over the next 0-3 years will possess a significant competitive advantage over those firms entering the market after this time.

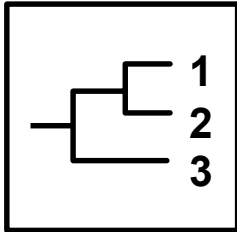
New Packaged and Bundled Product Offerings

As highlighted in Section 5.3, the distribution chain for digital content and applications will be highly integrated. Thus the inter-dependencies between content suppliers, aggregators, access providers and device manufacturers will be much more significant than that in the narrowband environment. As discussed, the commercial interests of the different players along the distribution chain may not necessarily align, and will be constantly evolving, as new technologies and competitive market pressures come to light.

For example, we can foresee that once market shares between competing broadband access providers are established, and the access provider industry consolidates, that providers, such as BigPond and '3', may well look to more aggressively extract commercial returns from the content they currently provide 'free' to their access subscribers (but pay for themselves). This will result in a discrete shift in the supply arrangements that access providers possess with content providers and aggregators. For instance, it is possible that the buyer-supplier relationship may completely reverse, so that access providers will move out of buying and aggregating content themselves and, instead, charge third party content aggregators for

²³ A compressed file format standard developed by the Motion Pictures Expert Group (MPEG)
Convergent Consulting

the carriage of data across their access networks. Content and applications developers will need to monitor these trends.



We expect that there will be discrete ‘alternative futures’ for various types of packaged and bundled offerings. These futures include:

1. Bundled content and access (e.g. ‘3’)
2. Unbundled content (e.g. ABC Online, F2)
3. Bundled content and device (e.g. Xbox live)
4. Bundled content, access and device (e.g. interactive TV)

More so than any other of the opportunity areas identified, these packaged and bundled offerings are very much a part of the current competitive landscape. Hence, content and applications providers, at the outset of any new broadband development, should be considering which of the above four scenarios describes the way their products will be bundled and distributed to end-users. This consideration should then be integrated into current product development and partnering strategies.

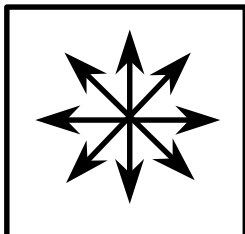
New synergistic cross-sector linkages

To take advantage of the revenue and cost synergies available, digital content and applications developers will need to develop relationships with firms from adjacent industries, such as television, film, and post-production.

These relationships currently have few precedents, or established engagement rules. This is largely because the nature of digital content and applications products, such as TV show web-sites, are still embryonic in their development and their commercial benefits are unclear. As a result, many large media players have opted to keep their the production and ownership of this type of digital content development in-house, so that they can maintain closer control of its development, and not risk losing valuable IP to third party sources.

Therefore a major challenge for the digital content and applications industry is to establish a ‘market framework’ that supports the outsourced production, and IP exploitation, of digital content produced under cross-sector collaboration. As an example of how this process has worked previously, we note the entertainment industry has developed a ‘market framework’ for the outsourcing of film and television production and in establishing a ‘chain of rights’ to exploit the copyright associated with this content. Importantly, under this framework, there are clearly defined transactions between all participants (e.g. producers, distributors, creative talent, etc.). So, by and large, the key inputs, outputs, roles, pricing signals and investment risk profiles are well understood by market participants.

Further complicating the establishment of cross-sector relationships is how to determine the value each party brings to the relationship. For instance, what is the value of the contribution of a TV character, or brand, in the development of an interactive game? Further, what metrics should be used to measure the success of a TV show web-site in providing a benefit to the show’s audience, or broadcaster?



We believe that ambiguity will exist for cross-sector linkages for some time. Many issues, such as ways of valuing contributions, developing appropriate metrics to measure outcomes and establishing market frameworks will need to be resolved. Further, these issues are not mutually independent, and will affect each other as each takes shape. To deal with this ambiguity, digital content and applications firms will need to move away from their usual modus operandi of fee for service work and, instead, work on developing co-dependent systems and collaborative relationships, as described in Section 7.

Given the ambiguities involved with this opportunity, we believe it is likely to take some years (at least 3-5) before most serious commercial opportunities are likely to arise for content and applications developers. Notwithstanding, it will be crucial for developers to begin taking ‘small bets’ on opportunities and partnerships as soon as possible. These small bets will provide important chances to experiment with different business models, and to gain the necessary expertise and knowledge required to make appropriate business decisions, once the serious commercial opportunities materialise in the market.

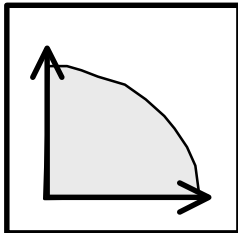
New products

Broadband's capabilities, such as extra speed, always-on, and interactivity will enable a new range of products to be developed. A good example of this type of new product is the massive multi-player online game (MMPOG) reviewed in Appendix A.1. Another example is video-conferencing applications used in the education and training environment.

A significant challenge for developing new products in the broadband environment, will be dealing with the highly inter-dependent distribution chain. Few products can be developed by content developers working in isolation. Instead, developers will need to work closely with aggregators, access providers and/or user-device manufacturers in order to exploit the full technical and commercial capabilities of broadband. For example, in developing MMPOGs developers need to work closely with console manufacturers and online aggregators who perform distribution, customer care and billing functions.

Another challenge will be managing the high risks associated with developing new broadband products. This is not only as a result of having to manage the high level of distribution chain inter-dependence, but also because of:

- the high costs of developing broadband product;
- the uncertainty about user demand for various new products; and
- the potential of these new broadband products to cannibalise existing products (e.g. telephony and stand-alone games).



In sum, we expect that a range of futures will exist. We expect that many new broadband products will be successful and will co-exist with existing narrowband and offline products. For example, we expect that online broadband games will co-exist with stand-alone console games and online (narrowband) games; each appealing to different market niches.

In terms of timing, the number and type of commercial opportunities arising is likely to be closely linked with the take-up of broadband access by the consumer and business markets (i.e. the addressable market), and with the maturity and sophistication of customer needs and wants.

In this sense, entry timing into market will be crucial. Going to the market too early with an overly sophisticated broadband product requiring mass market take-up, to deliver the necessary returns on investment, will meet with likely failure. On the other hand, going to market late with an inferior, or 'me too' product may also be equally problematic.

Overall, to successfully exploit and time these new product opportunities developers will need to develop a great deal of market insight and foresight, as described in Section 7.

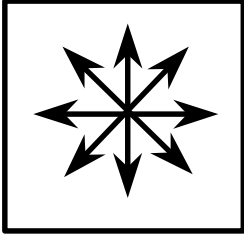
New solutions driving productivity and transforming existing industries

Broadband will enable existing industries, such as health, education and financial services, to improve their productivity and fundamentally transform existing business models and processes.

As described in Section 5.2, ICT investments that drive productivity improvements have proven to be the 'low hanging fruit' for most companies. Few companies, however, can derive permanent competitive advantages from these improvements, as most ICT applications tend to be universally available and adaptable to most companies needs.

Broadband offers the prospect of more sophisticated applications, such as 'just in time' learning, knowledge management and sales support tools. These applications will be more tailored towards specific industry and company needs. They will also require companies to transform their existing work processes and potentially their overall business models. For instance, the education and training case-study, in Appendix A.2, provides an example of how online schools curriculum is being used to re-shape traditional educational processes.

To drive these transformational changes a great deal of collaboration between a content and applications development firms, industry based companies, IT suppliers, access providers and so on will be required. Development risks will be high, and much patience and persistence will be required.



To deal with this ambiguity, digital content and applications firms will need to move away from their usual modus operandi of 'arms length' fee for service work, and, instead, work on developing co-dependent systems and collaborative relationships, as described in Section 7.

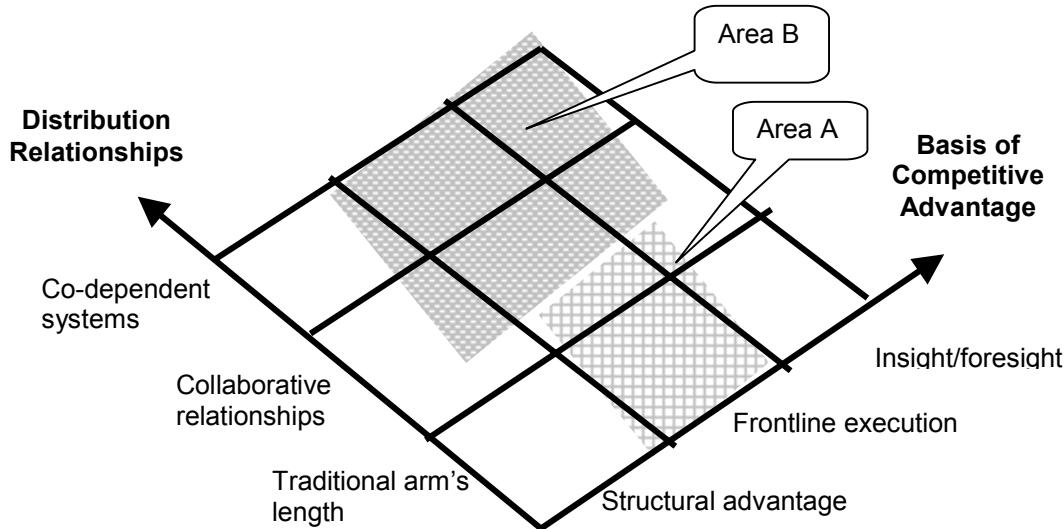
Given the ambiguities involved with this opportunity, we believe it is likely to take a few years before major commercial opportunities are likely to arise for content and applications developers. Notwithstanding, as with the 'cross sector linkage' opportunities, it will be crucial for developers to begin taking 'small bets' on opportunities and partnerships as soon as possible. These small bets will allow developers to begin establishing collaborative partnerships and to develop the expertise and intellectual property required to successfully address these complex and challenging transformational opportunities.

7 Industry and Firm Level Strategies

7.1 Strategy Framework

Figure 7.1.1, illustrates the two key factors used to determine the basis by which firms compete in the digital content and applications industry and suggests adjustments that firms and industries will have to make in response to the implementation of broadband platforms.

Figure 7.1.1: Distribution Relationships and Basis of Competitive Advantage



1. Distribution Relationships

Traditional arm's length model: This is the traditional transactional model characterised by competitive firms competing to supply a well-defined service scope. Firms usually compete on the basis of price for what is a reasonably well commoditised service. A typical example, is the competitive open tender process run by Hollywood film producers for components of film-post-production work.

Collaborative relationship model: Under this model, firms treat some firms differently than they do other firms in the same market. For instance, a relationship may develop due the unusual trust required to overcome the high transaction costs and risks, inherent in inter-firm relationships. A typical example, might be the advanced commissioning of a creative output, such as an interactive game, or the co-development new speculative product, such as a corporate e-learning system.

Co-dependent systems: These are cross-industry structures, such as alliances, networks, and economic webs in which independent companies deliver distinct elements of a complex unbundled value package, based on a common set of industry-wide organising business principles. A typical example is the PC software and hardware industry, in which any one firm can produce products that are compatible with, and dependent upon, another firms products. The console-based interactive games sector is another example.

2. Basis of Competitive Advantage

Structural advantage. Structural sources of advantage are usually entry barriers, such as infrastructure investments and access to limited resources. For example, , the interactive television company, Open TV, possesses the exclusive right to exploit the Sky Pay TV platform in the UK.

Frontline execution. Companies in some industries are able to successfully compete by consistently outperforming competitors in the execution of typical business activities. For example, through superior project management skills and processes, good digital animation firms consistently deliver productions on time and to budget.

Insight/foresight. Some firms successfully compete by developing or possessing knowledge or insights that others do not have. The knowledge may lie with technical expertise, insights, or creativity. Innovative interactive games developers and digital video arts producers are typical examples.

7.2 Strategy Development

The shaded area A, in Figure 7.1.1 conceptually represents the current modus operandi of most Australian digital content and applications firms. We base this view on the fact that most firms have been engaged on an traditional arms length basis (i.e. they have been highly reliant on project-based, fee-for-service development work). In varying degrees, some firms have also developed collaborative relationships. This has been often been achieved through the decision to specialise in a particular industry (e.g. e-education), which has resulted in the firm gaining the trust and respect of industry publishers and distributors.

In terms of the Competitive Advantage axis, Australian firms have not traditionally possessed many structural advantages. (In fact, often downstream distributors have used their structural advantages to improve their pricing power with developer firms.) Typically, most firms have relied upon excellence in frontline execution, and to a lesser extent industry insight/foresight to compete.

7.2.1 Building New Distribution Relationships

Our view is that, with the diffusion of broadband distribution systems, Australian firms will need to migrate from an arms-length relationships to co-dependent systems or collaborative relationships. Broadly, we base this view on our expectation that, compared with narrowband, there will be:

- greater levels of inter-dependency along the distribution chain;
- more complex product and solution development risks and uncertainties to be overcome;
- greater levels of cross-sector linkages; and
- larger scale projects to manage.

Developing co-dependent systems

The development of a co-dependent system is highly contingent on there being well-established business rules and technical standards that allow firms to carry out their business with a high level of certainty, such that their outputs and processes are compatible with other firms. For example, for there to be a competitive and innovative interactive TV industry in Australia, broadcasters, set-top-box manufacturers, and middle-ware firms will need to agree on industry-wide technical standards. They might also need to develop business rules on issues such as how a common electronic program guide (EPG) will work, and how third parties (i.e. non-broadcasters) will be able directly interface with the interactive TV system and so on.

Outside the communications and entertainment sector, companies from established industries such as education, finance and health will also be looking to use broadband to improve productivity and drive through transformational change. It is noteworthy, however, that these firms have traditionally relied upon structural advantages to compete, and thus possess little experience in developing co-dependent relationships.

A useful question to ponder is where will the leadership come from to drive the necessary industry collaboration required to set technical standards and business rules? This task usually needs to be set at an industry level and can be achieved formally through regulation or, more normally, through industry participants forming working groups and industry bodies to work through the issues.

An example, of what appears to be a successful co-dependent system, in an established industry, is 'The Learning Federation' (TLF) case study contained in Appendix A.2. TLF gained the necessary industry mandate to set the technical and educational standards required to develop a well-informed marketplace for the development of online curriculum resources. As a result, digital content firms now possess the necessary information to go about their development tasks, while the user market (schools) can progress their purchasing in the confidence that their digital curriculum content is compatible and supported across the entire Australia and NZ schools sector.

Alternatively, an example of a less successful co-dependent system is the online advertising industry overviewed in Section 5.4. Here the failure to set industry-wide metrics, value-propositions and standard units of transaction has caused considerable market confusion.

To achieve a co-dependent system, developer firms should be looking at innovative ways to create industry standards and business rules, for the deployment of broadband content and applications, within their target markets. This can be achieved through many mechanisms, including championing likely sources of industry leadership, collaborating with each other, and by developing in-depth knowledge of the industries firms wish to serve.

As a final point, it should be noted that the development of co-dependent systems will not be possible for many industry sectors as it may just prove too problematic to gain agreement on industry-wide standards and business rules.

Developing Collaborative Relationships

Historically, many Australian content and applications firms have developed collaborative relationships with their major customers/publishers operating within specific industry verticals, such as games and e-health (Although, judging by the absence of developer pricing power we would argue that the strength of these collaborative relationships are, in general, relatively weak).

To improve the 'strength' of relationships, in the broadband environment, developer firms need to evolve the value of their offerings. We have suggested a few ways of achieving this in Section 7.2.2., such as through process ownership and in delivering greater industry foresight. Developer firms will also need to expand the 'breadth' of their relationship partners to include other players in the distribution chain, such as access providers and device manufacturers.

Firms will also need to consider ways of increasing their risk-sharing potential with partners. This does not necessarily mean funding development costs directly, but it might mean contributing in-kind resources towards product and solution development.

The formation of successful collaborative relationships is largely dependent on firms:

- bringing equal, but complementary value to a partnership;
- sharing the same vision for the partnership; and
- sharing similar tolerances in project risk.

This tends to happen more cogently when firms are of a similar size, and/or stem from quite different industries. For example, in discussions with Telstra regarding the more successful consortiums operating within their Broadband Development Fund, it was suggested that consortiums consisting of a specialist in an industry vertical (e.g. tourism, health, etc), coupled with a firm possessing creative content and application skills, often proved to be a powerful and effective combination.

7.2.2 Building New Competitive Advantages

Firms will have the choice to develop a wider range of advantages, than in the narrowband environment.

Structural Advantages

Broadband will provide firms with the opportunity to establish new forms of structural advantage, such as:

- Collaborative Infrastructure Ownership. Broadband distribution will require new forms infrastructure, such as the establishment of central data vaults, designed for the digital storage and manipulation of film and television programs undergoing post-production work, or the deployment of online games servers and associated billing systems. These investments should provide first movers, who establish good market share, a distinct structural advantage in the marketplace.
- Process Ownership. Broadband distribution will see the emergence of industry players (e.g. access providers) who are typically not experienced, or interested, in aggregating and managing content as

part of the core business activities. This will provide the opportunity for firms to 'move up' the value-chain from 'just producing content', into actually owning a business process that they manage on behalf of clients. Good existing examples include SportAll (which manages sport web sites on behalf of a number of third parties) and ITV World (which manages much of BigPond's broadband entertainment content).

Industry Foresight/Insight

The risky process of developing new broadband products and solutions will require significant industry foresight and insight. As previously discussed, this development task is likely to be achieved through collaborative partnerships within specific industry verticals, or with the various players along the broadband distribution chain.

While content and applications firms may not be financially positioned to take on the costs and risks associated with the development, they can still add value by providing expertise to these collaborative partnerships. This foresight/insight provided might include local market knowledge that allows the firm to anticipate demand for new products, or specific technical knowledge that allows the firm to provide important views as to the future market dynamics and competitiveness.

Such a shift, in the way a firm competes, is likely to mean a migration from being solely a content and applications development firm to, also, being a consulting and professional services firm.

Frontline Execution

We expect that firms will need to refresh their frontline execution skills in order to maintain a competitive advantage in broadband. The skills will include the ability to:

- manage the large projects and budgets associated with broadband content production;
- develop practical ways of flexibly exploiting and managing copyright assets;
- develop and manage cross-sector linkages; and
- develop and manage new sources of revenue including, annuities, subscriptions and advertising.

Conclusion

It should be noted that in this section we have been making generalisations, about strategic development, on a macro industry level basis. At a firm (or business unit) level, however, there is a need to ensure competitive strategies are developed around a single basis of competitive advantage and single distribution relationship preference. In particular, in the broadband environment, we would caution developer firms from attempting to be 'all things to all people' (as may have been the tendency in narrowband), and to, instead, focus on where they best add value and possess sustainable competitive advantages. Gaps in capabilities should be addressed through partnering and co-operation with other firms.

As an overall summary, in developing competitive strategies, firms need to identify the opportunity area(s) they wish to pursue, as outlined in Section 6, along with the basis of competitive advantage and distribution relationship that best fits with the existing capabilities of the firm. This process is unlikely to be a linear development and may take many months, or even years, to refine as it passes through various iterations and responses to unfolding market developments.

Appendix A: Sector Specific Case Studies

We have chosen to highlight two specific segments within the digital content and applications industry: 'Interactive Games' and 'Education and Training'. One reason we have chosen to review these two sectors is that they collectively provide a good demonstration of the broadband opportunity areas identified in Section 6 as cross-referenced in Table A.1.1 below.

Table A.1.1 Broadband Opportunity Areas vs. Sector-Specific Opportunities

	<u>Interactive Games</u>	<u>Education and Training</u>
New Distribution channels for existing products	✓	✓
New Packaged and Bundled Product Offerings	✓	✓
New synergistic cross-sector linkages	✓	✓ ²⁴
New products	✓	✓
New solutions driving productivity and transforming existing industries	✓	✓

The vibrant interactive games sector provides an excellent example of a rapidly growing and highly competitive industry undergoing substantial change. This change is, in part, due to the introduction of broadband distribution systems that enable a whole new range of games (e.g. multi-player) and platforms (e.g. broadband-consoles, wireless and interactive TV) for playing games.

In contrast, the education and training sector provides an example of a fairly traditional and stable industry, which in particular, stands to gain from tremendous transformational and productivity improvements through the introduction of innovative digital content and applications.

²⁴ The case study does not specifically highlight opportunities although we foresee areas of collaboration with the games sector (e.g. educational games) and television (e.g. making documentaries interactive and available over the Internet)

Appendix A.1 Interactive Games

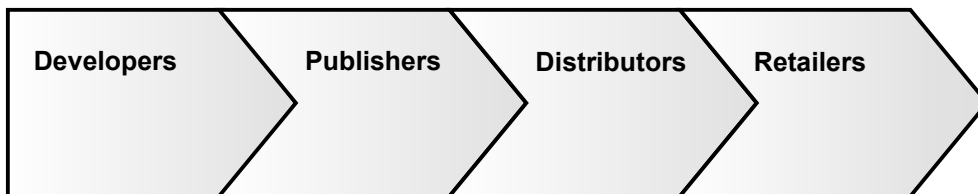
Industry Background

Interactive gaming is a very large and rapidly growing industry. It is estimated that the annual global turn over in 2000 was \$US31 billion, while annual growth has exceeded 20%, over the last five years. Around 70% of these revenues is attributable to the console sector, with PC based games making up the bulk of the remaining revenue. In the future, however, it is expected that Internet based games, mobile (e.g. cellular phone) games, and interactive television will also play a significant role in market growth.

The console sector is dominated by the Sony Playstation, Microsoft Xbox and Nintendo hardware platforms. These consoles tend to be sold below cost, by the manufacturers, in order to lower the entry costs and barriers for customers. Most industry revenues, and profits, actually flow from the sale of games titles, and from the license fees console manufacturers charge publishers.

The games industry possesses a relatively unique structure, although it has quite a lot in common with other copyright industries such as publishing and film distribution.

Figure A.1.1: Simplified Game Industry Value Chain



Developers: Games developers are responsible for the production of a game. This process, can vary from just one or two programmers working on a project for a few months, to a two year project involving teams of 15-50 specialised designers, programmers, artists, musicians, scriptwriters, project managers and actors.

Independent development work makes up the vast majority of the Australian industry sector revenues. Games developers generally work on a fee-for-service basis and therefore rarely own the intellectual property rights for fully developed games²⁵. Hence, in Australia, 95% of revenues are based on fee-for-service arrangement with publishers.

There are hundreds of independent developers around the world competing for development work. According to the industry association, Games Developers Association of Australia (GDAA), Australia possesses around 40 companies, employing 600 people. These companies have enjoyed a good deal of success and have developed over 200 internationally published games. The Australian developers have gained an international reputation for being creative, and delivering on time with relatively low production costs. Some of the larger Australian-based firms include Krome, Atari, Ratbag, MicroForte, Auran and Blue Tongue.

Publishers: Publishers are responsible for commissioning games titles, either from independent developers or from in-house teams, funding their development and overseeing or terminating production.

The publisher may invest in original IP, based on a prototype presented by a developer. For an Australian developer to produce an original prototype which is of a high enough quality for a publisher to consider, an investment of anywhere between \$A500,000 – 1 million²⁶ is required.

Most publishers are based in the USA, Japan and Europe. Much like film producers, publishers require significant financial backing, must be well connected to distribution networks, and need to be able to spot a 'hit' when they see one.

²⁵ However, developers may invest significantly in building 'prototypes' for publishers, in order to get further development funding

²⁶ GDAA

Distributors: Intermediaries between publishers and retailers. Most publishers have both functions.

Retailers: Retail stores are the most common channel for game sales. There is some discussion of online retail and delivery of games but physical delivery of product by way of CD or DVD is expected to be the most common form of delivery for the foreseeable future

Major industry trends

- **The games industry is, increasingly, becoming 'hits' driven.** Much like the movie industry, most revenues in the games industry are generated by the top few percent of games titles. Furthermore, most of the sales occur in the first 3 months of the game's shelf life. While this feature of the industry has existed for some time, it is clearly a trend that continues to gain momentum.
- **The cost of games development is skyrocketing.** The advancements in console technology, processing power and vastly increased storage capacities of the optical media now used, are enabling the development of increasingly complex gameplay and large quantities of realistic graphics. Games are becoming more lavish and cinematic, setting a standard which consumers are now beginning to expect. Whilst this increases the potential for computer games to appeal to the mass market, the resources required to produce games with such high production values has significantly increased. Costs in the order of \$30m are not unheard of.

Suffice to say, the combined effect of both these trends is leading to the consolidation of publishers and developers, as players who are under-resourced, and/or lack manufacturing (production) scale, exit from the market.

- **Massively multi-player online games (MMPOG).** These new, predominantly PC-based games, such as Everquest and Ultima Online, have gained millions of followers world-wide. At any one time there may be up to 500,000 active players participating in these games (although not all online at the same time). These games also represent a new revenue model for the industry, as players not only pay an upfront license fee, but also an ongoing monthly subscription charge. Most of the games are playable using narrowband connections via the PC, although, in places like South Korea, broadband-based MMPOGs are common. Also, quite recently, console manufacturers have announced plans to offer these games through their consoles.

Broadband Opportunities and Threats

It is probably not overly dramatic to say that broadband will pose one of the greatest disruptive forces to be experienced by the games industry. As outlined in Figure A.1.2, the games sector will potentially be affected across all four areas identified in the previous section.

At the centre of this change are the competitive strategies of the major console manufacturers. For example, the two largest console manufacturers, Sony and Microsoft, have now launched online broadband-enabled versions of their respective consoles. These broadband consoles will enable players to download games directly from the Internet, play games in a competitive multi-player environment, and enable a whole range of other functionalities, such as the ability to verbally communicate with other online players (in real time), to set up communities of interest (e.g. gaming tips and gossip) and to download music and videos.

A major difference in strategy between the two console manufacturers is their current approach to managing their online presence. Sony has adopted an 'open systems' approach, wherein it has left the market open to the publishers to create their own online distribution channels. Hence, each PlayStation publisher (separately or in collaboration with each other) will need to establish its own online distribution channel (e.g. portals, servers, billing software etc) and possibly its own consumer brands. On the other hand, Microsoft has adopted a 'closed system', wherein all games must be downloaded from a Microsoft-managed site, which will contain both Microsoft games as well as third party publisher games.

Each of these strategies offers opportunities and threats for both publishers and developers. The 'open system' approach obviously allows publishers to maintain control over the distribution of games titles to consumers. Arguably, this approach offers the most potential for competition-based innovation and the ability to offer a customised approach for particular market segments (e.g. a portal focussed on the Australian market, or the Sports market etc.) On the other hand, the 'closed system' approach, arguably offers a simpler and clearer value-proposition to consumers. That is, all games titles are found at the

same site, all potential online gaming competitors are available at the same site, a single billing system and so on.

It must also be noted that it is very early days yet for the development of these online strategies for the console market. Thus the console manufacturers may still significantly alter their strategies.

Figure A.1.2 Broadband Opportunity Areas mapped against Interactive Games Sector

Opportunity Area	Description	Examples
New Distribution channels for existing products	Games downloaded from the web, rather than being distributed via retail shops	<ul style="list-style-type: none"> Electronic Arts portal (www.ea.com)
New Bundled and Integrated Product Offerings	Games consoles could be used to download and consume movies and music. They could also be used to make telephone calls (particularly with other games players)	<ul style="list-style-type: none"> Xbox live game players communicate live via. audio headsets Sony (PlayStation manufacturer) plans to offer a music subscription service
	Broadband portals offer games as part of monthly access subscriptions	<ul style="list-style-type: none"> Telstra BigPond offers 120 online games Many wireless carriers offer 'free' games packages (e.g. Optus Mobile)
New synergistic cross-sector linkages	Games developers and/or games publishers partnering with other sectors to derive revenue and cost synergies in the production and/or distribution of games	<ul style="list-style-type: none"> Film post-production company Animal Logic partnering in the production of 'The Matrix' game
New products	Always-on broadband makes it possible for new types of games and interactivity	<ul style="list-style-type: none"> Massive multi-player games, such as Everquest Wireless games
Grow productivity and transform existing industries	Developers will be able to work more collaboratively together and with publishers, during the production process	<ul style="list-style-type: none"> 24x7 collaborative games development around the world timezones

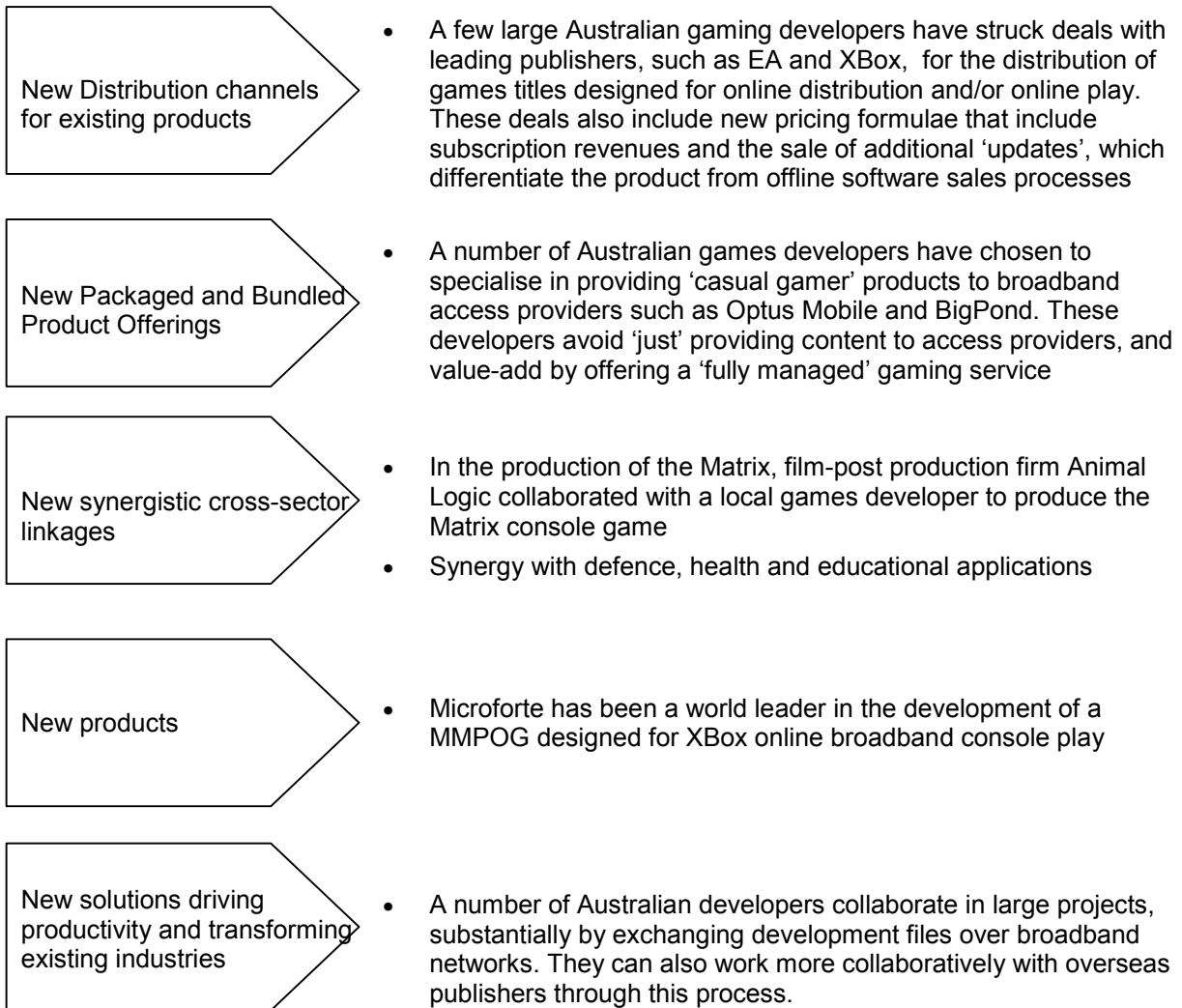
Broadband may also stimulate industry growth in some non-traditional areas. For example, in Australia, broadband access providers such as BigPond, Optus Mobile and '3' are already offering gaming channels to their access customers. This market is very different to the consoles market, and is sometimes known as the 'casual gamers' market. As such, the games offered by these access providers, for play on a mobile phone, PDA or broadband-enabled PC, for example, tend to be much simpler games and have a shorter playing life. Typically, interest in any game on a channel starts to tail off after 2-4 weeks. Games channels, therefore, require a constant supply of new games to refresh the content on their channels. This, in turn, requires the channels to have access to developers who can produce content both quickly and affordably/.

The cost of producing games for the casual gamer market is much less than that for the console market; many games can be developed for less than \$50,000.

Market demand for games seems to be heading in multiple directions for developers and publishers. Firstly, for the console sector, the trend is towards fewer projects (games), although they will be much larger in complexity and scale. For the Internet and wireless sectors, the trend is to develop games that are simple and have a real 'fad' factor. Also, some games developers have chosen to exploit their knowledge of the local Australian market and specialise in developing Australian gaming content (e.g. Finding Nemo, AFL and Rugby)

Figure A.1.3 Interactive Games - Broadband Strategy Examples

Examples of Online Broadband Strategies



Appendix A.2 Education and Training

The education and training market has been selected for review, as it provides a good example of the challenges faced in driving transformational change within a traditional and well established industry.

Industry Background

The global education and training industry is extremely large. As an indication, it is estimated that the industry turns over at least US\$2.4 trillion p.a., and employs 5% of the world's workforce²⁷. The market is often segmented into three broad sectors:

1. the schools, or K12 market
2. the tertiary, or higher education, market
3. the corporate, or business market

Given the sheer size of this market and the fact that it is 'information rich', one would expect the potential for productivity and transformational opportunities to be very significant.

Currently, the schools and tertiary education sectors constitute around 75% of annual industry turnover. In Australia, these two markets have, historically, been funded and managed through Government processes and institutions, while the corporate and business markets are usually self-funded.

Most of the ICT investment to date, in all three sectors, has concentrated on providing the infrastructure required to support e-learning. For example, each of the States and Territory governments possesses active programs aimed at deploying significant ICT hardware (i.e. PCs) into classrooms, bringing schools online (preferably at reasonably high levels of bandwidth) and stimulating teacher training and support. In contrast, within the tertiary and corporate sectors, much of the required 'hardware' infrastructure (e.g. computers and communications networks) has already been deployed.

On the face of it, interactive online learning technologies present a significant opportunity to improve the productivity of learning institutions and improve educational outcomes. However, despite the introduction of much ICT technology into learning environments, and the best efforts of a number of e-learning companies and 'maverick learning institutions' during the 1990s to champion such change, the primary method of delivery has, by and large, remained dependent on instructor-led training. The reasons for this resistance vary across the three sectors, although, there appear to be some common characteristics. These include:

1. Measuring 'outputs' (or student performance) from education and training is notoriously subjective and complex. As a result, policies and management processes have remained very 'input' based (e.g. funding is often allocated on a per student, or per course basis) making it very hard to justify the benefits of any transformational change (e.g. faced with the decision of spending \$100,000 on a much needed extra teacher, or on an e-learning system, the tried and tested teacher nearly always wins);
2. The sector possesses many characteristics of a monopoly (e.g. schools and universities are protected by geographical catchments and accreditation privileges and corporate training departments by ownership of employee training budgets), which limits innovation brought about by competition; and
3. Instructors/teachers at the coal-face are strongly wedded to their 'proven' teaching methodologies (arguably, for good reasons), and see little need for change.

It would also appear that the 'e-learning' companies, supplying services to educational institutions, need to shoulder much of the blame. In this regard, it is interesting to note the comments by SABA (a leading e-learning technology vendor to the corporate sector), reflecting upon many of the failed e-learning initiatives of the 1990s;

"In their rush to take advantage of the new technology, [e-learning] instructional designers and other learning practitioners did not take the time to fully explore how to use the new technology to engage learners, reinforce knowledge and skill through simulation, conversation and interaction, and combine action and reflection for meaningful application and retention. The importance of the user experience was not fully understood or deemed too time consuming in an effort to get content out quickly. Many learning managers also neglected to take into account the power of

²⁷ Challenges of the Knowledge Economy for Education, Carl Dahlman, World Bank
Convergent Consulting

blended learning: combining different kinds of learning experiences in ways to continuously reinforce knowledge acquisition.

For all the criticism leveled at instructor-led training (ILT), in the best possible case, it is a model of blended learning that works - lecture, discussion, self-study (via reading and homework) and informal dialogue and conversation (e.g. among students before and after class). Simply automating the delivery of information on a browser screen can't substitute for a well designed learning experience. The result was learners often didn't come to what was built; even when they did, the impact of the learning was negligible²⁸.

With that background, we have chosen to highlight the schools sector, and the corporate education and training sector as good examples of the challenges faced in driving transformational change.

A.2.1 The Australian and NZ School's Sector

Summary

The interactive curriculum content project being undertaken by the Australian and NZ School's Sector provides a good example of transformational change in progress. As summarised in Figure A.2.1.1, in our view, this process has been managed quite successfully.

Figure A.2.1.1 Summary Analysis of the Australian and NZ Schools Sector

Strategic Implimentation Issues for Transformational Change	Summary Analysis
Managing solution development risks	Would appear to have successfully addressed the solution development risks via an extensive collaboration process between the schools and content developers.
Developing leveragable business models	Still questionable that suppliers have developed leveragable business models as they are still fee-for-service dependent, and have a minimal role once the content is developed
Developing industry-wide standards and agreements	Would appear to have successfully developed nation-wide technical and educational standards that have created a sound framework for market development

Analysis

Australian schools are separately managed by State and Territory based Governments, and by the various non-Government school bodies, such as the Catholic Education Office. Each Educational Authority is responsible for setting its own curriculum, and managing its own policies, including that of the deployment and use of broadband and ICT in schools.

In what is a fairly unique experience for the schools sector, the Federal, State, Territory and NZ Governments all agreed, in 2001, to form a single online curriculum development initiative, called The Learning Federation (TLF). TLF's primary aim to is to develop educationally sound online content, suitable to the curriculum needs of each of the Australian and NZ school jurisdictions. Overall, the joint Federal and State funded project is sponsored to the tune of \$67m, until 2006.

The TLF project represents an interesting approach to overcoming what the teaching community felt were the shortcomings of private-sector content providers, whose products were often considered to be:

- edu-tainment, rather than curriculum based;
- focussed on specific narrow areas of curriculum only;
- not pedagogically sound;

²⁸ Next Generation e-Learning and the Road to Human Capital Development and Management: 4 Saba
Convergent Consulting

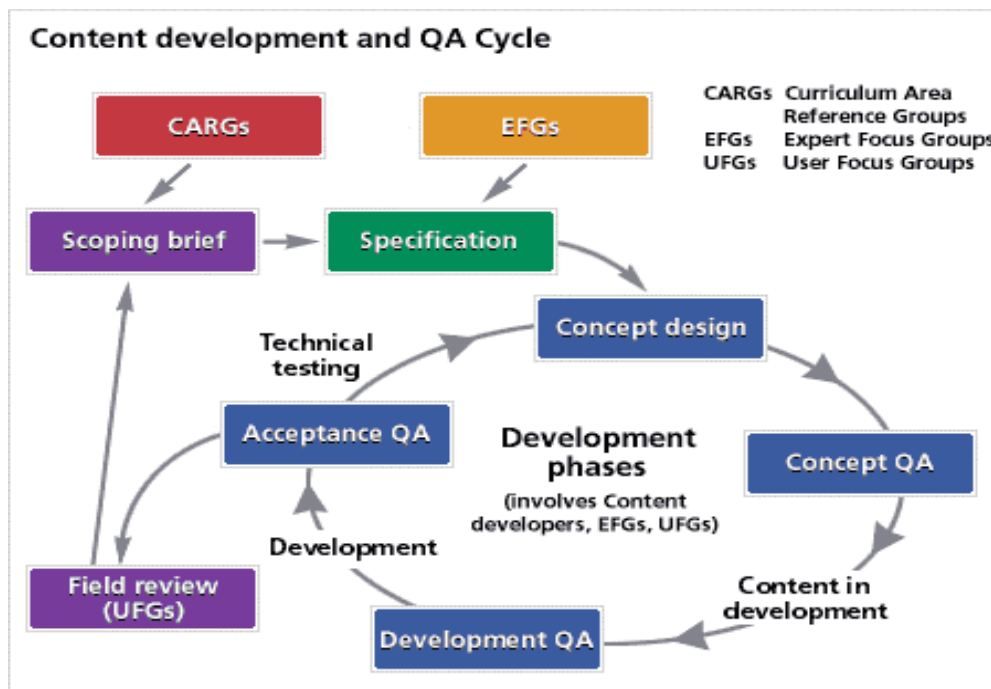
- not learner centred (e.g. they were often merely electronic versions of encyclopaedias or textbooks);
- not flexible enough for individual teachers to structure lessons around their individual teaching styles;
- restricted in accessibility to students and teachers with high computer literacy and skills;
- restricted to use by high-achievers and/or after-schools market; and
- restricted for use on propriety hardware and/or software standards.

A major focus for TLF was to establish a 'market framework' in Australia for online curriculum content. In establishing this market framework, TLF would set the educational and technical standards of the content, while the private-sector developers focus on producing the creative and engaging multimedia output, built to these standards. As a result, it is expected that the content produced will:

- meet the broad curriculum needs of all Educational Authorities;
- be built to open technical/software standards (e.g. IMS);
- provide sound pedagogical learning sequences;
- be developed as granular 'learning objects', such that teachers can package content to meet their particular needs and teaching styles;
- be 'learner centred' (i.e. adaptable to the learning style of each student); and
- be able to be distributed over a range of connectivity arrangements, including dial-up narrowband.

It should be noted that all of the content produced by TLF has been designed for use on narrowband, or broadband networks. In fact, the content is fully distributed as files to computer desktops, before it is used by teachers and/or students (i.e. it is not centrally served or streamed). Despite pockets of schools being interested in broadband content and rich media streaming, due to the poor state of broadband access for many schools, for the foreseeable future, TLF adopted this more conservative approach that allows virtually any school to access content, regardless of their access arrangements.

Figure A.2.1.2: TLF's Content Development and QA Cycle



Source: *The Learning Federation*

Around 20 Australian multimedia content development firms are currently producing content for the TLF initiative. As can be seen in Figure A.2.1.2, the multimedia content developer must interact with many TLF appointed groups/stakeholders (i.e. CAGRs, EFGs and UFGs), during the development process, as well as adhere to strict technical, procedural and QA standards. Thus, the TLF content development process tends to be a highly collaborative process, as content specialists, curriculum specialists, user groups, and the multimedia developer's work towards an output shaped by their collective roles and objectives within the development process.

In essence, TLF has created a solid and robust Market Framework that clearly defines, to both the Supplier and User (school) communities, the expectations for the development of quality online curriculum resources. Key aspects of this Market Framework, include:

- setting technical standards and frameworks (e.g. interoperability, accessibility, meta-tagging, etc.);
- setting instructional design standards and methodologies (e.g. defining learning objects, pedagogy design, etc.)
- specifying developmental and QA procedures (e.g. production management processes, user testing, etc.); and
- establishing a systems environment (i.e. the storage, search and distribution engines supporting content)

A.2.2 The US Corporate Education and Training Sector

Summary

The US Corporate Education and Training Sector provides another good example of transformational change in progress. As summarised in Figure A.2.2.1, in our view, this process has, at least, temporarily faulted for two of the three strategic implementation issues.

Figure A.2.2.1 Summary Analysis of the US Corporate Education and Training Sector

Strategic Implementation Issues for Transformational Change	Summary Analysis
Managing solution development risks	Poor collaboration between user-corporations, content and IT suppliers led to poor management of solution development risks
Developing leveragable business models	Most focus has been on developing leveragable models, however, broadly, this would appear to have been at the expense of addressing the other two issues
Developing industry-wide standards and agreements	Few, if any, industry standards set for the sector

Analysis

Intuitively, given its superior financial resources, and its greater levels of management freedom, it might be expected that the corporate market would be the 'sweet spot' for developing outsourced e-learning solutions. Further, unlike the schools and higher education markets, there is a very real and measurable opportunity cost for business' in sending their staff away from the workplace and to training courses. In fact, it has been estimated that around 80% of the true cost of training is in the wages and salaries of those being trained²⁹.

²⁹ Challenges of the Knowledge Economy for Education, Carl Dahlman, World Bank
Convergent Consulting

Indeed, according to David Lance.³⁰,

“The case for e-learning investment is considered in the US to be very compelling. Some of the attributes of the market are:

- *First, the market is vast. The market for continuous education is probably twice the size of the market for first learners at university.*
- *Secondly, corporations needing to remain competitive in an increasingly globalised and competitive world will need to have constant refreshment of their skill base. If you look at the valuations on any stock market in the world of companies 30 or so years ago, you will see that those valuations very often reflected the break-up value of the actual physical assets of the company. Today there are companies— substantial companies such as Microsoft— whose physical assets comprise less than two or three per cent of the total value of the company.*

We have moved from brawn to brain; from physical to human resources; and frankly, whether it is Australian universities or English or American, none of us are ready for the demands of this extraordinary new and changing environment”

Partly as a result of this positive environment, many billions of dollars were invested into start-up e-learning companies through private equity and IPO placements up until the late 1990s. However, since 2000, there has been a rapid and steep decline in equity flowing into the sector, following both the dot-com fallout and very disappointing operating results.

Many reasons are given for this failure, including:

- So called ‘soft skills’ form the majority of corporate training budgets (See US figures in Table A.2.2.2). These skill areas are, by their nature, highly dependent on human interaction and do not lend themselves well to being wholly transferred to an online delivery environment.
- Many corporation’s see their competitive advantages emanating through it’s human capital (e.g. culture, teamwork and common values). Face to face training environments form important opportunities for corporations to build (and protect) this capital. As a result, many corporations have developed their own ‘in-house’ corporate universities, which has somewhat thwarted the trend towards externally developed and delivered training
- Decisions to outsource training are is often decentralised (to line management), making for long lead times and difficult sales processes;
- Fragmented supply, amongst undifferentiated training and education suppliers, complicates the integration of corporate training tools (lack of investment in sales, brand creation, content and learning architectures).
- For better or worse, IT and system integration companies have generally been given custodianship of building e-learning infrastructures for corporations (versus specialist training and education suppliers). Further, it is often the IT departments within corporations that are provided e-learning content budgets (and not training departments). Hence, given the clash in cultures and competing objectives of all these groups, very little satisfactory integration technology, content and business processes have taken place.
- Most innovation focus has been mistakenly biased towards using online and ICT delivery tools to reduce the cost of training rather than to enhance or improve it.

³⁰ David Lance, Chairman iGlobal, Venture Capital Viewpoints and e-learning futures, available at www.dest.gov.au/archive/highered/eippubs/eip01_7/01_7.pdf
Convergent Consulting

Table A.2.2.2: % of the US\$47Billion US Corporate Training Market Revenues

	Soft Skills	Information Technology	Academic	Total
Internally Developed	52%	17%	0%	69%
Externally Developed	9%	13%	9%	31%
	61 %	30%	9%	

Source: Parthenon Group

Potential Implications for strategy

- Focus on improving the learning and development experience (rather than using broadband to purely lower costs of training delivery);
- Focus on companies with centralised purchasing and company-wide training strategies;
- Partner, with IT providers, and other e-learning firms, to achieve scale in sales and marketing, brand, and blended solution offerings; and
- Focus on learning architectures and in developing products that are interoperable into broader enterprise platforms;

Appendix B: Consultation Schedule

	Meetings/Discussions Held
Games	<ul style="list-style-type: none"> • Evelyn Richardson (GDAA) • Shaniel Deo (Half Brick Studios)
Post Production	<ul style="list-style-type: none"> • John Fleming (AAV) • Judy Tucker (FIBRE)
Telecoms	<ul style="list-style-type: none"> • Sandra Davey (Big Bond Broadband, and President AIMIA) • Justin Lamb (Manager, Telstra Broadband Development Fund)
Education	<ul style="list-style-type: none"> • Steve Grocott (Nine Lanterns and AIMIA) • Stuart Taite (Learning Federation) • Paul McKey (Redbean Learning Solutions)
Advertising	<ul style="list-style-type: none"> • Brett Rolfe (Beyond Online) • Heather Albrecht (Digital Connections)
Television	<ul style="list-style-type: none"> • Will Berryman (SBS)
General	<ul style="list-style-type: none"> • Chris Flintoft (ITV World) • Steve Burdon (UTS)

Appendix C: Consultancy Objectives and Scope

Objectives

The purpose of the consultancy is to provide information on the strategic issues that content and other providers will need to consider as content and applications are increasingly distributed using broadband. These include:

- strategies for content and applications developers to transition from a narrowband to a broadband environment;
- emergence of new broadband networked applications markets and distribution channels and the key relationships that developers will need to forge in this environment;
- the technological, business and market trends that will drive broadband delivery of content and applications as opposed to narrowband;
- the implications for content and applications development of a greater level of interactivity in a broadband environment;
- online and broadband distribution models for content and applications in a broadband environment including pay to play, subscription, advertising and offline conversion;
- the dynamics and nature of new and emerging distribution channels for broadband content and applications;
- the role of distribution entities in the broadband environment including telecommunications carriers, broadcasters and publishers;
- business models for broadband content and applications; and
- the implications of global markets for content and applications but also discrete niche markets.

Consultants Role

Drawing on knowledge about technical and market developments related to the new networked broadband environment and the production of digital content and applications the consultant is to report on:

- the implications of increased broadband connectivity for the distribution of digital content and applications;
- emerging broadband distribution models for digital content and applications including the role of interactivity and customisation in new marketing/distribution models;
- suggest possible firm and industry strategies that digital content and applications developers can adopt in for distribution in a broadband environment.