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INNOVATION IN THE AUSTRALIAN FILM INDUSTRY

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INNOVATION IN THE AUSTRALIAN FILM INDUSTRY

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EXECUTIVE SUMMARY

Australian film makers are internationally well regarded, and the talents of our most creative actors, producers and writers are much in demand. Australia has also developed a considerable reputation, and significant success, in the less well known, but just as important post-production processes, which include editing, compositing, and sound and visual special effects.

The film industry is economically and culturally significant to Australia. In 1996-97 (latest available ABS Statistics) the film and TV production industry generated production activity of \$1.6 billion, employed 9,400 people, and attracted \$266 million of foreign finance for productions. This is on top of the already significant amounts invested in establishment of major international studios in Sydney and on the Gold Coast. Each of these represents an investment in excess of \$100 million. There are also significant spin-off benefits for industries as diverse as communications, construction and tourism. None of this can persist, however, without the contributions made by original Australian talent to the creative parts of the industry. Not only are these vital in defining Australia's culture and what it is to be Australian, they are also a major source of content and value added to help us compete in a global market.

As with many other industries, the film industry is undergoing significant changes driven by technology and innovation. The industry has become increasingly digital, on line, and reliant on high-performance computing and communications. Its future directions will be driven at least in part by changes in technology, and it has become 'knowledge-based', in the sense that its products rely more on intellectual capital and information, and their clever use and manipulation, rather than materials or physical resources. In this regard, it is a leading member of a 'cluster' of industries which are based on the digital manipulation of images on screens. It is these industries which will be increasingly important in Australia's economic future.

The changes in technology have, if anything, made the global industry increasingly competitive. Our future success and identity as a national and international film maker will depend just as much on our mastery of these new technologies and ways of making films, as it will on our more recognisable artistic talents of acting, cinematography, and production.

So far, Australia has demonstrated an ability to absorb these new ideas, and use them cleverly in the film making process. We have also made some significant innovations of our own, and used these successfully in award-winning films. Australian innovations were significant in the recent film, *The Matrix* (made at Fox Studios Australia), which won two US Academy Awards ("Oscars") for sound and visual special effects.

However, the Australian industry faces a number of significant challenges, which must be met if it is to continue to compete globally, and to contribute to our national identity and cultural goals. Many of the firms in the industry are small, and struggle to survive. The industry is diverse, and this makes it difficult to take a unified approach on many issues. There is also fierce internal competition, for example among post-production firms, to win a share of global editing and special effects business. With the arrival of some major international studios in Australia, there is also concern that the industry is becoming increasingly polarised, with a few, large, well-funded Australian or international productions being made here, and very many indigenous productions struggling to survive.

One of the major impediments facing the industry is the cost of, and difficulties experienced in gaining access to, the high-bandwidth telecommunications capacity needed to transfer and exchange the knowledge products of the industry. There is evidence that these costs are significantly higher in Australia than overseas, and that this is holding back the prospects for the industry. The assertions of the industry in this regard have been reinforced by the report of the recent National Bandwidth Inquiry. This is a serious problem, not just for the immediate future

This paper was prepared by an independent working group for PMSEIC. Its views are those of the working group, not necessarily those of the Commonwealth

of our film industry, but also for all those knowledge-based, image-manipulating industries such as internet design, electronic commerce, multimedia, etc, which can potentially contribute so much to Australia's economic future.

The way forward for the Australian film industry must involve a combination of continued development of our creative talents, maintenance of a position at or near the leading edge of the technologies which define the modern industry, and a more competitive, flexible and responsive communications infrastructure. Recommendations to help achieve these conditions are made on:

- Continuing pressure to improve the performance of our communications carriers;
- Encouraging increased cooperation within the industry, so that it develops sufficient identity and voice to negotiate effectively with governments, communications carriers, the international film industry, and others;
- Government support for a mechanism to encourage this increased cooperation;
- Increased use by these industries of the programs provided by governments to encourage innovation;
- Sympathetic consideration by Government of increased funding to develop the creative, artistic side of the industry; and
- Government support to attract more foreign investment into the Australian industry, and win more film services business for Australia.

THE IMPACTS OF NEW TECHNOLOGIES

As with film industries and many other industries around the world, the Australian film production and post-production industry is being transformed and reinvented by technology and innovation.

Established and Future Changes

One of the most profound impacts of new technologies on film making is that of digital technology, which now affects most aspects of the industry. Although the preferred choice for both image acquisition and cinema exhibition is still celluloid film stock, the post-production industry (film and sound editing, visual effects, compositing, tracklaying and sound mixing) is now digital, non-linear and computer-based. Images from the original celluloid film are transferred, frame by frame, to powerful digital processors. All manipulation is then done digitally, and only when a final product of the necessary quality is obtained, is the original film cut and spliced to its final form. The savings in time and effort, and the flexibility and scope for creativity, added by this process are enormous.

The transformation of images to digital formats brings with it all the possibilities of transfer of information by telecommunications. The prospect exists of being able to manufacture feature films by online linkages between:

- production house and production house;
- within local areas (such as Crows Nest and South Melbourne);
- between States; and
- between countries.

In the near future, it will be possible for an editor in Australia to access digitised media on a server in Los Angeles and edit the film without ever leaving these shores. The same will be true for sound-editing, dialogue editing, automatic dialogue recording, sound track laying, preliminary and final mix downs and music recording. In pre-production, all scriptwriting, script-editing, financing, budgeting, casting and auditioning will be enabled by the online world.

Coming technologies will also include digital distribution (by satellite or digital video disk) and exhibition (data projection) of the final product. This process is known as E-Cinema. The writer and director of the *Star Wars* series of films (one or both of the next episodes of which will be shot in Australia), George Lucas, is a driving force behind this development. He is currently planning to digitally acquire the images for the next edition of *Star Wars*, and provide satellite or disks for exhibition by data projectors in cinemas.

This method promises far cheaper and more flexible distribution, and quick revision of products in response to market reaction, but has substantial capital costs for cinemas in converting from film to digital projection. This is likely to further widen the divide between the large, international, well-funded productions, and smaller local productions, which may not be able to afford the cost of providing their final products in the formats needed for digital exhibition. E-Cinema will have enormous impact on the film stock manufacture, exhibition and release printing industries. The substantial release printing of imported feature films undertaken by Australian companies underwrites the provision of full laboratory services for local productions. Loss of this business would further weaken the services available to the local production industry.

However, the time scales, degree of change required in distribution mechanisms and exhibition, and overall costs of, moving from conventional photochemical film to E-cinema is not yet clear.

It will also be some time before the impacts of E-cinema on the processes and technologies of making films become apparent.

Global Impacts of these Changes

These technologies are making substantial changes, and opening up significant opportunities, for the industry globally. Among the most significant of these changes are¹:

- Increased output and decreased turn-around time for film making;
- The ability to use talents and skills on more than one production at a time, eg a director approving special effects work on an already-shot film, while on location and shooting the next film;
- Increases in the speed and flexibility of program design;
- Significant process changes in program design and material processing, including digital film making for special effects and animation;
- Changes in company structures from large, vertically-integrated structures (the major studios) to ones who outsource more services, including internationally;
- Changes in the distribution market, from being focussed on theatrical distribution to include broader entertainment sectors such as video, cable, satellite, and eventually internet-based distribution; and
- The industry is becoming more footloose, with the so-called 'runaway' productions able to leave the major studios and be made overseas, and areas such as post-production, special effects, etc, being outsourced.

Impacts on the Australian Industry

These changes in technology and their global impacts can be seen as positive opportunities for, or as distinct threats to, the Australian film industry. The industry, working from its base of well-established creative and technical skills and a steady stream of Australian productions, has already shown itself to be strongly competitive in bidding for and securing international production and post-production work, and providing top-quality products as a result.

However, the rapid rate of change of the technology, and the need to keep up with the latest advances in order to remain competitive, comes at a cost. One leading Sydney post-production firm estimates that it needs to invest \$30,000 to \$40,000 on each of its cutting rooms every 18 months, in order to stay technically competitive. Firms are also building "production intranets" of high-capacity telecommunications channels (often fibre optic cables) to allow them to transfer the very large files associated with film-quality digital images between studios and locations.

The impacts of the new technologies on the film-making process leading to faster turn-round times are likely to be of greater benefit to big-budget productions, where a rapid return on initial production investment is crucial, than to small, local productions. These tend to be time rich and dollar poor, and interest foregone by the investor is less significant. The net result of these changes could be even more pressure on the chances of success of small, local productions.

Digital distribution and exhibition of films also potentially presents a major threat to the Australian industry, and Australia's cultural identity as expressed through film. There is a danger that digital distribution will contribute to an increased centralisation of distribution, on a world-wide scale. In these circumstances, it will be difficult for Australia, and any of the smaller film-producing nations, to maintain a distinct identity for its products and its image.

¹ Some of this material is taken from "Space Jam and Changes to the Traditional Animation Process", *Cinema Papers*, March 1998

On the other hand, developments in wireless communications offer real opportunities for Australia to gain a technological edge. The exciting prospect exists that film crews on location can use mobile communications and the new Wireless Application Protocol (WAP) to facilitate greatly the communications necessary between location and studio (see Box)

Use of Mobile Communications for Film Production

A film crew is a mobile, dispersed entity that needs to have excellent communication channels. There is a whole raft of time critical information that has to be moved around within a production. This includes the following data types: Storyboards; Scripts; Schedules; Location stills; Continuity sheets; Continuity stills; Call sheets; Budgets; and Cost reports

At the moment, this is usually done by hand delivery of hard copies, or faxing. Little use is made of email or Web-based delivery, mainly because the level of penetration of Internet usage among film production personnel is still relatively low, particularly in the lower crew positions.

BUT everyone in a crew has a mobile phone. Wireless Applications Protocol (WAP) technology, which is to be introduced soon, could enable at least some of this information to be accessed through a WML-enabled website, allowing the cast and crew to be completely independent of the usual means of communication.

Advantages would include:

- Increased efficiency in delivering time-critical information;
- Cost savings over conventional means of distribution; and
- Greater flexibility in the movement of cast and crew (i.e. they would not have to physically receive next day's call sheet at a given time)

Whether the film and television industries are able to take this new technology up, to enhance their flexibility of production, will depend on legislation and regulation which may impact on the use of the WAP spectrum, and costs of access to WAP networks and hardware.

The On-Line, Globalised Film Industry

Another opportunity for the Australian industry arising from technological development is in doing business within Australia and with overseas companies, by way of high-bandwidth telecommunications channels.

Digital technologies have already transformed the production and post-production processes of the film industry. As communications bandwidth increases and the digital files containing images and sound become larger, the **business-to-business** applications within the Australian film industry will develop great significance. One initiative to encourage this approach is Crows Net (see Box). A similar approach is being developed in the South Melbourne precinct, associated with the growth of "Digital Docklands".

Crows Net

In early 1998 an investigation was undertaken into the likely demand for broadband communication between film, television, new media and IT companies located in the Crows Nest region of Sydney. Entitled *Crows Net*, the report found that many companies identified a need for high-bandwidth data communications, but few believed it was feasible under the pricing then available.

Australia has a vibrant and creative community of digital media companies, producing work of world-class quality. A large proportion of the business of digital media production houses comes from export business in the US, Asia and Europe. These companies are active in development of high-end digital effects for film, television and advertising, as well as new streaming media technologies.

The nature of the digital media business is such that many large projects which Australian companies could bid for work on (e.g. feature films) are outside the scope of any one company. In consequence local companies have banded together on specific projects. Even where an individual company has sole responsibility for a particular aspect of the post-production process (e.g. all effects), transfer of material to other companies working on the film is essential. That is, a digital effects house may exchange material with an editing facility, the sound stage, the studio financing the film, etc. As the size and complexity of projects grows it is becoming increasingly common for companies to work together on projects, especially in the area of graphics and special effects production in which the costs of equipment and infrastructure can be extreme.

In short, the demand for communication between these companies is growing. At present it is served by putting vast amounts of data on high-capacity tape drives, and sending them by courier. All the companies surveyed for the *Crows Net* report believed it was inevitable that these files would eventually be sent over a network. The amounts of data involved (trillions of bytes per week in some cases) mean that for any network to gain market acceptance it will need to have *very* high capacity.

In the 18 months since the original report was prepared, the idea of building a network to service these industries has gained momentum. Similar networks have been operating overseas.

A consortium and plan for such a network is now being developed. The initial stage of the project will be developed in consultation with industry peak bodies, and is expected to involve 10-12 selected companies between Artarmon and Alexandria for an 18 month period. Support is being sought from key IT and telecommunications companies in the form of investment in the initial stage, and discussions are underway with other industry and finance partners to minimise the costs of the network and maximise the benefits to users of the network.

An integral part of the project will be international connectivity, providing low-cost access to international markets for these companies. It is proposed to partially subsidise the costs of this bandwidth so that prices to the companies using the network will more accurately reflect likely future pricing, say in two years.

The purpose of the initial phase of the project is not merely to test the technologies available for high-capacity data transmission and production. It is also to gauge the extent of business transformation. At present a barrier to collaborative pitching for export work - and the securing of the contracts for that work - are the very high bandwidth costs Australian companies suffer compared to some of their international counterparts. Research conducted for the *Crows Net* project suggests that companies will eagerly embrace new work practices based around the network if it is available to them at a cheaper rate than they currently work with.

A company will be formed for the purpose of preparing the submission and running the project. The shareholding in this company will reflect the contributions of the various partners. It is anticipated that at the end of the initial stage of the project the company will invite capital to take an expanded network public. It is quite possible that - should the network bring about change in work practices - demand for the network will grow before initial stage is completed, and in such a case it may be decided to commercialise the concept before completion of this stage.

The level of use of *Crows Net* on a local basis (within the Crows Nest Area) will be influenced by the number of large-scale projects that are brought to the Sydney area in the next few years, because it is large projects such as feature films that require extensive collaboration between design houses, post-production companies and editing houses. For this reason the companies selected for participation in the initial stage will be chosen on the basis of their likely heavy demand for bandwidth. To some extent this preselection ensures the success of the initial stage and paves the way for a successful roll-out to a broader market on its completion.

When the original report was commissioned there was a great deal of interest expressed in the project by the digital media industries, but insufficient momentum in telecommunications companies and government to bring it to fruition. Discussions in 1999 have shown that this momentum has grown, to the point where interest in the project from IT companies, telecommunications companies, government and digital media producers has become intense. The time for development of such a network is *now*.

The potential business-to-business applications involving the Australian film industry with other countries are expected to be highly significant. Outside the rarefied world of the Hollywood studios, producers the world over are looking for cost-efficient deals, particularly in post-production. Australia's production and post-production industries are benchmarked against the best in the world, and more significantly, among the best in the English-speaking world. However, our fabled "tyranny of distance" has meant that producers outside this country would never consider us as an option for full post-production services. There are some exceptions to this - one-off productions from China, Taiwan and Indonesia which have undertaken post production work in Australia.

In the online film production world of the near future, this "tyranny of distance" will all but disappear. Producers looking for the best possible deal will no longer be constrained by geographical problems. The Australia industry is ideally placed to take advantage of the "globalisation" brought on by the new technologies.

"99% of my work is delivered online"

- Peter Mitchell, Big Animated Digital, quoted in Crows Net Market Report²

However, this will depend crucially on the availability, cost-effectiveness and reliability of telecommunications bandwidth to carry very large amounts of information quickly and reliably both within Australia and between continents. This issue is discussed further below.

An example of the possibilities opened up by the more on-line approach to making films and doing business is the Global Film School proposal (see Box overleaf).

THE AUSTRALIAN FILM INDUSTRY

In 1996-97 (latest available ABS Statistics) the film and TV production industry generated production activity of \$1.6 billion, employed 9400 people, and attracted \$266 million of foreign finance for productions. This is on top of the already significant amounts invested in establishment of major international studios in Sydney and on the Gold Coast. There are also significant spin-off benefits for industries as diverse as communications, construction and tourism.

It needs to be recognised, however, that the Australian film production industry is small in the global context. Investment in feature film production in Australia was \$US105 million in 1998, compared with over \$US 9 billion in the USA, \$US 3 billion in the European Union, and nearly \$US 1 billion in Japan. The industry is dominated world-wide by a handful of USA-based studio distributors, which collectively have a world share of over 80% of film production, and earn over half their revenue outside the USA.

India and the USA are the only countries in the world where there is sufficient volume of film production, and access to sufficiently large audiences, to allow unsubsidised production to achieve high enough returns to survive in either a local market (India) or a global market (USA). All other countries with recognised film industries are aided, to varying degrees, by government support.

² "Crows Net high bandwidth industry network" - a report on the market for the service, for Access Australia Cooperative Multimedia Centre and ACSYS Cooperative Research Centre (Peter Higgs, Access Australia, and Rachel Dixon, Handshake Media)

global film school dot com

The Partners:

- *Australian Film, Television and Radio School*
- *National Film and Television School of Great Britain*
- *UCLA School of Theater Film and Television*

Offering a premium standard online film school curriculum that marries three of the world's most respected professional training institutions. The objective is global reach through the interactive potential of the Internet.

In the first 24 hours, **globalfilmschool.com** registered 2 million hits, including 9,000 people from 42 countries who recorded their email addresses. 80% of these countries have no recognised film and television training, nor are likely to have such training in the immediate future.

The three film schools will have equal equity in a for-profit company ("Global Film School"), and will be responsible for designating appropriate industry practitioners to generate the curriculum for the online school.

Third party seed capital of \$US300,000 has been raised and Series A finance (\$US20 million) will be sought during the next six months. The three "territories" (USA, Australia, Great Britain) will have the opportunity to solicit up to one-third each of "Series A" investment.

The idea for the Global Film School was born at a Conference convened by the Director of the Australian Film Television and Radio School. It brings together two national film schools (Australia, Great Britain) with one of the "big four" film schools in the United States. All are English-speaking and all are geographically demarcated. They represent Asia-Pacific Rim (Australia), the Americas (USA) and Europe/Africa (Great Britain). The curriculum will be "global" although the timezones allow for interactive online work in real-time (direct student-teacher relationships and face-to-face teaching where possible).

The current prohibitive cost of telecommunications within Australia remains the most significant issue. Like the film and television industries, the Global Film School requires the ability to use very large amounts of bandwidth in short periods of time. Without cost-effective telecommunications, the Australian components of the Global Film School would be forced to use United States or Great Britain infrastructure to offer our online courses.

In recognition of this fact, and, after three decades of inactivity, the Gorton Government took steps in the late 1960s to revitalise the Australian Film Industry. The outcome is one of the acknowledged "miracles" of support for a National Cinema. The industry, which is a beneficiary of Government support, has used this support to provide financial and cultural returns to Australia.

Australian films have been critically acclaimed at the highest levels (Academy Awards for *Shine* and *The Piano* (which was shot in New Zealand); the Palme D'Or at the Cannes Film Festival for *The Piano*) and several films have recorded impressive worldwide box office grosses (*Crocodile Dundee*: \$72 million, *Babe* \$36 million, *The Man From Snowy River* \$34 million).

Australian Film Success Internationally

US Academy of Motion Picture Arts and Sciences (Oscar) Winners since 1990

1990 (2 Australian nominations)

Dean Semmler	Best Cinematography	<i>Dances with Wolves</i>
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1992 (3 Australian nominations)

Luciana Arrighi	Best Art Direction	<i>Howard's End</i>
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1993 (5 Australian nominations)

Jane Campion	Best Original Screenplay	<i>The Piano</i>
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1994 (2 Australian nominations)

Lizzie Gardiner	Best Costume Design	<i>The Adventures of Priscilla,</i>
Tim Chappell		<i>Queen of the Desert</i>

1995 (9 Australian nominations)

Bruce Davey	Best Picture	<i>Braveheart</i>
Peter Frampton	Best Make Up	<i>Braveheart</i>
Paul Pattison		

1996 (9 Australian nominations)

Geoffrey Rush	Best Actor	<i>Shine</i>
John Seale	Best Cinematography	<i>The English Patient</i>

1997 (2 Australian nominations)

Jim Frazier	Technical Award	Invention of the Panavision/ Frazier lens system
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1998 (8 Australian Nominations)

Gary Tregaskis	Technical Award	'Flame' digital compositing and visual effects software
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1999 (5 Australian nominations)

Steve Courtley	Best Visual Effects	<i>The Matrix</i>
David Lee	Best Sound	<i>The Matrix</i>

The industry makes a significant contribution to the definition and identity of Australian culture, and increases awareness of Australian creative talent and abilities. The spin-off effects of the film industry on the tourist and trade industries have provided dramatic capital inflows into Australia. All these sorts of advantages have led to significant foreign investment in the industry in Australia, including the location here of a number of major studios, with Fox Studios locating in Sydney, and Warner Brothers on the Gold Coast.

The industry also needs to be seen as a leading example of an increasingly important group of established and emerging industries. Film production and post-production share many characteristics with television (creation of programs and commercials); writing of computer games (many computer games now have development budgets well in excess of the production costs of many films, and often use digitised images of prominent actors and sports stars); web

page design; multimedia; and e-commerce. All these involve ‘screen-based moving images and sound’ as common elements, and they collectively make up an important part of industry and society, spanning information, education, entertainment and commerce. The techniques used in film production and post-production are also used heavily in these other industries.

At present, there is little communication across these industries, and little recognition among practitioners that those in other industries are independently addressing the same technical and content problems and issues.

“The post-production guys and the multimedia guys don't even speak the same language”

- Tom Kennedy, Brainwave, quoted in Crows Net Market Report

“Two to three years ago we put a proposal to some other companies to work together, but people were going ‘hey, we want to do our own thing’. I think it would be different now.”

- Chris Perkins, Pacific Advanced Media, quoted in Crows Net Market Report

The Industry's Assets and Infrastructure

Twenty years of growth and relative stability have resulted in a strong, internationally recognized infrastructure. Our world-class film directors include Peter Weir, Bruce Beresford, Jane Campion, Phillip Noyce, Gillian Armstrong, Fred Schepisi, George Miller and PJ Hogan. World-class cinematographers include John Seale and Dean Semmler (Academy Award winners), Don McAlpine, Russell Boyd, and others. Internationally acclaimed actors include Cate Blanchett, Toni Colette, Russell Crowe, Geoffrey Rush (Oscar winner), Guy Pearce, and Paul Hogan. Our industry has the ability to produce local products which, in some cases, are major national and international successes (*Crocodile Dundee*, *Mad Max 11* and *111*, *Shine*, *The Piano*, *Babe*, *Man From Snowy River*, *Strictly Ballroom*).

Our Production Designers, Editors and Music Composers have won Academy Award nominations for their work on international and local productions. Our crews are regarded as resourceful, well trained and capable of working more co-operatively on location than those from most other countries in the world. Many firms have commented on the flexibility and responsiveness of the Australian industry, as distinct from the rigidities and hierarchical approaches which operate in Hollywood.

“One thing that surprised me overseas is the number of animators who want to come here to work. The US effects industry tends to box in its talent, while we have a reputation for more well rounded artists”

- James Whitlam, Head of 3D Animation, Ambience, quoted in *B&T Weekly*, 7 May 1999

Australia also offers distinct advantages associated with our landscape and environment. Australia represents a pleasant living and working environment, which attracts successful and mobile Australians back to Australia (Peter Weir, George Miller, Fred Schepisi), often bringing substantial post-production work with them. A wide variety of locations, including urban, desert, tropical, and marine provide for a wide range of film settings. Australian crews are, due to the size and scattered nature of population in this country, also expert at working in, and communicating to and from, these remote locations.

“... the film (*Pitch Black*, a science fiction film set on a desert planet) was shot in Australia, both at Warner Roadshow Studios and on location at Coober Pedy in the country’s remote southern region. Shooting in Australia gained the production access to a less costly, yet thoroughly professional film crew, as well as to the unusual, dramatic vistas of the Australian desert - a region that, featuring neither vegetation nor signs of human habitation, was ideal for representing the forbidding planet”

- *Cinefex* #81, p 47ff

We also have an internationally competitive and innovative post-production industry which can trade on clever innovation and leading-edge use of technology (see Box overleaf), rapid response, and competitive costs to secure a share of the post-production of features from major international studios. We are also aided by a unique, geographic time zone advantage. Australia is the only English-speaking country in its region of longitude with a film industry of sufficient quality to win international business. Our time zone relative to the USA and UK is such that, with sufficiently rapid and high-capacity communications channels, we have the potential to receive material for editing or special effects from the USA or the UK, process it during their night time, and return it to them in time for them to access it the following morning their time. This sort of rapid turn-around is vital to success in, for example, production of television content and commercials. This process of “Chasing the Sun” has already been used successfully in a number of productions shot or post-produced in Australia. *Babe II*, and some Australian episodes of the US television Series *JAG*, have made use of the time zone advantage.

Government Support for Industry Innovation

The industry has benefited from government support for its research and development. For example, since 1994 **Digital Studio Processing (DSP) Pty Ltd** has received a total of \$1.45 million in grants from the R&D Start and other innovation support programs operated by the Commonwealth Department of Industry, Science and Resources. This has included:

- A \$198,000 grant for development of a Non Linear Video Processor, which has now sold in the UK, Korea, the USA, Japan and Australia.
- A \$148,000 grant for development of a "Virtual Control Surface Digital Mixer" (VCS), which has gained the company sales of \$2.8 million so far, mostly in Japan.
- A \$150,000 loan for commercialisation of "Postation", a complete redesign of DSP's products; and
- A \$950,000 grant for development of the "Total Editing and Mixing (TEAM) Audio Production System", which was completed in June 1999. The TEAM product allows concurrent editing and mixing on the same film or documentary by several users, using networked workstations. When one operator has finished a particular sound sequence, the next can start to process it further, without having to wait for the completion of a whole tape. TEAM has already been sold to Malaysia and the USA.

Fairlight ESP, a Sydney firm, designs and manufactures a range of products used in the audio post production phase of film and TV program creation. The products provide recording, editing and mixing features which are at the heart of an audio post facility. Fairlight’s customers include most of the major Hollywood movie companies, independent film and TV producers and national broadcasters in several countries.

Fairlight’s “Southern Cross” project involved the development of a computer which includes specialised hardware and software for the processing of high quality audio. The project involved hardware, software, mechanical and industrial design, carried out by Fairlight’s R&D team in Sydney, and was supported by an R&D Start grant of \$2.04 million.

Innovation in the Australian Film Industry -

Software and Special Effects

The value of proprietary knowledge and intellectual property has been recognised by many Australian visual effects companies, who are developing software and techniques to suit internal needs and the needs of specific productions. The firm **Photonvfx** has developed its own software management system to cope with the flow of digitised images and work across its four sites. **Rising Sun Pictures** has created its own film proofing system, and successfully used it on major feature films.

Animal Logic, a Sydney post-production firm, has developed Softman, a software package which allows two of the industry's main animation packages, Softimage and Renderman, to be used together. Softman is now being marketed to the industry. The company also created a range of new techniques for use in the film, *The Matrix*. One of their staff created the Matrix Code, which appears throughout the film, and a software designer developed the program which controls its behaviour. **Dfilm** (since absorbed into Animal Logic) developed proprietary shader and rendering techniques for use in *The Matrix*, as well as algorithms to assist with compositing, and new colour subtraction techniques.

“The pool of intellectual property and proprietary knowledge within Animal Logic is our most valuable asset. ... We develop digital tools that we use on our projects and sell internationally, and that's a model you can see in ... any of the successful visual effects houses in the US”
- Zareh Nalbandian, Managing Director, Animal Logic

FAMOUSfaces, based in Melbourne, is at the cutting edge of facial animation technology globally. The technology captures the facial expressions of a performer so that they can be applied to any animated 3D character. FAMOUSfaces has applications in the feature film, broadcast, computer game and Internet industries as animated characters become increasingly commonplace, either as fantasy creatures or photo-realistic humans. It has been well received at major industry events in the US, Europe and Japan. Software licenses have been sold to major animation studios in Hollywood, London, Paris, Hong Kong, and Australia.

Accolades for FAMOUSfaces includes being awarded the prestigious *Wired for 3D - Editor's Choice Award* in 1999 and being invited to present to the Red Herring emerging technology conference in Hollywood, August 1999. Future growth opportunities includes the application of the technology to bring 3D animated characters to the Internet with the advantage being that FAMOUSfaces digitally rendered images require less bandwidth than conventional footage and can be streamed in real time via standard phone lines. The applications here are tremendous - from lifelike on line sales inquiries, guides, teachers and entertainers, to television and motion picture integration and visual email.

At the same time, not all Australian innovations have had as successful outcomes for Australia. The Academy Award-winning visual effects software *Flame* was invented in Melbourne, but was subsequently sold to a Canadian developer.

The computer consists of a core engine, eight times more powerful than Fairlight's current product, and multiple sophisticated user consoles. This enables Fairlight to introduce a number of integrated "breakthrough" products into the professional audio market and to expand into new markets such as music recording. Demand for the latest generation of these products is growing exponentially as the technology changes from analogue to digital. The total available market for

replacement of traditional tape machines with digital disk recorders is in excess of \$1 billion. In addition, the growth of cable broadcast, satellite distribution and home release formats such as DVD have created additional demand for program material, and hence for audio production facilities. Consequently film and TV program producers are increasingly being forced to adopt computerised production techniques in order to meet schedules in a cost effective manner.

The original technology aims of the project were exceeded (by an approximate factor of 2), allowing larger more sophisticated user surfaces to be developed. The first product resulting from the project is the Merlin 24- and 48-track disk recorder, which has received substantial critical acclaim and a significant number of orders. The mixing products have been recently released and the early feedback is very encouraging. Fairlight's current products are used extensively in Hollywood movie production, and the company was associated with the Best Sound Oscar for *The Matrix*. The Southern Cross project will allow Fairlight to continue to offer this market products with a technical edge and to develop other markets, such as music recording.

Challenges Facing the Industry

The Australian film industry is characterised by the presence of a few, big players, and a very large number of smaller firms, in both production and post-production. The arrival of the major studios in Australia can be seen as a polarisation of the industry, which many in the Australian industry find disturbing³. While the major studios produce a few, very well resourced international and local productions, there are many, small Australian firms and productions. Business for these smaller firms is intensely competitive; many of the smaller production firms survive on credit, gambling on the future financial success of the film they have under production. The restricted budgets on which they produce films severely limits their access to the leading-edge production and digital post-production technologies.

Post production firms compete fiercely for work from overseas, and overseas producers make severe demands for use of the most up to date technology, and for rapid turn around of work. The flow of overseas work is unpredictable and 'lumpy', and firms can find themselves moving rapidly from being extremely busy, to periods when expensive equipment, technology and staff are under-utilised. These conditions all make investment in technology, necessary to remain world competitive and win overseas contracts, risky.

Post-production work for smaller local producers, on the other hand, is often undertaken by the post houses on very slim margins, partly to encourage promising local talent, and partly as an investment to secure further work from an individual or firm which post-production firms believe has the potential for growth. It is also recognised that a local production industry must be maintained, not least in order to provide the next generations of creative and technical talent which can add value to local and foreign productions. Without this, Australia's involvement in the global film industry would be as an unskilled price-taker, providing low-grade labouring and service jobs, without scope for creative and technical contributions.

A number of commentators have remarked on the advantages that could be obtained if the industry were to work in a more unified way to improve the infrastructure for the industry, address pre-competitive problems, and develop a common voice in dealings with government, suppliers, and others. In terms of access to and efficient use of technology, these advantages could include:

- The ability to present a united picture on Australia's total technological capability to the global film industry;

³ See for example a discussion on the industry on the ABC Lateline Television program, at www.abc.net.au/lateline/archives/s114189.htm

- an effective sharing among firms of the costs of acquisition of new technology;
- a more effective allocation of tasks among firms according to their technological capabilities;
- more efficient use of the ‘pool’ of technology in Australia; and
- increased ability to smooth the peaks and troughs in workload.

The Crows Net project described above, and the South Melbourne/Digital Docklands initiative, include elements of this approach, applied to obtaining better communications infrastructure. Other industry leaders have commented similarly:

“ ... there is still room for improvement in terms of cooperation and altruism. A greater sense of community is needed, particularly between established and emerging players, a situation that has been hindered in the past by the need to compete for local work. ... local companies are beginning to work together for the betterment of the industry as a whole, rather than solely for their own gain ... “

- Jeff Oliver, Managing Director, Garner McLennan Design, quoted in *Encore*, v17 issue 5

“There is an enormous amount of work which could be done in Australia if we embraced the ‘shared work structure’ between SFX (special effects) companies, which has proven so successful in the UK and USA. If the industry collaborated on pitches, we could go after larger jobs, which offer greater creative challenges and financial rewards. Collaboration also spreads the risk - no-one has to spend a fortune on new gear or hiring staff on a short-term basis. What we need is a critical mass of SFX companies to come together and take a long-term view.”

- Steve Matson, Creative Director, Ambience, quoted in *B&T Weekly*, 7 May 1999

The vigorous competition among post-production houses mentioned earlier in this report should not be seen as an insuperable obstacle to increased collaboration. While some post houses may not wish to collaborate on content (ie share creative work with other houses), there can still be scope for collaboration on matters such as securing access to and using network and computer processing resources, setting technical standards, negotiating with suppliers, and so on.

A more unified approach by the Australian industry would also open up increased opportunities for the industry to relate more closely to other, emerging industries such as computer game creation, multimedia, and computer-based education. All these involve the digital manipulation of moving images and sound, and many techniques and skills are common across all of them, but there is evidence that at present they all work separately, often leading to duplication of effort and ‘re-inventing the wheel’.

AVAILABILITY AND COST OF TELECOMMUNICATIONS BANDWIDTH

Earlier sections of this report have argued that the Australian industry has some distinct advantages, and has shown itself capable of capitalising on these, in terms of the quality and competitiveness of its products. It has also been argued that the industry, both in Australia and globally, is becoming more ‘digital’ and on-line.

A major consequence of these developments is that, for any film industry to succeed and to compete globally, it will need access to cost-competitive, flexible and responsive telecommunications, particularly broadband telecommunications which can handle the large amounts of digital data the industry generates and needs to transmit.

“If a film is big enough to use several effects houses, then the producers are as likely to say “we’re going to scan the world for the right people” rather than confine themselves to local companies. The sort of cooperative efforts in this area are not local but are between Sydney and LA or London ... In my view the biggest demand right now is for communications between Crows Nest and Los Angeles.”

- Dominic Case, Dfilm, quoted in Crows Net Market Report.

The chart below shows some typical uses of broad band communications by the industry.

Bandwidth Needs of Media Forms

Resolution:		
	Compressed, High-resolution	Uncompressed, High-resolution
High	Uses: “Rushes”, High-band Internet Bandwidth 1 – 5 Megabits/second	Uses: Feature film, high definition digital TV, “Blue screen”, special effects Bandwidth in Gigabit/second range
Low	Compressed, Low resolution Uses: Internet Bandwidth 28 – 56 Kilobits/sec	Uncompressed, Low resolution Uses: TV series and commercials, high-end standard definition digital TV Bandwidth ~ 8 Megabits/second

Data:

Compressed

Uncompressed

The chart shows that the industry has a wide range of bandwidth demands. Some of these are already available at reasonable cost, and others will become so with further introduction of Digital Subscriber Line (DSL) services. It is in the two segments of highest bandwidth (ie the right hand segments of the chart) - both national and international - where the industry needs reliable access at reasonable cost, if it is to compete on global markets.

It needs to be recognised that the industry’s demands for high bandwidths is intermittent (in the sense that it comes in the form of the need to use very high bandwidth for brief ‘bursts’ of activity, which must be met on a very short time scale), and its aggregated level of demand is not high, certainly not in terms of the total demand for bandwidth. Nonetheless, such access is vital to the industry, and it should also be recognised both that the film industry’s demands in this area could be expected to grow if bandwidth were more readily, and cheaply available, and that the industry is not alone in these sorts of demands. Other, digital image media such as Internet service provision, computer animation, multimedia and aspects of e commerce, can be expected to have these sorts of demands in future. Further, improved availability and pricing of bandwidth now would enable the Australian industry to become well established in global post-production, before further advances in technology (eg low earth orbiting satellites) make the possibility of such work ubiquitous.

This paper was prepared by an independent working group for PMSEIC. Its views are those of the working group, not necessarily those of the Commonwealth

The Industry's Views

It is this area of difficulties in access to the necessary communications bandwidth which appears, from consultation with the production and post-production industries, to be one of the principal impediments to future success and threats to competitiveness and viability. The claims made by the industry in discussion included:

- The costs of broadband communications are higher in Australia than in our competitor nations; while costs are falling in Australia, they are falling at least as rapidly in those other nations;
- The costs of bandwidth is not just in terms of actual use of the communications medium; often the costs of establishing connectivity or a 'gateway' to the necessary channels are prohibitively high; in some cases, this has been further complicated by excessive delays in gaining access to the necessary bandwidth;
- The effects of costs of bandwidth are often such as to neutralise, or even overwhelm, Australia's other competitive advantages; some companies quoted examples of where Australia could provide a product to the production cost and quality needed, but had lost the competition for international business due to the negative impact of communications costs;
- The problems of access to, and cost of, bandwidth in Australia are not regulatory, and are not to do with availability of physical capacity; the problem is more in the carriers' business models, cost structures, priorities, and ability to cope with, or respond to, leading-edge demands;
- It is by no means certain that recent or any future increases in numbers of carriers and competition among them will necessary lead to improved cost and availability of the sort of bandwidth the industry needs; the point was put that, sooner or later, most carriers (and hence their customers) needed to have recourse to the networks and capabilities maintained by Telstra, and that this is a fundamental obstacle to meeting the industry's needs;
- There is an interplay between cost and demand; the industry's demands for bandwidth (whether met at a reasonable cost or not) can only be expected to grow, as the quality, resolution and volume of images needing to be transmitted increases; at the same time, lower costs of communications could be expected to lead to increases in demand, possibly to the point where the industry would become a customer of sufficient volume to be of value to the carriers; current costs and differences between the industry's demands and the carriers' business models are preventing this 'virtuous cycle' of growth from developing.

"I can get around this. I'm a film producer. I can send material on FedEx and just wait a couple of days. We have the budget to deal with such delays. The Australian commercials and post-production industries can't afford such delays. Their international competitiveness is dead in the water"

- Rick McCallum, Producer, *Star Wars* films, on the telecommunications costs of producing in Australia and communicating internationally

The following case studies provide examples of the impacts on the industry of communications costs, delays in access, and the lack of responsiveness of carriers to the industry's particular needs.

Establishing a Broadcast Digital Video Network⁴

In 1998, the Screen Producers Association of Australia (SPAA) started to explore the potential of a Broadcast Digital Video Network. The potential was seen primarily as a benefit to the service and facilities members of SPAA, mainly post production houses. SPAA's development of this concept drew on the research undertaken for Crow's Net, and discussions with the developers of Sohonet, a broad band network located in the Soho area of London.

SPAA sees management of any such network as a critical issue, and is "neutral" in the sense that it is not competing with any of the potential users of the network. In fact, it is genuinely there to represent and promote members interests equally. It has no self-serving agenda, but to work for the benefit of the industry as a whole, based on its understanding of the production processes. Given these factors, SPAA believed it could make an effective contribution to the professional management of the proposed network.

As an outcome of SPAA's investigations, in early 1999, a proposal was put to the NSW Department of State and Regional Development for support to undertake a detailed market research project into the potential size, scope and use of a proposed broadcast digital video network in Australia, centred on Sydney, with connections to the Digital Docklands site and the Brisbane/Warner Bros nexus. The specific objectives of this project were to:

- establish the level of commitment to use such a service within the film and television industry,
- identify the range of applications the network may provide,
- estimate usage and take-up rates,
- identify improved work practices the network may provide; and
- finalise operational costs and revenue estimates of the network.

The NSW Department agreed to fund this research project and over the next several months, intensive discussion was held with industry members with the results of this research completed in August 1999.

The conclusion indicated that the outlook for the introduction of a digital television network was very favourable. The majority of the respondents saw it as being able to offer distinct improvements in service, an opportunity to use the technology in innovative ways to build business and creativity. There was a strong desire to embrace the network without delay. Throughout the eighteen month period of the project, regular discussions were held with Telstra both to inform them of SPAA's activities and to keep informed about theirs. One of the major frustration's has been caused by Telstra delaying proposed testing of this network. Initially, SPAA was advised October/November 1998 would be a possible time, this became March/April 1999, then it was October/November and now SPAA has been informed that Telstra can not address the issue until well after the Olympic Games.

While it is understandable that Telstra would not want to commit large amounts of time and resources which in the initial stages would not be a huge part of its revenue. However, it is frustrating that so much time has been lost in introducing a test of the mechanics and creative use of this currently available technology. SPAA has expressed considerable concern that these delays may result in another lost opportunity for the Australian industry.

⁴ Provided by the Screen Producers' Association of Australia

Communications Competitiveness and Winning Off-Shore Productions

The impacts of communications costs on Australia's chances of winning international business are illustrated in a case study provided by Ms Cathy Robinson, former CEO of the Australian Film Commission.

A studio production executive in charge of a major film project was advised to contact the AFC by a colleague in Los Angeles after he had expressed his frustration at his inability to negotiate "reasonable" ISDN rates for the project from a major Australian communications carrier.

From the studio executive's point of view the problem was sizeable. He needed to ensure Los Angeles-based production executives' access to the "dailies" ("rushes" in Australia) on a daily basis and wanted to use the ISDN facility to send them from Sydney to the studio overnight. In the North America he had regularly used ISDN at rates of between \$US0.45 to 0.90 per minute (the variation being between peak and off-peak zones). In his conversation with the Australian carrier he had been quoted around \$A3.00 per minute, with a slight discount for off peak use. He projected the volume of traffic to be a minimum of two to three hours, six days each week for around three months. He also advised that subject to satisfactory outcomes, the studio was contemplating making at least three more pictures in Australia over the following five years, all of which would be of a similar size and budget to the project under discussion.

The executive indicated to the AFC that if he could not negotiate a better deal on Australian telecommunications, it was likely the picture would be made in either the US or Canada, and sought AFC assistance in his dealings with the corporation. The CEO of AFC briefed the office of the Minister for Communications, Information Technology and the Arts about the matter, and through this channel and direct contact with the communications carrier, a resolution was reached after extensive negotiation among all parties involved. The studio agreed to accept a reduced price from the carrier, although still well in excess of North American rates.

It is also worth noting that the film executive observed that he had managed studio pictures in many parts of the world and dealt with many difficulties, but that the negotiation with the Australia carrier rated as the single most difficult and unhelpful he had been involved with. He also observed that unless the carrier improved its negotiation technique, this sort of episode would be likely to cost Australia business in the future.

Survey of Industry Needs

These claims by representatives of the film industry interviewed by the working group appear supported by a survey of the film and related industries conducted as part of the Crows Net telecommunications network initiative (see p 6). That survey, of 102 companies in film, television, graphics and publishing, interactive media and computer software in the North Sydney region, found that:

- There is very strong interest in Crows Net, and subject to cost vs bandwidth considerations the service will find an accepting and enthusiastic market. Indeed, the cost of bandwidth itself is an obstacle to the sort of increased collaboration which would improve opportunities to win international business. Most of this market is currently more interested in communicating with companies outside the region than with local companies, and it is only after the first few collaborative projects have been identified and completed that cultural change is likely to occur.

- International connectivity must be a vital component in Crows Net. The ability to access a high bandwidth connection for data transmission (especially to the US) will be crucial to the acceptance of the service by the sectors of the Crows Nest community most able to support the service financially.
- The price of the Crows Net service is also a critical factor in the willingness of companies in the Crows Nest region to be involved.

These findings reflect the industry views above about the vital importance of bandwidth, connectivity and price. The survey identified the following customer industries for the various 'intensities' of bandwidth and processing power use:

High intensity

(need for extremely high bandwidth and processing power)

Film Post-Production Houses
Design Houses
Internet Service Providers

Medium Intensity

(need for moderate bandwidth and processing power)

Television and Video Production Houses
Television and Video Post-Production Houses
Sound Post-Production Houses
Computer Software Developers
Interactive Media Developers

Low Intensity

(need for low bandwidth and no real processing power)

Film/Television Producers
TVC Producers
Film Laboratories
Editing Facilities

The National Bandwidth Inquiry

The Government commissioned the Australian Information Economy Advisory Council to undertake an inquiry into national bandwidth issues. The Council has recently provided its final report⁵, and its conclusions appear broadly to recognise some of the issues faced by the film industry, and other industries in need of large bandwidth capacities. The Inquiry's findings and recommendations include:

Supply of Bandwidth

- Usage of bandwidth is generally less than 1% of bandwidth capacity;
- Demand is growing rapidly, and most of the demand is in data traffic. Increases by a factor of 2 to 5 can be expected by the year 2004;
- ... there are problems in practice with the translation of the potential trunk capacity on the optical fibre network into actual capacity available for data services ... This lack of customer access to bandwidth on a timely basis would seem to flow from problems in the customer access network and from the provisioning priorities within carriers' systems.
- Backbone bandwidth capacity ownership is highly concentrated. Outside the large markets of the eastern seaboard there are only two significant providers of bandwidth, and only one of them has true national coverage. This market concentration may limit the amount of capacity that is actually supplied to the market through active or passive 'rationing' of that capacity by its owners.
- On international routes, supply is expected to broadly meet demand projections although the lumpiness of supply changes may constrain the ability of suppliers to respond rapidly to demand changes

⁵ "National Bandwidth Inquiry" Report of the Australian Information Economy Advisory Council, April 2000

Competition

- Competition is essential in placing real pressure on suppliers of bandwidth to reduce prices and improve service.
- Policy initiatives should be directed at facilitating the development of both infrastructure and services competition by addressing potential barriers to market entry and by encouraging demand growth. Innovation in products and the commercial provision of services will also encourage demand.
- The Government's principal focus of policy attention in relation to bandwidth issues needs to be on transforming bandwidth capability into bandwidth availability by developing competitive and responsive market conditions, particularly in the customer access network and provisioning of trunk capacity

Making Bandwidth Internationally Competitive

- Australian prices for leased lines and switched data services appear to be generally higher than prices for comparable services in comparable markets in the United States and Europe
- Unit prices of bandwidth in the wholesale market are likely to continue to decline by 30 to 50 per cent per annum over the study period in capital city and thick route markets
- Major influences on price trends are underlying cost structures and the levels of competitive pressure in the market. The Australian telecommunications market is more concentrated than in some other communications markets, although competition is improving
- The Australian bandwidth market has not to date seen the same levels of innovation in the type and range of infrastructure and service provision as is seen in the most competitive North American and European markets. In particular, Australia has not to date developed dark fibre or **bandwidth spot markets** to any significant extent
- The Government should maximise the potential for the development of a fully and vibrantly competitive infrastructure market in those parts of Australia where there is the greatest prospect of true international competitiveness in a global e-commerce market by removing as far as practicable regulatory distortions to the operation of such a market. At the same time, the Government also needs to ensure appropriate mechanisms are in place to meet social equity and public interest goals.
- In particular, existing telecommunications-specific regulations should be progressively reviewed to ensure that such regulatory instruments do not unintentionally hinder the development of an internationally competitive information economy
- Governments at all levels should consciously develop ways of fostering and supporting new types of telecommunications operators who will add to the depth and range of the Australian market

The Multimedia Industry

- While not specifically identified as an area of high growth and potential demand by the consultants, or currently significant in terms of *overall* demand for bandwidth, the multimedia industry in Australia has particular needs for high bandwidth. *Multimedia* refers to a combination of skills in two or more of the following areas: photography, animation, graphic design, digital imaging and audio engineering to produce, for example, film or video sequences.
- Often these processes involve the transfer of images and sound through a number of production stages carried out collaboratively and/or sequentially by geographically separate organisations. This is ideally suited to high bandwidth data transfer. This industry is a potential consumer of competitively priced high bandwidth services within Australia and to overseas locations and, given the right circumstances, could well compete effectively in the US film and video post production market.

- The development of content and applications should also be encouraged, including through the provision of testbeds and incubators across Australia through Commonwealth funding using, for example, the Building on Information Technology Strengths (BITS) program.
- Collaboration in the multimedia industries, particularly on global projects, should be pursued by industry and Government working together to develop network solutions which allow them to move large amounts of digital material in the interests of greater competition and efficiency in the use of resources.

These findings and recommendations appear broadly to support the views of the film industry about the importance of bandwidth, its cost and accessibility.

Addressing the Issue of Bandwidth

In discussing with the film industry the difficulties faced in access to, and cost of, telecommunications bandwidth, the working group considered a number of options to try to improve the situation. Many of these, such as a form of Universal Service Obligation to apply to the provision of bandwidth, or a subsidising of the costs of connecting to the necessary bandwidth, appear to be contrary to the thrust of regulation and ownership in telecommunications, and were not pursued further.

The working group took the view there are roles for both government and industry in addressing the bandwidth bottleneck. Government needs to recognise the fundamental role of information industries, such as the film and related industries, in Australia's economic future, and in turn the basic part played by availability and cost of bandwidth in the competitiveness and viability of such industries. Government already has policies aimed at improving competition, innovation, flexibility and variety of higher bandwidth services. It should continue the impetus to a more competitive, diverse and responsive communications industry and bandwidth market in Australia.

The recommendations of the National Bandwidth Inquiry provide the necessary leads in this direction. There may also be a role for government, from time to time, in demonstrating its commitment to, and leadership in, these areas, by, for example, helping promote special arrangements to ensure that Australian firms have as good a chance as any to win important, high-profile business (see the case study, 'Communications Competitiveness and Winning Off-Shore Productions' above).

Industry needs to take a more cooperative and inclusive view of achieving the desired levels of access to, and cost of, bandwidth. No Australian film industry company is large enough to have the level of demand for bandwidth which might make the carriers pay attention. Together, and working with the related 'digital image on screen' industries, a more united, powerful and substantial case for, and level of demand for, access to bandwidth can be presented. This joint approach on the part of the film and related industries should seek to use all available technical solutions and potential providers, to achieve the most cost effective solutions.

There is also a joint role for both government and industry to work together. This is in the area of the industry availing itself better of existing government programs of technical industry support, in areas such as software development, IT business incubators, and networking initiatives. These programs include various support programs for industrial R&D and innovation, and specifically the Department of Communications, Information Technology and the Arts' Building on IT Strengths (BITS) Program.

The BITS Program has recently announced an allocation of about \$76 million to establish 10 BITS Incubators for information technology and IT-using firms. Start-up firms in the film industry, with a significant involvement in digital technology, should be able to take advantage

of this part of the program. More specifically for the film industry's problems with establishing and making use of networks, BITS is soon to invite applications for funding under the Australian Advanced Communications Infrastructure Development Program (AACID). \$40 million will be provided to support the development of advanced communications networks in Australia.

AACID is intended to play an important role in developing advanced communications infrastructure, to allow access to high-performance, leading-edge networks, and to test, trial and demonstrate next generation applications, products and services. Networks supported by AACID are to be based around communities of users, including content and applications developers, and the working group believes that the film and related industries would be an ideal community for this purpose. The program also encourages collaborative approaches, leverage of Commonwealth support, and linkages with other networks.

The working group believes that the film industry should recognise the opportunity offered by the AACID Program, and develop a proposal for funding under that Program.

The working group **recommends** that:

1. Government should examine and act on those recommendations of the National Bandwidth Inquiry aimed at improving competition, innovation, flexibility and variety of services in the provision of bandwidth;
2. The film and related industries should examine forms of cooperation which would allow them to aggregate their demands for bandwidth, thereby presenting a more consolidated and higher level of demand, which may be more attractive for bandwidth providers to respond to;
3. The film, multimedia and related "digital image" industries should be encouraged to explore and make use of existing Commonwealth programs which encourage innovation in information technology, telecommunications, and the use of networks; in particular, these industries should vigorously compete for funding under the new AACID networking program.

THE WAY FORWARD

The working Group believes that the industry has three, interdependent opportunities for growth and contribution to Australian culture, based on the industry's advantages, and drawing on the potential opened up by new technologies. It can provide services to the global industry, picking up contracts for production and post production in competition with other players. There has been some success already in this area (for example the firm Animal Logic's Academy Award winning work for the film *The Matrix*), and this path offers the opportunity for greater recognition internationally of Australia's technical skills, and increasing demands for those skills. A second route for the industry is to become recognised as a player with significant assets and contributions to make, and become well established as a partner in officially-sanctioned co-productions with other nations. The industry can also maintain an independent cultural identity, producing recognisably Australian products, maintaining independence, and it is hoped achieving financial and critical successes with a number of distinctly Australian productions.

The interdependences among these opportunities need to be recognised. The growth and profits generated through the first two paths can encourage the development of new talent through the third. That talent in turn can provide the technical and creative skills needed to sustain the first two, and to maintain an Australian identity and value-added. None of these can be achieved without the vigorous presence of the others, and, in achieving them, there is a constant and

complex interplay of content, creativity, industry capacity and technical skills, and Australian cultural goals.

The working group believes that industry and government need to take action together, to ensure advances along all three paths. These actions should be aimed at overcoming the challenges and obstacles to growth identified above.

Actions Required and Recommendations

Industry needs to work cooperatively to seize opportunities in production and post-production wherever they arise. Sharing of capacities and equipment will be vital to Australia achieving a share of world markets, and it is only through cooperation that not only such competitive scale, but also greater internal coherence, more common directions, and a clear industry voice can be achieved.

One way to start this process would be to encourage the industry to form a group to examine and promote the benefits of improved cooperation, sharing of technology, and some strategic industry planning. This group might work to develop a strategy, and draw together an industry-wide point of view. It should be made up of industry practitioners, focus on making practical improvements to the situation, and work to a set time scale and outputs. The group should not seek government hand outs; it should focus on an industry-wide view on opportunities and impediments, and the practical steps necessary to maximise the growth of the industry.

An alternative approach, more favoured by the working group, is to encourage the industry to join with other, similar industries to form a forum which would be the voice of those engaged with the creation and provision of digital media. This would include the film industry; television (programs and commercials); multimedia; computer games authors; internet authors; etc. A common forum which embraced such industries could undertake a number of tasks which are currently neglected, to the detriment of the industries involved. These could include:

- Looking for ways to aggregate demand for bandwidth across firms and industries, to be in a position to negotiate with telecommunications providers on terms of access to such bandwidth;
- Representing the industries' needs and opportunities to Governments;
- Having a say in the setting of technical standards for the industry, and negotiating on international technical standards;
- Examining the possibilities for collaboration to win business from overseas, and strategic partnerships with overseas companies;
- Provided sufficient volume of overseas business is available, examining the chances for collaboration on handling such business, ie sharing it out among firms based on price competitiveness, capacity and capabilities;
- Sharing ideas on technology and innovation, at the pre-competitive level, across industries; and
- Addressing copyright issues

There are already a number of industry bodies within the film industry, but many of these are small and represent only parts of this diverse industry. Two organisations, the Screen Producers' Association of Australia and the Society of Motion Picture and Television Engineers, would be well placed to lead the way on designing and developing this forum.

As pointed out above, **Government** needs to recognise the vital importance of broadband telecommunications capability in achieving the best outcomes in this industry (and other industries), and needs to ensure that the infrastructure for this is installed and available.

Government should also actively support the establishment of the forum proposed above, and provide seed funding for its start-up. Such intervention is justified due to the fragmentation of the industry, its diversity, and the large numbers of small firms which are industry players. The benefits of Government support for establishment of the forum would include:

- Providing a boost to an emerging industry cluster which will be increasingly important globally and in Australia's future;
- Supporting small business;
- Encouraging industry to address its own problems and opportunities collectively, rather than relying on any increased or targeted Government support; and
- Encouraging and supporting an important part of Australia's culture and identity.

The working group **recommends** that:

- 4 The Australian film industry join with other, related industries involved with screen-based imaging, to develop a forum which will provide a consolidated voice for these industries, represent the industries needs and opportunities, and improve collaboration to maximise the opportunities for the growth of these industries.
- 5 The Commonwealth Government provide initial funding support to help the establishment of this forum.

Government needs to evaluate the long-term cultural and trade significance to Australia of our National Cinema and enable our industry to increase its competitive effectiveness in the global marketplace, while ensuring the steady flow of local productions. The working group believes strongly that a technically expert industry, and the removal of technological barriers, will not by themselves guarantee a vigorous and internationally-competitive Australian film industry. The creative side of the industry must be nurtured if our industry is in any way to be complete, and to retain both an Australian identity and a chance to compete internationally.

A recent report to the Minister for the Arts and the Centenary of Federation by the Australian Film Commission and the Film Finance Corporation has pointed to the lack of so-called development funding for the creative side of the industry. Such funding is used to support the development of scripts and concepts, prior to production commencing. Over the last 3 years, only 1.4% of the budgets of films supported by the FFC was spent on development, compared with 2% in the UK, 5% in Canada and 10% in the USA. Such development can be seen as the equivalent of the 'basic research' which leads to economically-valuable new-economy products and industries, and the working group believes that the arguments which apply to government support of basic research, apply with equal force to film industry development spending. Many senior figures in the Australian film industry have recently joined together to support the AFC/FFC industry recommendation on development funding⁶.

"Amongst all this economic integration, small countries such as Australia strive to promote their cultural identity. Technological change and globalization seem daunting, but reinforce the need for strong cultural policies to ensure that the skill and expertise we have developed is used to tell our own stories, allowing us to maintain our national identity and cultural diversity in a rapidly changing world."

- Screen Producers Association of Australia

⁶ Sydney Morning Herald, 19 April 2000, "Top filmmakers unite in plea for help to save their industry"; The Australian 19 April 2000, "Stars seek a Howard support role"

Government should also examine support to attract foreign film work to Australia, whether foreign productions to be made at the major studios, or a share of post-production of foreign features. At present, AusFILM, a joint Austrade, State Government and private sector initiative, co-ordinates the promotion of Australian film services offshore. The Government should examine increasing funding to AusFILM, and ask Invest Australia to promote the Australian film industry as a destination for foreign investment.

The working group **recommends** that:

- 6 Government examine sympathetically increased development funding to the creative side of the industry.
- 7 Government consider providing increased resources to (a) promote the Australian film industry as a destination for foreign investment, and (b) encourage foreign firms to make use of Australian film services.