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May 22, 2003

Response to the inquiry into the future opportunities for Australia's film, animation, special effects and electronic games industries.

The Film and Television Institute of WA (FTI) appreciates the opportunity to comment on the inquiry now being made by the House of Representatives Standing Committee on Communications, Information Technology, and the Arts into the future opportunities for Australia's film, animation, special effects and electronic games industries, and feels it is well placed to provide substantive input on the subject.

As the terms of reference have in many cases linkages to the work being done at FTI, the response begins with a brief on FTI's role in WA and its efforts in film and television, games, puppetry, animation, and special effects training and production development. The inquiry may find the approach that FTI has taken is the best model for the future development of animation, special effects and electronic game industries in Australia.

FTI – BACKGROUND

FTI is Western Australia's development centre for independent screen production and exhibition. For over 30 years, as a Member based not-for-profit organisation it has assisted the professional development of independent emerging film and television creators. From these ranks, not only has the WA industry grown, but also many national and international professionals began their career journey at FTI.

FTI is supported by over 600 industry members, ScreenWest, the Australian Film Commission, the City of Fremantle, corporate sponsorship, and grant funding for specific projects. It derives income from member's services, facility hire, exhibition, events and training and workshop/seminar fees. Along with Metro in Sydney, Open Channel in Melbourne, QPix in Brisbane and MRC in Adelaide, The Film and Television Institute is one of five members of Screen Development Australia(SDA). FTI also represents the Australian Film Television and Radio School (AFTRS) in Western Australia.

FTI offers a host of assistance schemes, exhibition and production opportunities to Members and Industry practitioners alike, and on a weekly basis visits schools, TAFE and universities to talk to students about future trends and opportunities. FTI consults with and provides training to teachers, trainers and education administrators, and regularly meets with government regarding the industry, future training needs, school curriculum, and over the horizon opportunities. FTI wide range of assistance programs also include accredited training, professional skills development, adult education, an international guest speaker calendar, regional workshops, youth workshops, and VET in schools auspicing and delivery.

On completion of informal or formal training at FTI, or any of the other WA institutions, FTI continues to nurture these emerging screen producers through the beginning years of their careers. These on-going programs operate under the

umbrella of professional practice, member's production groups, and various levels of emerging filmmaker grants. Those with no formal training, or late bloomers are encouraged to also participate in these programs after some introductory training.

Through its *Making Movies At FTI* program it is the largest provider of Adult Community Education in television production in the state. Beginning in mid 2003 FTI will tour West Australian regional and isolated communities and run accredited filmmaking workshops and feature film screenings. A WA Department of Local Government and Regional Development grant is making the FTI MAKING MOVIES ROADSHOW possible.

In recent years one of FTI's key strategies has been that education/ training/ and professional development are key catalysts for the economic development of the WA screen industry. Production through training can be the seed from which new companies will grow.

In 2001, with substantial financial support from the WA Department of Education and Training and operational assistance from other departments of the state government, FTI began a major initiative to stimulate and support the growth in WA of several interrelated forms of digital screen production. It brought together key industry, government, and individual stakeholders, and working with Spare Parts Puppet Theatre established the Centre for Advanced Digital Screen Animation, Games and Puppetry at FTI (CADSA GAP) - A Community of Creative Practice.

In developing a strategy for training, and professional development at CADSAGAP, a substantial amount of research went into international production practice, workflow, and commercial requirements in animation, games, puppetry, and effects, and where they share common ground. There was also a significant review of those training/higher education institutions that are highly rated by the animation, games, and effects industries. In animation there are a few schools that have long histories of entire classes being hired by major production companies including Sheridan in Toronto, and Cal Arts in California (which also teaches puppetry).

A key characteristic of these programs was a foundation in traditional animated storytelling. This was reinforced after discussions with ILM, Disney, Dreamworks, BlueSky/Fox, Pixar, and Sony. All of them believe animators need root skills in traditional animated storytelling before moving into the digital medium.

This background to FTI and what we've learnt from these experiences lead us to the follow observations.

THE FUTURE

FTI sees animation production, children's production, and games productions as areas of significant opportunity, with the potential to generate tens of millions of dollars of production in WA, and to substantially assist the state government's goal of significantly increasing the level of production in WA. FTI would contend that this could be around 10% of national production within 10 years. Production created through training and professional development at CADSAGAP has commercial viability, but more importantly creates productions that can demonstrate the community has the ability to deliver. These outcomes can then be used to attract the attention of national and international production companies that would otherwise never consider WA as a place to set up a production.

Creating an opportunity through the development of a Centre of Excellence in the rapidly growing field of animation, effects and games industries will not only build

business growth domestically but create a greater export opportunity for Australian product,

Games production and animation in many respects have a greater potential market than Australian film, as the product can be readily localised. Different languages, types of voices, changes of character, or situation are not insurmountable barriers when an export market requires changes to suit that market. In film, such changes are often not financially possible.

Contracted production components, and co-produced content creation in these areas of screen production are less affected by WA's physical isolation because this industry cluster already embraces decentralisation as an advantage. Many international game, effects, and animation companies have located production centres around the world so the development process is unbroken, with a 24-hour work cycle that follows the sun. Nor does such production require large international crews and facilities or expensive talent to travel to WA. However, this industry cluster does require a high degree of connectivity.

DATA TRANSFER

In light of these observations, an outcome of the inquiry must be to place a priority on a means of providing low cost, high volume broadband between WA production companies, and not only to East Coast production centres, but beyond our borders. Broadband services must take into account the nature of the screen production industry. Current broadband bulk-buy pricing is suited for banking, broadcasters and other large volume users, where the data volume is relatively continuous and on-going. Production companies need high-speed transmission of data only at certain times in a production cycle, but when they do, it will be intense high volume. Low cost sporadically intense broadband connectivity is essential for high performance production companies (most of which are fairly small) to be an integral part of a national agenda to grow screen production, animation, effects, and games production.

While the idea of a precinct where such companies can form a hub may seem like a solution for electronic connectivity, Unfortunately such models seldom provide an atmosphere and landscape of inspiration to suit the work practice, creative process, and artistic culture of such companies. Their preference is to locate in surroundings more conducive to *imagineering*. Such companies grow, prosper, and creatively interact in communities of creative practice and not manufactured high tech ghettos. Though many small production companies do form clusters in decentralised urban settings that have the "right" organically evolved street culture, such as Fremantle, they are not electronically inter-connected, however, there is significant opportunity for creative connection and synergies. When employees of such companies walk outside they want diverse architecture, galleries, artist lofts, bookstores, CD shops, clubs, pubs, and a cappuccino strip. A low cost broadband policy for connecting these types of companies must take into account the desire of such niche companies to be a part of a creatively stimulating urban landscape.

The inquiry should find that the infrastructure and costs associated with the introduction of high speed broadband connectivity is a financially limiting factor for most small businesses to grow in this area. If access were made available, these small creative companies will generate the successes of the future and become the larger companies of the future,

SKILLS DEVELOPMENT and TRAINING

The committee should note that the skills development across the range of its inquiry does not limited to the digital or (electronic) realm.

Traditional model and miniature making, and traditional and digital puppet making and puppetry are also essential for the production of animation, games, special effects. Added to that is the broader commercial, military, and industrial simulators, themed installations (restaurants, shopping malls, amusement parks, museums), live performance, and animatronics implementations.

Most game, puppet, animation, and effect production starts with sculpted models and drawings that in games and animation are eventually turned into 2 or 3D animation. In the case of stop-motion animation, and puppet performance these models become articulated, and mobile. In the case of narrative live screen production these models may become robotic, or able to be manipulated by puppeteers so they can interact with actors. A variety of models in different scales may be created for shooting intricate scenes.

Movement analysis and practice has also proven to be an important aspect of animator training as this provides a base on which to build an understanding of animated motion and the effect of physics on movement. Animators also need experience in character/ voice acting as in many cases the animator is the first voice that a character has. Even in this day and age of star voices on animated features, the animator sometimes creates such a memorable and appropriate voice for the character that it becomes the final voice. Character voice skills are also essential for animators to capture the facial characteristics of lip-synced animated characters. It was Walt Disney who created and was the voice of Micky Mouse in *Steam Boat Willie*.

One of the supporters of CADSAGAP is Brian Henson, Chairman of the Jim Henson Company, the world's leading high tech puppet company. It designs and uses animatronic, traditional puppets, and CGI (Computer Generated Images) in the production of a variety of programs. It produced the Australian production Farscape. In a recent correspondence Brian said,

> " Since I have been in the business of puppetry all of my life, I can clearly state that even in the face of new technology, the very basics in puppetry and performance will always be of great importance. Recently, our company has had great success in marrying puppeteers and their talents with CGI technology. In fact, the key to audiences identifying with CG characters is in the development of their personalities. With a puppeteer, a character can be performed more spontaneously to create a fresher type of personality. What the industry lacks are puppeteers with any working knowledge of CGI technology. If the Film and Television Institute can help create a work force with this combined skill set, then those individuals will be poised to create spontaneous animated characters who are more entertaining and far more cost effective than animated characters are today."

Programming skills within game production teams is obvious (average 1 programmer to 2 artists), however, programming is also essential in leading edge animation production, and the creation of digital special effects, and anamatronics. We have also seen that from the ranks of IT graduates have come project managers trained in digital development workflow who want to enter creative fields outside of commerce.

Motion capture (full body as well as hand) is also pivotal for a wide array of production in all of these outputs. MOCAP is key to the creation of digital doubles and provides a means for creating animated motion that is more holistic, and in most cases speeds up the animation process. Motion capture is essential in games production, particularly in those that feature athletics.

Motion capture is also essential at the user end of simulators and games. It allows a player to reach in, or move through a game, or a surgeon to reach into a virtual patient, or a submariner to operate a submarine through any number of strategic scenarios.

In feature films ground breaking productions such as Harry Potter, Lord of the Rings, Moulin Rouge, Star Wars, Walking with Beast, Walking With Dinosaurs, Farscape, Dinotopia all used major amounts of miniatures, puppets, and motion capture in production which were then integrated into digital processing.

The inquiry should expand its terms of reference to include these skills which are outside of the computer. A narrow focus on digital processes will not fully achieve the goal of expanding Australia's animation, games, and effects industries.

TRAINING

Looking at the various game production training/education programs, and after discussion with many game developers in Australian and internationally the most striking aspect was the interdisciplinary nature of game production, and the diversity of skills required by a game production team.

Useful backgrounds for those entering, or changing into this field of endeavour included computer science, applied psychology, human-computer interaction, art/animation, film/ media studies, mathematics, physics, English/ creative writing, and communications. Each of these disciplines offers valuable insight into the process of game design.

Games companies need experts in:

- Game design, level design and scriptwriting;
- Programming within real-time computing constraints;
- Project management;
- Simulated physics and particle system dynamics;
- The Internet and large-scale multi-player environments; and
- 3-D modelling and texture development.

In Australian at this time there is only one higher education (Charles Sturt-Bathurst), and three vocational (AIE- Canberra, QANTM-Brisbane, and FTI) programs in game design. Internationally there are more, but most are elective units within other qualifications. These programs might be categorised as

Game Programming / Design Programs

Computer Science Programs with Gaming Classes

New Media Programs

Design/ Art/ Animation

Comparative Media Study Programs

Educational Technology Programs with gaming focus

The interdisciplinary and collaborative nature of the animation, games, and special effects sector presents significant difficulties in designing and implementing training and professional development programs. Training/ education institutions seldom provide intense and sustaining team interactions between disciplines, thus interdisciplinary production is rare and a novelty. If it should happen it is generally short projects after which all involved go back to their stream of study. It is also rare for recent past graduates, or older alumni to be active in current student production. While foundation skills can be streamed, the melding and integration of these diverse specialists into collaborative and cohesive groups to produce industry competitive product requires a new approach to training and production development.

The difficulty in the professional development of special effects specialist is compounded when one considers their efforts are locked to live action production. Rudimentary training might be possible in mock exercises, but it is the rigour and challenge of inventing, then constructing the requirements of a real production which will prepare someone for the industry. The AFTRS is the only institution that is currently able to offer such integrated high level training.

INTELLECTUAL PROPERTY

What is also critically important in such training driven business development and team building is that the students are allowed to keep their IP so that the work created during training can be further developed after graduation to form new products, and production companies.

Outside of FTI, we know of no institution that has a methodology for establishing and protecting student IP during training, nor a policy of turning it over to students (individual creators, or workshopped collaborative) on graduation. This is counterproductive to encouraging the individual or team of creators from further developing a commercial product or concept, as they are unable to establish a clear Chain of Title which is essential for any production to successfully attract funding. By providing a clear Chain of Title to teams that were formed during the training, the members have an emotional and time investment that is an incentive to continue to work together to realise a commercial outcome.

INCUBATION

FTI believe an incubator within a Community of Creative Practice is the best model to bring together the diverse skills required in game, animation, and special effects, and to incubate production teams that can then become seeds of start up production companies.

Under CADSAGAP all participants get an overall appreciation of the discipline by receiving a broad grounding in all aspects of the process, occasionally resulting in people crossing from one discipline to another, or building up a level of experience in another discipline.

The Community of Creative Practice created at FTI is a vibrant incubator for production development. Participants are involved in training driven production for film and television, interactive computer games, simulators, traditional and digital puppetry, set design, linear animation, animatronics, and screen effects. The cohort

includes television and film creators (producers, directors, cinematographers, sound and lighting operators, etc), model makers, electronic technicians, IT specialists, turner/fitters, puppeteers, 2D animators, 3D animators, game designers, storyboard artists, scriptwriters, programmers, and project managers.

We believe the Community of Creative Practice at FTI is unique in Australia as it brings together the experienced with the inexperienced within a loose and dynamic construct to form an intergenerational domain of knowledge, and abilities to create commercially focused production. FTI assists and facilitates the community, and invests efforts in attracting international speakers, and global attention to the community.

Commerce will grow from this form of training, because through the process real and viable content is developed and produced by collaboration. Completed projects will provide demonstrated *proof of concept*, and can subsequently be commercially developed by the teams that create them. Working alongside and with the television production program run at FTI, many of these people will also be involved in creating special effects for "real" production in film and television.

Training in this most collaborative field of production goes hand and hand with a strategy of

- developing teams of creators,
- involving past graduates with current students,
- and nurturing the development of production that demonstrate the work and entrepreneurship of the cohort within the Community of Creative Practice.

FTI believes the Community of Creative Practice that it is now nurturing will in time generate many viable businesses in WA that will be able to hire employees, and expand the state's screen production industry – resulting in a value to the state, the nation and globally. The participants have created a synergy of imagination where individuals are part of a sum of creativity that is much greater then the component abilities of each artist. Along with creating an environment for greater employment opportunities with export potential, there is opportunity for local stories to be created locally both in a business and cultural sense.

This approach also meets two other trends in society and the workforce. It allows individuals to become involved as they have time, and at whatever level they want to participate in the Community to create production that adds to their portfolio. Currently, of the 60 or so participants in this FTI Community of Practice, the youngest just turned 16, and the oldest is in her 60s, and every age in between.

SURROUNDING ISSUES

The inquiry should look at the approach of major international film and television production companies who maximise their IP by integrating film releases and TV shows with game products, and merchandising. DVD releases have substantial additional material and interactivity including games to entice the theatregoer to later rent the DVD. If the additional material is attractive enough the consumer will purchase the DVD. Most productions also have extensive web sites, and these are used to cross promote products associated with the production. With the exception of the Wiggles, and to a lesser degree Bananas in Pyjamas, and Hi-Five, Australian film and television production companies have not embraced such cross marketing or franchise maximising. While not all Australian production may be suitable for multi-product merchandising and cross promotion, it should be encourage so that

Australian product compares well to international product. Such maximising also provides additional income to the production company, and if incorporated into the deal structure may assist in raising production funding. It is interesting that the production budget for Buffy - Vampire Slayer is high for the broadcast fees it attracts, however the income from DVD, games, and product merchandising has made the production company a fortune. Games, products, and home release revenues are integral to the initial pitch of the production, and its commissioning. In Japan and America toy and game manufacturers are not only sponsors but also co-producers.

WA BUSINESS LANDSCAPE

In WA there are a handful of games production companies or start-up teams. The most established are Bungarra Software P/L that has an international publishing deal and is developing its first PS2 game, Geosync and Dogmelon, both of which are working in hand held, PC/web games and industrial simulators. There is a rich culture of animation in WA with many small production companies at one time or another producing animation. The largest is Animation Works, which has recently co-produced the series QUADS. There are a few production houses that can create a range of digital effects. The most active are Double G, Whiz, and Profile Digital. In the field of puppetry which extends into model making there is a rich culture centered around Spare Parts Puppet Theatre, one of the best operated and supported puppet companies in the country. Both FTI and Spare Parts have a close relationship, and both work closely with the state government, in particular ScreenWest and ArtsWA that are within the Department of Culture and the Arts. CADSAGAP has some of the most experienced people available in commercial production, mentoring and teaching those involved in incubated production. There are a number of high profile production experts that call WA home but work for extended periods in other states and countries on international production. When they are home they conduct master classes and seminars at CADSAGAP. As the industry grows in WA, we expect they will spend more time in WA and work here and create businesses here.

It may be obvious but WA is on the Indian rim, and as such a significant number of WA producers work with companies in Singapore, Japan, South Africa, India, Mauritius, Korea, Indonesia, many Arab countries, and a variety of others bordering the South China Sea, and Indian Ocean. Possibly because WA is closer to Europe, there also seems to be greater activity between WA producers and EU producers than with North American producers.

MISCONCEPTIONS AND STATISTICS

Recognising that the committee has asked for data about the industry in Australia, while sales and production statistics are available there has been little research on underlying detail. But if the industry is viewed as global, data from the US can be a valuable starting point and extendable to nearly all first world countries including Australia.

One of the tasks that the inquiry will have to address will be to change the misconception that games are played predominantly by young males in isolation, and that this is in some way contributing to anti-social behaviour. This misconception is common in the thinking of decision-makers in government, and financial industries resulting in resistance to any involvement with the games industry.

The committee may already have the following detail, but we supply it to highlight valuable research already conducted and support our own findings and our contentions in this document.

According to findings in research conducted in 2000 by Peter D. Hart Research Associates, (a North American based company) adults are increasingly playing computer and video games. The data showed that 32 percent of Americans who play computer and video games are age 35 or older, with a remarkable 13 percent age 50 or over. 43 percent of game players are women, and that the average age of these women is 29 years old. Overall, the study showed that 60 percent of all Americans, or about 145 million people, say they play interactive games, exploding the myth that most gamers are teenage boys alone in their rooms.

The data also showed that these grown-up gamers play with their children and friends as part of their regular social activities. 25 percent of most frequent gamers play with their parents, 27 percent play with their partner, 33 percent play with siblings, and 43 percent play games with other family members.

Video games are no longer relegated to a corner of the house, as they once were. Nearly three-fifths of all game consoles are located in family rooms, living rooms, or home cinemas and occupy a very central place in the home entertainment complex. The popularity of games played at home can also be measured by the fact that Americans report that playing games, either online or from the desktop, is the most popular use of the PC in the home. According to Interactive Digital Software Association's research, the PC is used 31% of the time to play games, surpassing e-mail, which ranks second at 21%. Furthermore, gamers come from all walks of life. Nearly ten percent of the most frequent users are homemakers, 8% are executives/professionals, about seven percent are computer scientists or engineers, and 8% are clerical workers. More than three-fifths have some higher education.

A particularly interesting statistic was the types of computer games purchased by frequent game players age 50 and over. This group of gamers are often in retirement; with many in age care homes. For them game play is more then fun, it is an important part of maintaining mental stimulation, and dexterity. 50+ gamers are interested in:

Puzzle/Board Game/Card 25.5 percent

Action 12.7 percent

Learning 10.4 percent

Role Playing/Adventure 10.0 percent

Driving/Racing 10.0 percent

The one figure which may matter most to the film and television industry is that when Americans were asked which entertainment activity they find to be the most fun, 34% said video games, more than double that of watching TV, surfing the Internet, or going to the cinema.

> "The popularity of video games with Baby Boomers reflects the increasing variety and sophistication of titles available and the appeal of entertainment with which users can interact and control. The state of the industry is very strong. Indeed, the future for video games is one of unparalleled growth, limitless creative advances, and eventual leadership as the most important form of entertainment in the 21st Century."

said IDSA President Douglas Lowenstein at a conference in 2001.

In the US, sales in video games have grown at an annual rate of 15% a year over the last several years, double the rate of growth of the US economy as a whole, and far outpacing the growth in other entertainment and technology industries. For example, growth in the film production and distribution business has averaged about

5% a year and growth in the computer sales has averaged 4% a year. In 2001 industry analysts Alex Brown with Deutsche Bank, found that the target population in America for the video game industry in 1980 numbered twenty million; today, it is 96 million, and by 2005 it will be 119 million.

While the growth of game sales has been rapid and continually upward, the game production industry does seem to experience transitional lulls when existing platforms approach the end of their product life, and new platforms are in development. During these periods publishers hesitate to commission new games. Only those featuring a high value franchise, such as a Harry Potter game are developed during these periods. However, it is expected in the future that such periods of production contraction may be less severe as new opportunities for game developers expand into wireless (mobile phone) games, massively multi-player games, on-line games, hand held devices (PDA-Personal Digital Assistants), DVD applications, open architecture arcade games, and the use of game technology in military, commercial, medical, and industrial simulators, and educational applications.

According to a recent (2001) Deutsche Bank report on interactive entertainment sites, roughly one-half of all US Internet users spend time playing on-line games. A more recent IDSA consumer survey has picked up similar trends. The percentage of the most frequent gamers who play online grew from 19% in 2000 to 24% in 2001. This growth has a direct correlation to the number of houses connected to broadband high-speed ADSL and cable modems, a key factor in the expansion of on-line game play. Analysts predict broadband penetration will reach 25%-30% of US homes over the next five years. A recent US report estimating that about 55 million Americans play online games, and 72 million will play online games by 2004. IDC estimates that revenue from online games will hit $2.3 billion by 2005. This revenue is collected from US as well as offshore players.

In many parts of the world *massively multiplayer games* are rapidly growing in popularity. While they can be played in the home via high speed access, they are increasingly played in an entertainment venue (already prominent in the US and South Korea, many universities in Europe, and beginning to appear in Australia) which resemble a cross between a night club, internet café, and game arcade. Several hundred people may play the game in one location, and can not only interact with each other, but with those in other parts of the world. At the recent Australian Games Developers Conference (Dec. 2002) 200 people at a time interactivity played for three days a single game.

Broadband has often been highlighted as a means for greater personal contact and interaction between friends and family through personal teleconferencing. The availability of broadband will also allow games to be played among friends and family separated by distance. Such games would be installed in the machines of each participant, and would have a telewindow where each could see the other.

High-speed access is a hot topic in most countries and has become a prominent national agenda in some (as in Singapore). This surge in high-speed access will mean that on-line game designers will be able to deliver richer game experiences and *Massively multiplayer games* to users, and the entire on line game experience will itself be more compelling.

The statistics on new fields of growth in games play is just beginning to emerge. Research in 2001 found that 32% of Americans play games from time to time on handheld game systems, 5% play games on their PDA, and 11 percent are playing games on their mobile phones. These percentages have substantially increased in the last two years, most significantly in mobile phones where colour screens and

greater functionality have been a driving force in marketing phone sales and mobile services.

Financial implications

On-Line games created and operated in Australia will generate a direct user client base. Income will be nearly immediate, and with a higher percentage of return to the developers compared to products which are sold through distribution and publishing channels. While developmental investment in such games is high, the fact that an international publisher or distributor is not essential will mean Australian developers will have new opportunities to create direct income generating products, much of it as export income from off shore players. This will however change a long established investment paradigm whereby venture capital for production (private or government) is tied to a distribution agreement in place.

The inquiry should explore the use of completion bonding for interactive title development that could provide a means of underwriting the investment exposure through such development. I'm sure other submissions will also address the need for some form of 10ba tax incentive for games production.

Data Monitor forecasts that 200 million people in Western Europe and America will be playing games on their phones by 2004. Nokia estimates that mobile gaming will generate $6 billion revenue worldwide by 2005. Nokia, Sony/Ericson and Siemans have made content deals with leading game companies. With the eventual rollout of 3G high-speed wireless Internet access, cell phone games may become even more viable. In Japan, cell phone gaming is already huge and NTT is planning on rolling out its DoCoMo I Mode service in Europe. Games are a hot application for PDA's, and the most popular downloads for Palm Pilots.

Wider implications, opportunities, markets, trends

Travel

Several airlines now have games available on some in-flight entertainment systems, and it is expected this will quickly expand and become common with the rollout of personal monitors for all seating. Gaming in the skies means that millions of passengers will be able to play video games, possibly for the first time, on thousands of planes flying around the globe.

There is significant potential for QANTAS to have inflight games that enhance the cultural experience of Australia, while providing stimulating entertainment during the hours of long flight to and from Australia.

Leisure Industry

Animation, games, special effects, anamatronics, and puppetry production also have application in cultural and themed entertainment venues such as museums, zoos, historical sites, national parks, game arcades, and amusement parks. This form of commissioned installations engages visitors by bringing to life cultural and historical themes. The market for such installations is expanding as an increasing number of Australian attractions are commissioning emersive experiences. Those who create installation production are finding this form of production has a market internationally with many pursuing international contracts, and earning export income. A peak body in this area is the Australian Amusement, Leisure, and Recreation Association who have many members that are now being contracted to develop themed experiences

for off shore clients.

In the past, arcade game play was limited to those provided by the game hardware manufacturer. There is a trend in the arcade game industry toward motion platform based game hardware that has an open architecture so that the variety of game play can be expanded, and favorite hardware can be rejuvenated with new game play. This will be a new source of game development for independent game production companies. Generic hardware will also allow games that are specific to a venue, or market to be developed, for instance for museums, youth education facilities, theme parks, historical sites, etc.

Cultural (or Museums and Art Galleries)

In WA the Centre for Advanced Digital Screen Animation Games, and Puppetry sees installations as an important part of the mix of outputs which it will develop. One of the proponents of CADSAGAP is the WA State Museum. It would like to develop skilled digital, and stop motion puppeteers who can be involved in the production of cultural and educational projects that are planned by the Museum. Another is Corporate Theatre, an events company that also has an interest in developing digital puppeteers for inclusion in special events it regularly produces.

Clay Bryce, Documentary Unit, Western Australian Museum commented in a recent correspondence

> "The Film and Television Institute's initiative to establish the Centre for Interactive Game Design, and Traditional and Digital Puppetry is to be applauded. The aspirations and eventual outcomes derived from this initiative will enhance future Museum productions concerned with educational and factual programming."

Events

Andrew Hiscox, Production Manager Corporate Events turns to digital puppetry

> "With an audience that is increasingly aware of computer technology and advances in broadcast television, we are constantly in need to produce bigger and better on screen presentations. I believe that the recent developments in the Didjiglove (an Australian product) and its application to digital puppetry may provide a new and exciting element to our events."

Medical

Games, animation and game technology are also finding a place in medical laboratories to treat diseases and other conditions. Skip Rizzo, a psychologist and cognitive rehabilitation specialist at University of Southern California medical centre is incorporating gaming features into virtual environments to treat people with cognitive impairment, such as Alzheimer's, Parkinson's Disease, and attention deficit disorders. He reports that video games like SimCity are extremely useful for enhancing patients' executive functions. Another is Dorothy Strickland, President of Do2Learn, who is using video games to work with autistic children, teaching them simple skills like how to use a computer mouse.

Research

Larry Hodges, a professor and computer scientist at Georgia Tech, is using video game and virtual reality technology to treat Vietnam veterans with post-traumatic stress syndrome. In a paper he presented at a recent medical forum Hodges talked about a Vietnam Veteran tank commander he was treating,

> "His most traumatic event involved his tank being overrun by North

> Vietnamese regulars. Everyone in his tank battalion was killed except him. He was left for dead with his jaw broken."

Hodges is using VR technology to create a virtual environment to recreate the experience of being in Vietnam, and the veteran will retell, and relive, the story of the tank being overrun.

Defence

Video games in the Defence Forces are already being used in training. Compared to traditional instructional design/simulator tools, game development tools are more powerful, have vastly superior functionality, and are designed to allow for quick development, revision and modification. For example, at Fort Bragg, North Carolina, up to 50 soldiers at a time train on a new high tech weapons system called Land Warrior. This situational training aid simulates actual weapon system's capabilities. It relies on a customised version of a video game, Delta Force 2. A version of it is also available to would-be soldiers in military recruiting offices.

The Australian defence department also has an interest in developing a range of simulators that use game technology. FTI regularly meets with representatives of Training Authority Submarines, Garden Island regarding future plans for staff training, and developing a pool of developers that can be sub-contracted. It is the intention of the Training Authority-Submarines to develop a suite of applications that will be used throughout the Defense Department system. It is then planned that their experience will lead to other projects for other defense applications beyond the submarine service.

Commander Ogrizec of the Training Authority Submarines, Garden Island explains.

> "The Submarine Training & Systems Centre (STSC) at HMAS Stirling, is currently in the process of upgrading it's computer based training systems. These will be enhanced to incorporate advanced 3D interactive computer based simulation, as an integral component of the submariner's training footprint. This strategy is intended to provide a more experiential training media than has previously been available and will incorporate multiple scenario training templates, in combination with high fidelity 3D equipment simulation. An essential part of this project, we will be seeking source appropriate training for our development programmers, in the use of simulator development software & technology. ...We would be keen to source...expertise and training services, in respect to the following specific areas of interest:
>
> - The use and application of digital image capture, as a raw input to simulator and VR development frameworks.
> - The employment of 3D games development platforms, to create real time simulations & training scenarios, utilising digital image frameworks.
> - Management training, in respect to simulator design, production and validation."

These same skills are also in demand for those creating next generation industrial, defence, educational and commercial simulators.

Education and Culture

Computer games have rapidly become a significant and expanding field within the

entertainment industry and modern society. But where is video gaming as it relates to culture, human behaviour, or of course education.

In the landmark book *The Art of Computer Game Design*, Chris Crawford noted that

> "Games are probably the original educational technology. People of all ages, learn through play, participating in and inventing games to support learning. Although educators have been using games to support learning for years, games for learning went largely ignored in educational discourse until the 1960s and 1970s. Since that time, using games for learning have come in and out of vogue, usually along with technological advancements."

Tom Malone wrote how games use challenge, fantasy, player control, curiosity and invoking design to create intrinsically motivating environments. More recently, Lloyd Rieber saw digital games as engaging the gamer in productive play, and can result in learning that occurs through building microworlds, manipulating simulations, creating strategies, and responding to situations.

To be more specific, gamers can relive historical eras (as in Pirates!), investigate complex systems like the Earth's chemical & life cycles and the consequence of basic government and urban planning (SimEarth), govern island nations (Tropico), manage complex industrial empires and learn basic principles of economics (Railroad Tycoon), or, indeed, run an entire civilisation (Civilisation series). They can travel in time to Ancient Greece (Caesar I, II, & III) and Rome (Age of Empires I, and II), bring the Middle Ages to life (Age of Empires), and relive European colonisation of the Americas (Colonisation). They can learn basic principles of physics while designing roller coasters (Roller Coaster), and can manage an ant colony, farm, hospital, skyscraper, theme park, zoo, airport, or fast food chain. Beside fast cars they can drive a train, a plane, a ship, and a submarine and develop complex critical thinking and situational decision making along the way.

In a recent story from the *Virginian Pilot* (Norfolk, Virginia).

> "Third-grader Dan Hasas plops on an easy chair in front of the television and reaches for the controls of his Sony PlayStation. In months past, his mother probably would have told him to do his homework first. But in Dan's living room -- and hundreds of others across the city -- homework and PlayStation have become one and the same."

Dan's school, Willard Model Elementary, is one of 16 Norfolk schools that are working with Lightspan Inc. to use video games as a learning tool. Thomas Lockamy, Norfolk's deputy superintendent of academic affairs is one of a rapidly increasing number of educators that see game play as an important aspect of new media and learning. Unlike computer based training where fun was low on the agenda of the educational designer, these learning products see "fun" and long term engagement as a top priority in achieving learning outcomes. In the article he explained why the school turned to video games. "We were looking for a program that was not the same old duplication of workbooks and teacher-directed remediation kind of program, and this answered the charge." Lightspan systems are in use in 1,600 schools in 43 American states and early evidence is that they improve academic achievement in vocabulary development, reading comprehension, and math problem solving.

The Lightspan product is highly customised. But there is no question that there are also great opportunities to use off-the-shelf video games to help kids learn.

For teachers to teach and engage an increasingly technologically literate student,

and as a new generation of teachers more comfortable with technology enter the classroom, it's just a matter of time before more and more games will be used as teaching tools.

Australian perspective – education recommendation

The inquiry should look at games creation and animated storytelling by Australian students as the next step for VET-in-Schools programs.

Increasingly, teachers are finding that Australian students find the subject of multimedia boring. The instructor is usually able to teach the application and the function and form of multimedia, but CD ROMS or web sites and less engaging then games, and animation. The availability of the software package *Flash* in schools provides a means for post compulsory students to conceptualise, create and program intricate interactive video games. Flash is also used professionally for the production of broadcast narrative animation, so the same application can be used to develop animated visual storytelling. Unlike 3D applications that require substantial platform specific hardware, *Flash* is a cross platform product (PC/Mac), and the machines do not require extreme specifications. Also the Australian distributor (Scholastic) has attractive school pricing that includes a suite of learning resources.

Stop motion animation is ideal for students who are attempting to find their voice abd tell a story, but who do not have high literacy skills, nor art ability. Stop motion software is relatively inexpensive, as is the required hardware. It is ideal for school who have a history of arts, ceramics, or other craft forms.

For this to be implemented, effort will be required to educate curriculum councils, education administrators, and school principles that animation and game content creation will not only be fun for students, but will also grow young programmers, storytellers, designers, and content creators. Those working multimedia and web site design do create content, but only after they are commissioned to do so. On the other hand animators and game designers at even an early age can create products which will attract commissions. The potential for self-employment is substantially enhanced.

Games and animation provide a means for those in this formative age group who are at risk due to low literacy skills, to create linear and non linear visual storytelling. Visual storytelling can become a path to develop higher-level communication skills outside of the written word. Such storytelling will for many lead to a new found interest in the written language.

For the most advanced young people, they could become involved in making "*mods*" for existing games that make available game development tools. *Mods* developers can show potential employers something tangible, which lowers the employer's risk dramatically. In some cases, those who develop *mods* come into a game production company already familiar with the very tools they'll be using on the job. The willingness to commit personal time to developing maps and missions also shows a commitment to game development that's hard to argue with.

Australian perspective – Cultural

Cultural expression in all forms and from all cultures should be explored by this committee.

In particular the very nature of animation is visual storytelling and is ideally suited for the portrayal of indigenous stories. The beliefs and histories of these cultures are often powerfully portrayed in art and related forms of expression. Animated art expression provides a means of story development over time, and is an ideal

platforms for many indigenous stories and cultural expression. Stop motion animation is particularly well suited as it allows animated storytelling by young people (down to a very young age), or those who have limited drawing ability, and with "found" objects. It can also be done with low cost technology.

The cultural and social impact of computer games is much more difficult to pin down, particularly in the context of Australia where little research has been done on games and their effect on society. Interactive games outside of instructional design are only now getting the attention of academic institutions. But some things are self-evident. As a culture, we have raised a generation of people with a capacity to take in, analyse, and act on large volumes of multi-layered information in rapid bursts. Cultural forms that don't take this into account may well loose their relevancy, or at the very least diminishing interest.

Warren Spector is one of the most visionary and articulate game designers today. In a recent interview he said,

> "Games are as much an art form as any other popular medium. But, the genre is just emerging from infancy. We're still making (and remaking!) *The Great Train Robbery* or *Birth of a Nation*. Or, to be really generous, maybe we're at the beginning of what might be called our talkies period. But as Al Jolson said in *The Jazz Singer*, "You ain't heard nothing yet!" So, many people in the industry and so many outside observers lament the fact that we're not taken seriously or that we don't have any serious game criticism or any outlets for such criticism. Well, give it time! Who was there writing seriously about film as late as the 1920s and 30s? Computer gaming is only 20 years old. The movies turned 20 in 1915 (roughly). No one was writing about film then. By 1935, there was a handful of serious film critics and thirty years after that you couldn't throw a rock without hitting a serious film scholar. Give it that kind of time and I absolutely guarantee we'll have serious artists and critics, and scholarly journals on games".

CONCLUSION

The West Australian government has recognised and supported many new and innovative approaches which FTI has initiated as the state moves from a resource-based economy to one that is knowledge-based and an *imagination and creative content economy*.

It is early days, but the Centre for Advanced Digital Screen Animation, Games, and Puppetry at FTI has quickly become a skill centre for training and incubated production activities in the converging fields of interactive games, simulations, animation, screen effects, and live and recorded traditional and digital puppetry.

Combine these outcomes and future directions with the 30 year history of excellence independent screen production, development and story telling at FTI and you have the future – true convergence.

Walt Disney first coined the word *imagineering*. It well describes what is occurring in the state of Western Australia.

Tom Lubin

Head of Training