Evolution of New Media Technologies −
Developing Design Parameters for a Digital Media Centre
for the Beijing Olympic Games 2008

Mimi Chau

Master of Creative Arts
University of Technology, Sydney

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Contents

Certificate of Authorship/Originality

I certify that the work of this thesis has not previously been submitted for a degree nor has it been submitted as part of requirements for a degree except as fully acknowledged within the text.

I also certify that the thesis has been written by me. Any help that I have received in my research work and the preparation of the thesis itself has been acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

Mimi Chau

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Abstract

The advent of digital media has affected the nature of global communications, amplifying the interaction between populations and massively expanding the information load that an audience may be forced to consider. The Beijing Organising Committee for the Olympic Games (BOCOG) has proposed a digital strategy for the 2008 Olympics, which will open up a wide range of challenges for information gathering and dissemination.

My research project has two related components: The first is an exegesis which sets the context for the project, identifies its main issues and presents a background research plan that, on the one hand, focuses on journalists and their likely orientations to a Digital Media Centre such as the one I propose, and, on the other, seeks to discover in other digital media centres the elements of best practice and innovation that might be adopted for Beijing. The second is a development project to explore and present innovation in Internet-based digital media operations, as exemplified by the challenges presented by the 2008 Olympic Games.

Chapter 1: Introduction

1.1. Overview

> Digital media have been called the "fifth news medium" by those who think they will rival the traditional news media of newspapers, magazines, radio, and television. Indeed, in less than a decade, the digital media themselves have become top news stories, heralding the promises and perils of an emerging and unpredictable communications environment (Kawamato, 2003).

Twelve years ago digital broadcasting was relatively new, and the Internet barely existed when I was working as a journalist for the *South China Morning Post*; at that time I had to search for background information for the news by going through piles of paper files and microfilm in the newsroom library. Today, I can access news and information instantly through the Internet; digital technology has become central to the media and information industry, and there is no doubt that it is transforming the way we obtain news and information.

Within the reporting framework of events such as the Beijing Olympic Games, innovations and advances in technology will greatly enhance accessibility to information and visual coverage of all sporting events, either by broadcast or through Internet-based hubs. To reach an international audience successfully requires not only effective programming but also a digital media facility dedicated to multilingual broadcasting. A Digital Media Centre, having both real and virtual elements, has become a paramount

necessity for the dissemination of information. The proposed Digital Media Centre, with its physical and web-based facilities, will provide news information and a range of services to journalists (both IOC accredited and non-accredited media) from all over the world who wish to cover the 2008 Olympic Games in the lead up and during the Games period.

My research project explores many aspects of the new media and assesses their further application to the creation of a virtual Digital Media Centre, which will provide comprehensive, multicultural information related to the Beijing Olympics.

To begin with, I created an online survey of potential users addressed at local and international journalists, to find what features they would need at such a Centre to facilitate their work. I then complemented that information by interviewing selected individuals who have particular expertise. The aims and scope of the project were developmental and conceptual, and so I sought to address neither the economic feasibility nor the managerial imperatives of the proposal.

Inclusiveness, adaptability and diversity are the key ideas driving this research project. I have a vision of multi-dimensionality and flexibility embodied in the design of the Digital Media Centre that needs to be functional, robust and effective, reflecting an international outlook and a mixture of global cultures in a constantly changing technological environment.

The design process of the virtual Digital Media Centre has been inspired by the

architectural concept of "reflection in action", as Donald Schon described it:

> This allows the users to operate in a virtual world, a constructed representation of the real world of practice. This fact is significant for the question of rigour in experimenting. In the virtual world, the practitioners can manage some of the constraints on hypothesis-testing experiments that are inherent in the world of their practice. Hence their ability to construct and manipulate virtual worlds is a crucial component of their ability not only to perform artistically but to experiment rigorously (Schon, 1999, p. 75).

Accordingly, the design of the virtual Digital Media Centre aims to explore the key elements for a design brief for such a site, by researching and specifying its ideal functionality, and by creating a template to illustrate these ideas.

The rapid pace of technological change and convergence has made it difficult to devise a coherent framework for understanding the nature and shape of new digital media technologies. Therefore, I have attempted to focus on the fundamental issues of concern while acknowledging that every user is unique. People, with all their needs, aspirations and limitations, must be considered first. My approach, which follows the notion of the reflective practitioner, raises some key research questions:

- What are the functional parameters that a Digital Media Centre should realise, to best enable the global user base to achieve its goals according to its various cultural perspectives?
- What are the various problems and concerns for potential users in using digital

media technologies, and what are the links to their cultural backgrounds or experiences?

- How does the new digital technology help the users' work and improve its efficiency?

My research is aimed at establishing the virtual Digital Media Centre as a medium of reflection-in-action, an experimental Web site for the users to explore the real-life digital working environment at the Beijing Olympics.

1.2 Research Goals

My research goals are:

1. To devise a strategy for creating a Digital Media Centre and a set of criteria for measuring its success, using as a case study the challenges presented by the 2008 Olympic Games.

2. To plan the architecture of a virtual Digital Media Centre network, an arena where developers, journalists and media professionals can share their creative ideas, resources and experience, and learn from each other.

1.3 Significance

This research project is unique in that it brings together three different areas in the one research study: (1) the development of new media technologies, (2) the Digital Media Centre and (3) the Beijing Olympics.

The research has relied largely on the responses to the survey questionnaire and in-depth interviews as its primary source of data. This data has provided important first-hand information, including original ideas from a cross-section of professionals from diverse cultural backgrounds. This will make a significant contribution to gaining a cross-cultural perspective from the potential users, in order to facilitate networking and sharing of resources for the establishment of a Digital Media Centre in the lead-up to the Beijing Olympic Games in 2008.

Around 20,000 media representatives accredited by the IOC to cover the Games will descend on Beijing for the 2008 Olympics, with thousands more from China with no access to the venues. The Digital Media Centre will allow both accredited and non-accredited media from around the world to cover the 2008 Games as well as other issues on China.

Another significant innovative development of the Digital Media Centre is a Creative Zone, where users can post their reportage and choose the terms of the licences under which they can publish and distribute their work. This idea was inspired by the Creative Commons, founded by Lawrence Lessig, a Professor of Law at Stanford University. The Creative Commons, launched in December 2002, established the first release of a set of copyright licences for free public use, providing free tools that allow authors to easily mark their creative work with whatever level of freedom they want it to carry.

The significance of this Creative Zone is that it offers a vibrant environment in which new ideas can be generated. Its purpose is to enable users to take their ideas forward and

to maximise their potential for use with the Digital Media Centre.

This research goes beyond being a theoretical study, in that it has practical applications in real-life situations while it contributes to the development of the Digital Media Centre. It will enhance the use of new media technologies by media professionals, content producers and others interested in being a part of the creative digital environment.

Proposed Research Outcomes

A CD-ROM integrated with a Web site has been produced to demonstrate the dimensions of best practice and innovation that could be adopted for a Digital Media Centre at the Beijing Games. This will enable journalists and other interested parties to gain access to the Centre and share their ideas with each other.

The findings of this research project will serve as a blueprint, as well as providing recommendations to BOCOG and other developers on the criteria for establishing a Digital Media Centre so as to ensure international usability. An e-book will be published to be distributed via the Internet for interested readers, with provision for on-demand printing.

1.4 Conceptual Framework

A critical question in the field of human/computer interaction focuses on the direction of the changes that occur – what sort of system will allow digital technology to enhance the way in which media professionals do their work?

Though some of the 'old school' sports journalists have not totally embraced the technology side of modern journalism and would rather dictate into a phone watching the game than sit looking at a laptop, the reality is that contemporary sports journalism now often stretches beyond the confines of the game itself, so the modern sports journalist requires a breadth of skills that digital technology can help to facilitate.

While a technological divide may have existed at one stage, as new digital technology was rolled out in the 1990s, most sports journalists today recognise the benefits this technology can bring as Raymond Boyle indicated, taking up Richard Williams' point:

> The new technology has helped, making people think about the quality of the words, rather than simply banging them into the paper in quite the same way. The writers and the sub-editor have greater control, and there is no printer intervention, which makes it easier to write reflectively under pressure (Boyle, 2006).

Furthermore, the emerging technologies are creating a new global language of communication that draws on national cultures but transcends them within a common space. Is this forcing nationals to adopt a new global digital orientation, subsuming their traditional cultural priorities within a logic determined elsewhere, or is there sufficient flexibility in the application of digital media technology for professionals of many different cultural backgrounds to apply their capacities and perspectives to the same technologies and so generate culturally relevant and accessible material? If the latter alternative prevails, how mutually comprehensible to people from different cultures

might its outcomes be?

Might not the Beijing Olympics have the right characteristics to offer us an opportunity to test these key research questions?

News Corporation Chairman, Rupert Murdoch, has suggested that the peculiar challenge for us, as digital immigrants — many of whom are in positions to determine how news is assembled and disseminated — is to find out how to apply a digital mindset to a new set of challenges:

> We need to realise that the next generation of people accessing news and information, whether from newspapers or any other source, have a different set of expectations about the kind of news they will get, including when and how they will get it, where they will get it from, and who they will get it from (Murdoch, 2005).

Following a similar line of thinking, the Digital Media Centre needs to be relevant to the audience. Today people want their news on demand, at a time when it works for them. For instance, the global audience may want to know what factors will make the Beijing Olympics a success and how BOCOG can deliver a "clean" Games with Chinese characteristics. They want to get more information, and to use this information to talk about, to debate, to question, and even to get together with people who think about the Beijing Games in similar or different ways.

In order to achieve these ends, past experience is critical; however, each Games presents its own unique set of challenges. Listening to our audience about what they want and how we can make this better will be a significant step in the process of developing an effective Digital Media Centre.

These challenges are addressed in my survey questionnaire (Appendix 1) that covers these issues, including:

- the effectiveness of particular aspects of a Digital Media Centre and areas in which they can be improved;
- the services and functions that potential users would like a Digital Media Centre to provide;
- the need for the technology to be accessible and adaptable, for users from different cultural backgrounds.

It is important to realise that these criteria will only be used as a reference and guidelines for establishing an effective and user-friendly Digital Media Centre. The real test, however, will occur during the course of the Beijing Olympics, and subsequently, when feedback from users about their experiences with the Centre is obtained and interpreted in the context of preparatory background research.

Application of Grounded Theory in This Study

Undertaking exploratory research is an important first step in gaining valuable ideas and insights. The techniques used during this exploratory research will enable a more

thorough understanding of the digital media industry, and will allow prompted and unprompted ideas to be discussed amongst potential users, to identify strategies and discuss important services and key needs.

In a bid to get ideas and insights on a practical guide for a Digital Media Centre, the 'grounded theory' approach has been applied in this research project. Developed by Barney Glaser and Anselm Strauss, grounded theory provides a way to find questions that can then be followed up by examining their possible answers. Theory can be built from the data, using an inductive approach. This will then lead to further studies using other methodologies, for instance surveys among the potential users. It will also provide enough evidence for developing assessment instruments for use in practice (Glaser & Strauss, 1967).

The in-depth interviews were taped, transcribed and analysed, employing the concepts of grounded theory. This method of analysis allows large amounts of narrative to be classified and examined to find the themes and categories that emerge from the data. In this process, the participants are central to the outcome, because it is their words that are analysed, not the predetermined words of the researcher, so that the validity of the participants' experience as experts in their fields is duly recognised.

The responses from my survey questionnaire and personal interviews have contributed to a body of quantitative and qualitative data addressing the main categories of my research, that is, new media technologies, the Digital Media Centre and the Beijing Olympics.

From this data I have attempted to identify the criteria that should be used in setting up an efficient and user-friendly Digital Media Centre for the Beijing Olympics in a cross-cultural environment.

A major initiative such as a Digital Media Centre requires a firm idea of how it might be used, and a thorough knowledge of the past experiences and future expectations its potential users. Such a Centre generates a potential user group that includes those interested in its conceptual basis and practical realisation, those who are seeking to generate information as providers, and those who want to use the Centre for their own professional reporting and related roles.

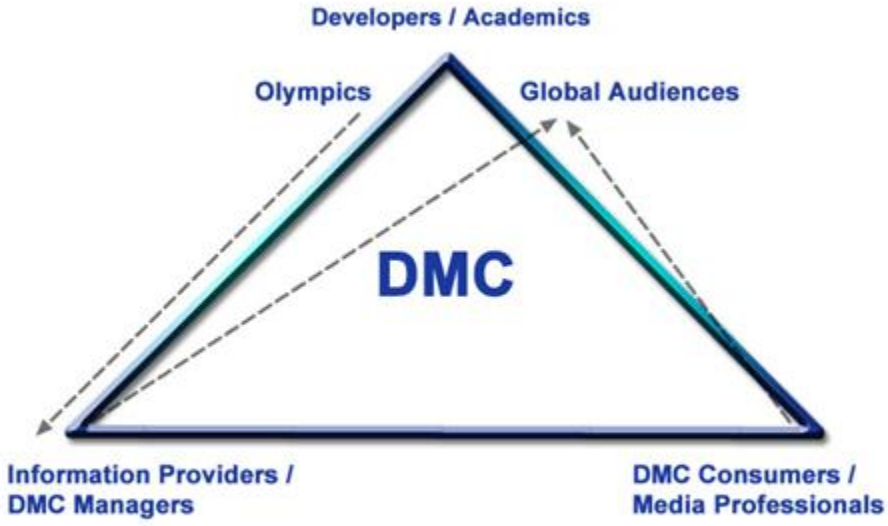
David Bollier, Public Knowledge co-founder and Charles Firestone, Executive Director of the Aspen Institute Communications and Society Program (1995), have theorised that one of the fundamental consequences of new media technologies is that they have increasingly created a knowledge hierarchy. In their view, knowledge in its most elemental form is data. A step up on the knowledge hierarchy is information, whereby data are organised and defined in some intangible fashion. True knowledge emerges when information is interpreted and synthesised, reflecting certain values. Found at the summit of the knowledge hierarchy is wisdom, knowledge that carries spiritually profound, trans-historical insight (Pavlik, 1996, p.347).

By considering a triangular arrangement of Developers, Providers and Consumers, the rich sets of relationships can be used to frame an analysis of the project terrain. Such an

analysis will benefit from systematic interrogation that uses both queries common to all groups, and those specifically fashioned to the specific role under investigation.

The diagram below demonstrates the network of communication relationships between the various component groups in the Digital Media Centre system, and the critical role played by global audiences, whose use of the media services generated by the Centre will be the ultimate test of its efficacy. In the meantime, the triangular system can be modelled from studies of current members of each of the three groups.

Diagram1: Communication Relationships



1.5 Research Methods

I used two complementary methods – interviewing and questionnaires – to reinforce the rationale for creating a Digital Media Centre prototype that will meet the needs of its potential users.

My research also involved:

- participation and observation in the work of media organisations, such as SBS Australia, China Central Television, and educational institutions, such as the University of Wollongong Digital Media Centre and Tsinghua University Science Park in Beijing;
- comparative analysis of past and present Olympic Games Web sites, 2006 Asian Games, FIFA World Cup and multimedia publishing, on http://news.com.au/, and

http://www.youtube.com/;

- attendance at conferences, seminars and workshops on the University of Technology, Sydney campus and at other locations.

Digital media research is a new field that is interdisciplinary and dynamic. I believe it is more effective to use this variety of methods in order to achieve the research aims; both primary and secondary data sources were analysed, using a qualitative approach. Data sources included a range of materials, such as books, journals, newspapers, Web sites, online surveys and interviews.

Chapter 1 has presented an overview of my research aims, conceptual framework, research methods and significance. Chapter 2 discusses new media and technological changes and their effects on the way in which communication professionals do their work; as well as the various problems and concerns for potential users in using digital media technologies. Chapter 3 summarises the research findings from a cross-cultural perspective and the relationship between digital technology and culture. Chapter 4 explores the design concept of a Digital Media Centre and does a comparative analysis of past and present Olympic Games Web sites.

Chapter 5 concludes with recommendations on the criteria for establishing a successful Digital Media Centre and future research.

Chapter 2: Critical Issues in the Evolution of Digital Media Technologies

In this chapter critical issues for the evolution of digital media are explored. Do these evolving technologies determine the work flows of media professionals, or do changing work practices demand certain types of technology? What are the implications of the evolving technologies for a Digital Media Centre for the Beijing Olympic Games? What are the various problems and concerns for potential users in using digital media technologies, and what are the links to their cultural backgrounds or experiences?

Some people in our modern world would trace the origins of new media technology and the birth of the information society to the year 1956, when the first desktop computer was manufactured and video tape was introduced to the world of television; in the following year the Soviet Union launched the first artificial satellite, Sputnik.

However, the first major breakthrough in the development of media technology, as we think of it today, occurred in 1969 when the first trials started that would lead in 1972 to the establishment of the ARPANET and in 1986 the NSFNET, the forerunners of today's Internet and World Wide Web. Since then, the communication landscape has changed in dramatic and revolutionary ways, bringing us ever closer to Marshall McLuhan's notion of a global village.

New media technologies, such as the Internet and other forms of digital communication,

are compressing time and space. People are no longer restricted by physical distance, since the media are reducing our need to travel; rather than having to be physically transported to the other side of the world, television and other media bring the other side of the world to us. There is no longer a need to be together in the same place to share in experiencing major events, whether they are the Olympic Games in Beijing or the Presidential election in the USA. The electronic media and the new communication technologies make such news and events instantly accessible to us, wherever we are.

Each major technological development in media during the twentieth century – the transition from press to radio; radio to television; television to the Web – offered a new 'space' for human intervention, as Sybil Nolan has observed. "On the whole, however, media professionals developed new production practices and protocols through experience on the job rather than from theory. This was an evolutionary process, marked by makeshift techniques and a tendency to reinvent the wheel" (Nolan 2003), but, as with other evolutions, the earlier stages were incorporated rather than abandoned.

2.1 The Digital Revolution

The convergence of computer networks, satellites, telephone connections, and other evolved technologies with the traditional mass media of newspapers, magazines, radio, and television, has resulted in what, according to Kevin Kawamoto, can be referred to as the digital revolution (Kawamoto, 2003). It is called digital because information – embodied as text, sound, moving images, photographs, or graphics – can be coded into binary digits, quickly processed and transmitted by computers, and then decoded and

presented in a form that people can comprehend. This conversion process is known as digitalisation.

Digitalisation, however, is just one of a number of important factors that have led to the emergence of the so-called "new media", that tend to be digital, computer driven, interactive and, in many cases, more able than the traditional media to serve the specific needs of information seekers and users.

What has led to the emergence of this digital media environment? Kawamoto has indicated there is certainly no single cause; rather that a number of factors working together have changed the communication landscape in dramatic and revolutionary ways.

The following summarises the key factors:

- increased digitalisation of information (text, audio, video, photographs, and graphics);
- growth and mass market penetration of powerful personal computers;
- development of user-friendly interfaces and miniaturisation of computer hardware;
- development of networking software and hardware;
- federal government support for the building of an interoperable global information infrastructure and the revision of antiquated telecommunications laws;
- corporate consolidation in the media and telecommunications industries;
- technological convergences;
- broader bandwidth capabilities and compression technologies;
- diffusion of computer technology into many sectors of daily life, including

education (libraries), business, government, health and civil communications;

- demonstrated market demand for news, information and entertainment.

(Kawamoto, 2003, p. 11).

These key factors combine to form a useful observation about the new media environment generally, but are also relevant to a central question, raised by Gill Branston and Roy Stafford (Branston and Stafford, 2003), about the emergence of the Internet – does it provide opportunities for a new form of democracy or for its opposite, a new form of oppression? As demonstrated already by the 2008 Games reportage, there are increasing numbers of online journalists present at the Olympics. The IOC has sought to control who can report on them, but this is a difficult task given the emergence of a new community of citizen journalists. So far, athletes and coaches have been forbidden from blogging or undertaking any practice that could be construed as journalism during the Olympic fortnight. As Andy Miah, Beatriz Garcia and Tian Zhihui note:

> The impact of new technologies will have to be a prominent issue for China at the Beijing 2008 Games, as it is a country that is considerably advanced in the area of new media innovation, but also imposes specific restrictions on journalistic freedom that are now being contested within the context of the Olympic Games (Price and Dayan, 2008).

As an example of these restrictions, in response to the violent protests in Tibet and the disastrous international Olympic torch relay, China tightened media control and restricted access to various stages of the route, including Mount Everest, to prevent protestors interrupting the progress of the Olympic torch relay.

Furthermore, the underlying concept of convergence owes much to the digital technology revolution and, indeed, depends on it. As Herve Fischer points out, the technologies of production, post production, and distribution can now intermingle in a vast field of multimedia and interactive communications common to computing, the telecoms, the Internet, television, radio, film and video games. (Fischer, 2006).

Today, mass media have been affected in several ways by the revolution in digital technologies, especially by the Internet and the World Wide Web. There are hundreds and thousands of newspapers currently appearing on the Internet. In addition, many popular print magazines, such as *Time*, *Newsweek* and others, have on-line editions.

Radio as a popular commercial medium has been around since the 1930s, with television joining it in the 1950s. These technologies were based on the conventional broadcast model, where messages originate from a single source and are disseminated through the airwaves to many listeners. For decades, the traditional broadcast model dominated the ways in which radio and television stations communicated with their audiences. With the advent of the Internet, radio and television stations have found a new way to communicate with their audience. Currently, many radio stations and most, if not all, national network television stations, as well as a wide range of cable television channels, have a strong presence on the Internet.

The Barcelona ’92 Games will occupy a place in the history of the Olympics as the last

Games of the broadcasting era, with Atlanta ’96 as the first of the Internet era. This transition, happening against a background of rapid developments in ICT during the 1990s, revealed technological challenges and deficiencies that left a symbolic question mark over the image of the Atlanta Games. IT related problems, such as numerous errors in the management and reporting of results, led to widespread criticism by the international press of both the organisers and IBM, as noted by Miguel de Moragas Spa (Spa, 2005).

The growth of the Internet presents a new set of opportunities and challenges for the organisers of the Olympic Games. The Internet enables highly efficient communication to audiences worldwide of information such as results and reports of events, overcoming barriers of space and time. Content can also be delivered interactively and through services personalised to customers, combining sports information with opportunities to connect to related Web sites and make purchases online.

The most important prospect for the Olympic Games offered by the Internet, though, is Webcasting – the broadcast of live or recorded sport over the Internet. While initially this may enable delivery to computers and mobile phones, the approaching convergence of digital television and the Internet will also make it possible to Webcast to television sets directly. This opportunity is a further major challenge for the International Olympic Committee (IOC), possibly threatening the sale of TV rights in their current form by moving towards a fully digitalised Olympics.

2.2 Issues of Concern in Using Digital Media Technologies

What characterises the digital sporting landscape is not only the 'always on' nature of communication, but also the expansion of the range of media outlets that require to be serviced with sports content. Some sports editors, however, have reservations about their overall standards of accuracy. Craig Tregurtha, *Sunday Mirror* Sports Editor, for example, argues that:

> They are still very important and, of course, relate to the resources you can spend on them. What I would say is that as the spectrum of sports covered by the wires has increased, their accuracy is not what it used to be. However, if you use Web copy you should be checking the facts anyway, so that is your responsibility. But they are important to the sports section of a paper, depending on your resources (Boyle, 2006).

Some recent developments need care in their use for distributing news; for instance in the case of news sites that carry Web logs ('blogs'), a format developed by individuals outside the mainstream media that are sometimes ideologically opposed to the dominant culture and its influences. Margo Kingston's Web diary (http://webdiary.com.au/) is an example of a mediated blog with audiences that range from international affairs analysts to dairy farmers. Kingston's robust support of the democratic nature of blogging means that many viewpoints are represented on the site just as their writers serve them up, and so the site provides an outlet for talented writers and thinkers who are not heard in the mainstream media.

There are several issues of concern in the use of digital media; according to respondents to an interview survey I conducted as part of this research, with journalists, academics and professionals in the digital media industry.

Control and Regulation

The technical evolution of media-enabled digital devices has brought unprecedented opportunities for the wide public to enjoy digital media and to play an active role in their creation; however, public debate on digital media is increasingly animated by a certain obsessiveness about issues of control and regulation, so that moves toward freedom of expression and access to culture are overtaken by threats of repressive control of digital content. Lucian Beebe, Product Manager, Macromedia, indicates that the issue of control is a primary concern for many people:

> With analog media, the publisher has control over the content. With digital media, the publisher does not have control. We have seen this affect publishing, music, and now video. While these industries work to find a way to make their content secure, they also work to find business models that can take advantage of a society with fundamentally free exchange of information (Beebe, 2004).

The development of digital media has been driven by the availability of new technologies and methods of content creation and distribution, and by anticipations of untapped business and consumer demand.

In the analogue world, content and delivery medium are essentially fused — one does not

listen to an Ian Thorpe Biography or read ABC radio. Digitalisation changes all that, since content is only one part of the message; the device or system that delivers and interprets that content is another. This flow of content across and between devices can be a source of great anxiety for those industries that are used to having firm control over the distribution and use of their copyrighted material.

The implication of this for my research project is that it will be useful to discuss how to realise this in the Digital Media Centre design. To take an example, Crikey is an independent online media service; every weekday around lunchtime their 10,000+ subscribers (known as the Crikey Army) are sent an email packed with the latest news, analysis, juicy gossip, reviews, rumours, links and prescient tips. All the articles from Crikey's daily email are also posted on the associated Web site, but most of these are locked, needing readers to register for a free trial or a paid subscription if they want to read them (Crikey, 2007). So there is, in effect, a firewall behind which a controlled level of content exists; the notion of such a firewall could be adopted by the Digital Media Centre.

Copyright Infringement

The rapid technological progress in information technologies raises new issues for copyright law. Nowadays, a digital file can be copied and distributed instantaneously worldwide through the Internet, thus potentially depriving the copyright holder of revenue from legitimate sales. Consequently the holders of copyright on creative works in digital format are contesting the right of consumers to make personal copies of

copyrighted materials.

From a technical perspective, digital media generally require an enormous amount of data to be transferred, using large amounts of bandwidth at both the host and client sides, Riccardo Leggio, ATPI Information Service Manager has commented:

> There are many techniques to best utilise available resources and careful planning is always essential. In more general terms there have been many reports of copyright infringements with regards to digital media, this is always a concern and the users must be aware of their legal obligations (Leggio, 2004).

In consideration of these factors, the Digital Media Centre should use the Digital Rights Management (DRM) system to enforce proper use of digital content, and brand the content strongly; for example, by putting a name (watermark) in a photo, or attaching specific names within text, or by requiring call back to a specific server. A strongly-branded element is harder for others to reuse. The aim is to make it more expensive to steal the digital content; any solution is hackable, but if we can increase the costs of hacking, this will help to lower levels of overall theft.

Lack of Standards

Many questions arise when talking about professional standards in digital media. Some would argue that such standards do not exist; Will Berryman, Chief Technology Officer, SBS in Australia, is one who believes there is a lack of standards:

> I think we are in a real evolutionary mode in what we are doing, and combining

> traditional media is based very much on fixed and established principles. This is because in old analog media there was not much room to move and basically you're dealing with analog technology that is quite disciplined.
>
> With digital media there is a lot of scope and we seem to be doing a lot more invention of technology rather than invention of narrative techniques, narrative tools and story telling and those types of things that technology takes away from a good media product at the end of the day (Berryman, 2004).

It is important to encourage diversity in the Digital Media Centre, and to deliver professional-quality audio and video streams over a wide range of bandwidths from mobile phone to broadband and beyond. At the same time there is a need to comply with universally accepted standards for digital communication of audio and video content because of the overwhelming acceptance of the Internet and the TCP/IP protocol.

Continuing Training in New Technologies

An important issue for many media professionals is keeping pace with the development of digital media technologies. Joe Wang, Sydney Bureau Chief, China Central Television (CCTV), has said the main problem is with the re-training of staff:

> Most of the TV stations in China do not have a sound re-training program to support the introduction of new technologies. Slowly, our staff is beginning to learn at least. Going digital is the trend for media in China. We have seen the advantage of it (Wang, 2004).

Wang indicates that the development of the Internet also creates an impact on the use of digital media; television professionals in China have had to learn to operate the new machines that replace the old ones. He believes young people can learn faster than those of the older generation so as to keep up with the pace of digital media technologies.

Some digital media training courses are designed for people with no previous experience and cover all aspects of production with digital cameras and computer based editing systems, whereas other courses, such as some of those run by the Digital Media Department of the Australian Film Television and Radio School concentrate on computer graphics and interactive techniques for screen-based media. The curriculum provides opportunities for innovation, experimentation and creativity and aims to develop strong collaborative production skills.

In another instance, the Australian Broadcasting Corporation has teamed up with the Asian Media Centre to deliver training in digital television that has a real-world orientation, with hands-on experience. Unlike many others, these organisations tend to offer solution-specific training, using practical solutions that meet the needs of television professionals. They aim to produce individuals with increased capabilities for managing technical innovation and meeting changes in the new digital work environment, hence providing for a better, more adaptable workforce.

Reliability

Another major issue of concern is reliability; Joe Wang, Sydney Bureau Chief, China

Central Television (CCTV), cited the example of a computer crashing; this would create a major problem, particularly for a news program, and China Central Television would not be able to get to air on time:

> Therefore, we do not use digital broadcasting for news programs at this stage, due to its lack of reliability. In China, security in broadcasting is very important. This is because of the traditional high security demand placed on the media so CCTV has to be very cautious in this aspect. I think digital media for feature programs will be very significant in terms of post-production. It will make the job more convenient and increase efficiency (Wang, 2004).

Wu Jia, Sydney Bureau Chief, China Radio International, agreed, saying one of the major problems is the vulnerability to virus attack. "Hackers have always been a headache. Or can I say the reliability of digital media?" (Wu, 2004).

A comprehensive security solution that fights viruses, hackers, and spam is essential for users to keep their PCs and files safe on the Internet.

Keeping Information Secure

Digital media is fast replacing old forms of content creation. More and more information is moving to the digital world, and being transported from person to person over the telecommunication lines. As we migrate to a more mobile media world, the need to protect that information from falling into the wrong hands becomes greater. The movie and music businesses now battle to gain back millions in lost dollars from piracy. For

businesses in other fields, securing digital media means protecting information from leaks, from hackers, and from internal theft. The media need to be protected in today's technological age. An information leak can lead to an enormous amount of time wasted in trying to recover the data and resume normal operations.

Herbert Chen, Director, Tsinghua University Science Park, indicated that people are concerned about security, privacy and the safety of placing information on Web sites. Simon Hayes, IT Journalist with *The Australian*, agreed that issues of concern include lack of access to reliable telecommunications infrastructure, security issues, lack of familiarity with the technology on the part of journalists, and readers or viewers being uncomfortable with it. And as the Internet and other communications systems become more entrenched as interactive global media, questions of international regulation and professional standards will arise.

Digital Manipulation

Journalism via the global information grid also faces another threat. The critical issue is how we can verify the accuracy of data on the information superhighway, where news and information is openly exchanged and computer network security is difficult to guarantee. Another major concern in using digital technologies is how we can remain confident in what we see, considering how easy it is to modify reality; as Massimo Martino, a photojournalist with Asia Pacific News Agency, says:

> It is obviously quite easy to change the content of a digital file and thus modify substantially the original intentions. In order to guarantee the validity of a

> picture, only small cropping (mainly to straighten subjects) and colour balance should be allowed. Then Editors can change size according to layout requirements. Failing this, nobody could rule on the validity of a picture (Martino, 2004).

Martino cited a typical example of digital manipulation during the war in Iraq in 2003 that created a major storm at the *Los Angeles Times* newspaper, when a staff photographer was fired for having "digitally sandwiched" two pictures in order to create a more visually impressive shot.

Digital photo manipulation has become a popular pastime, and many consider this photographic trickery to be a new art form. But when it infiltrates photojournalism and the media, the issue of ethics comes to the forefront. How far can digital image manipulation be taken while still maintaining photographic integrity? This remains a problem, particularly in China, as piracy is so entrenched there.

2.3 Changing How Communication Professionals Do Their Work

The use of new technologies, from cellular telephones, to facsimile communications, to advanced radio communications, as well as computer-based technologies for investigative reporting, electronic image scanning and processing, video capture, and electronic mail has dramatically changed the way communication professionals do their work.

> How about “completely”? I have trained thousands of people the world over using video conferencing. I have had conversations and collaboration over e-mail in one day that would have taken a month before e-mail. Overall, as technology marches on, we don’t have to be in a physical place or even have a physical existence. For example, most people I work with in e-mail I have never met. I am always surprised to meet them at a conference or event. One person I worked with on a weekly basis on e-mail for a long time told me he is a quadriplegic. The Internet is allowing us to work with a blind eye towards what a person is and focus on what they have to offer. That’s a wonderful thing!” (Beebe, 2004).

A number of journalists have indicated that the benefits of technology convergence in the newsroom are improved efficiency and speed, greater access to information and reduced cost. For instance, China Radio International is moving to digital radio broadcasting online. It is more cost effective and has better quality, according to Wu Jia, Sydney Bureau Chief, China Radio International:

> As our target audience is mainly overseas, today China Radio International, one of the most influential international broadcasting stations in the world, serves the entire globe with 211 hours of broadcasts every day in 38 foreign languages and five Chinese dialects. I believe digital broadcasting will enhance our service to the larger overseas audience (Wu, 2004).

She also believes that new technologies enable easier and quicker access to more background information. It makes their work much more efficient and cost-effective

without compromising the quality of the products.

Will Berryman, Chief Technology Officer, SBS in Australia, has indicated that the new media technological changes have had positive effects:

> In the past, we put the satellite dishes up and brought all the stuff through and made it work. For example, you have a Czechoslovakian broadcaster here and you go to the Czech broadcaster's Web site overseas and you can have this material. I think in terms of the potential for audience feedback has changed what we do, things online now put our program makers in greater contact with the people who watch the shows and those people who watch the shows and use our interactive tools feel that they have a kind of ownership of what happens on the television. For instance, the way we cover soccer here on the Web site and digital interactive media we've done online creates feedback which has changed the way we make television, and that has a huge impact (Berryman, 2004).

He cited another example; Flash, which is designed for online and interactive content, has now made graphics and animations on television in a way that we were never able to achieve before:

> What we used to have to do on graphics, Web stations that cost several million dollars we can now do on a four-thousand-dollar Apple computer, to a quality we could not do before. It does create a kind of conflict in skills and we are in a very strange time in media convergence. I'm not talking about convergence in the audience but convergence in how we make television. There are two

> different cultures of people making media, people who have grown up with traditional media and people who have grown up and gravitated to the new media. There are some editors who like to be in huge editing suites and other editors who like to sit on their laptop and cut their show in the canteen here and it's a very strange time in the world of media (Berryman, 2004).

The new technology can encounter problems not always foreseen by those who design it. Wherever there is a human element involved, technology can either be used for benefit in a positive way or misused to create chaos. For instance, hackers and viruses have, on occasions, severely disrupted communications systems. Dr Barry Harper, Director, University of Wollongong Digital Media Centre, believes new media technological change affects our work enormously, citing a negative example, the new worldwide virus problem:

> Most PCs in this institution, except those who put the patch on recently, are down. So there is no e-mail communication between all of our engineers. People using Macs are not affected but our major project partners don't use Macs so we need to arrange face-to-face meetings, which we don't often have. We really do most of our communication electronically (Harper, 2004).

The changes in digital media and the advances in digital technology mean that communication professionals are focusing more on analysing the content of information, interpreting and reporting it, rather than gathering information. Information today can be delivered at rates faster than a single person can analyse, with almost perfect real-time

quality and accuracy, according to Riccardo Leggio, Information Service Manager, ATPI. The new technology puts new demands on the users; hands-on training is required in order to gain knowledge and benefits from the technology.

2.4 Influences on the Nature of Communication Products and Content Delivery

The public today expects media in real time and with real-world quality. As the technologies improve, both the commercial and private markets will expect immediate delivery of customised information based on their users' specific needs. Riccardo Leggio, Information Service Manager, ATPI, has said that as technologies improve the content spectrum will increase and expand into different areas of the international community, leading to further development and refinement of the technologies:

> Educational institutions can take advantage of quality media collaboration technologies to educate remote students or to facilitate research projects with international partnering institutions without the expenses of long distance travel. Reduced costs of meetings and collaboration tools will lead to stronger relationships and more fruitful research and educational outcomes (Leggio, 2004).

Massimo Martino, a photojournalist with Asia Pacific News Agency believes time saving is a major benefit of the new technologies, indicating that one of the most important aspects of new media technologies relies on the ability to disseminate information at the touch of a button. Press releases, pictures, print articles, presentations, all of these typical areas of journalistic production used to be constrained by the time available for

production and then distribution. Today, thanks to modern digital technologies we can produce and deliver the product almost as it happens and, in doing so we are freeing ourselves from the tyranny of time. However, Wu Jia, Sydney Bureau Chief, China Radio International, said that new media technologies seem to bring less variety: “I mean some big powerful voices have started to dominate, and the voices of a large number of small players have become weaker and weaker” (Wu, 2004).

Herbert Chen, Director, Tsinghua University Science Park, believes people will be affected further by the development of high definition TV and broadcasting systems, SMS on the mobile phone and high definition digital equipment, such as the use of DVD players for entertainment.

The effect of this new digital revolution is that many people in China might now have been brought into step culturally with the rest of the world. No longer limited to the information and entertainment generally available on TV, video or cassette tape, the Chinese now have access to a wide variety of mainstream Western entertainment products, and at a very affordable price. Consequently, current Western notions, images and cultural trends are directly and immediately available to virtually anyone.

New communication technologies can increase the interactivity of users in team environments. Ideas can flow back and forth much quicker between team members. Lucian Beebe, Product Manager, Macromedia states:

> In a lot of the same ways I have already written about communication

> technologies that accelerate business processes. Most tools are built for individuals to use, but the reality is that they are almost always used in some sort of coordinated fashion, such as on a team or with a co-worker. Integrating collaboration into the toolsets will prove to accelerate the workflow (Beebe, 2004).

Dr Barry Harper, Director, University of Wollongong Digital Media Centre, said that the Centre is trying to push the boundaries all the time:

> What we are trying to do is develop implementations or examples of how you can use the technology at the boundaries. For some groups in our Digital Media Centre, how they use technology at the boundaries for education is vital, for some groups how you use the technology for telecommunication and delivery of content. For example, MP21 is the brand new evolving standard. It has enormous potential. If MP 21 falls over as a standard, that work is lost in some ways but that's got to be part of the way a Digital Media Centre works (Harper, 2004).

Dr Harper revealed there are going to be some projects that never really come to fruition because of changes around the users in their working environment:

> Whatever you develop should be the latest possible use of technology and significant innovation. The whole point about developing a prototype or an example is that you've got a research agenda and this product is going to illustrate it. The product is going to allow you to find out how this works, so

> consequently you can put that back into your research and say we know that question so what's the next question and here is a way in which we can think about that and look at those products. Most of those would have had multiple doctoral students working on them. Many of those students have finished their doctorate and that research has been folded into the next project. Those products are essential stepping-stones in the research agenda for the Digital Media Centre (Harper, 2004).

Digital media research is a new field that is interdisciplinary and dynamic. Research of this nature is time sensitive. What may be true or apparent at one point in time may be different at another point in time. Whenever new technologies are introduced in society, there is often an accompanying chorus of voices that express concern about and criticism of those technologies. Digital media technologies are no exception.

The ideas and feedback obtained from the interviewees have contributed greatly to defining and resolving problems for this project. They could be the basis for setting parameters for analysing the development of a diverse Digital Media Centre.

Chapter 3: The Digital Media Centre from a Cross-cultural Perspective

This chapter explores the conditions for effective response to stakeholder needs for a Digital Media Centre for the Beijing 2008 Games and the ways that an effective and user-friendly centre might be established in a diverse cross-cultural environment. As part of this exploration, an online survey was designed to find out what features potential users of the Digital Media Centre would need to facilitate and enhance their work. Key stakeholders include journalists, producers, administrators, and audiences. The survey specifically addresses the involvement of the generators of content, the journalists and producers.

From a journalist's perspective, one might be interested in the integration of digital media services into the Centre, the development and effectiveness of multimedia tools for telling news stories, and the changing role of journalists in cyberspace, whereas the challenge for producers is to deliver news and services in ways that would suit a range of audiences from diverse cultural backgrounds.

The argument in this thesis is that, while taking account of the diverse cultural backgrounds of global users of the Digital Media Centre, their communication processes can all be enhanced by new media technologies. The research examines the various problems and concerns of potential users in employing digital media technologies and, from a cross-cultural perspective, identifies the ways in which the Digital Media Centre can help to address them.

From my perspective as a researcher, I am exploring new horizons in the fast-changing world of media technology, with the aim of examining some of the positive and negative impacts on digital communication so as to achieve a balanced view of what would constitute a good model for a new Digital Media Centre. Open minded and creative thinking is needed. The survey is designed to be directly relevant to the potential users, and their responses contribute to the criteria for the Centre to be user-friendly across cultures.

Conducting a survey is a relatively inexpensive way of obtaining information. The reasons why I chose a survey are because it provides information on the participants' attitudes, their needs or wants, their knowledge, their self-perceptions, and also factual information.

A survey questionnaire was conducted online, with a sample of 500 participants, including local and international journalists, in order to determine the information and services the Digital Media Centre should provide, and the range of functions the participants would like to see included and implemented.

The significance of the sample is that it included a proportion of respondents from both Western (Australian, American, British) and non-western (Chinese, Japanese, Korean, Malaysian, Thai) cultures. Although not all respondents in the selected sample group had previously worked in a Digital Media Centre, they had worked with digital technologies in their respective fields, and are likely to be involved in the Beijing Olympics as

potential users of the Centre.

A list of questions was presented to individuals via the Internet, and their answers were tabulated and analysed to study the group response. The survey was conducted online because this way has major speed, cost, and flexibility advantages; however, it also has significant sampling limitations.

The survey questionnaire featured both open-ended and closed-ended questions. Open-ended questions allow participants to respond in any way they choose; they primarily provide qualitative data, and are frequently used in exploratory research.

The core questions were designed to gauge the respondents' opinions on a range of issues, including:

- their previous experience in using a Digital Media Centre;
- effectiveness of certain aspects of a Digital Media Centre;
- aspects that could be improved;
- services that they would like to see a Digital Media Centre provide;
- the need for technology to be customised for different cultures;
- the importance of digital communications in staging a major event such as the Olympic Games;
- cultural issues or problems foreigners may encounter when they attend the Olympics.

I used a sample size of 500 for the survey, as a recommended guideline for empirical studies is as follows:

50 = very poor

100 = poor

200 = fair

300 = good

500 = very good

(Comrey & Lee, 1992).

The sample included members from the International Federation of Journalists' network and sport journalists around the globe. Over 50% of those invited (260) replied to the survey. More than 75% of respondents to the survey agreed that digital technology would play a major role in communications at the Beijing Games. The respondents were mainly from Australia and China, with the remainder from the United States of America, Japan, Korea, Malaysia, Thailand, Singapore, the United Kingdom, Italy and Nepal; ages ranged between 18 and 55 years. Sixty per cent of respondents were male and 40% were female.

In addition to the survey, in-depth interviews were conducted, via email or face-to face, with 20 professionals in the digital media industry, journalists and academics, mainly from Australia, the United States of America and China. A consent form (Appendix 2) providing information about the research project and contact details was completed by each of the participants.

The interviewees were all prominent in their respective fields, and agreed to share their ideas and provide input to my research. Some were experienced in new media, while

others had just made the transition to new media from traditional fields. The age of participants ranged from 29 to 60 years; the majority of them had tertiary education.

The interviews were structured through a series of questions focusing on their expertise so as to address the key research questions. A number of specific questions were asked in order to gain insight from the respondents based on their own experiences, including examples of situations and problems they encountered in their real-life working environment. Supporting data were sought to ensure the validity of the responses to this research project and follow-up interviews were conducted where necessary. An archive of the interview recordings was kept, with the permission of the participants. The interviews were a valuable data source, as they provided insights into the real needs of users of the Digital Media Centre.

3.1 Findings of the Digital Media Research Survey

A research survey was conducted among a population of 500 local and international journalists, as part of a study on the evolution of new media technologies from a cross-cultural perspective, assessing how a Digital Media Centre should operate in the lead-up to the Beijing Olympics. Two hundred and sixty of those invited responded to the online survey. The respondents were mainly from Australia and China, with smaller numbers from the United States of America, Japan, Korea, Malaysia, Thailand, Singapore, the United Kingdom, Italy and Nepal; ages ranged between 18 and 55 years; 60% of respondents were male and 40% were female (Figures 1, 2 and 3).

Figure 1: Country

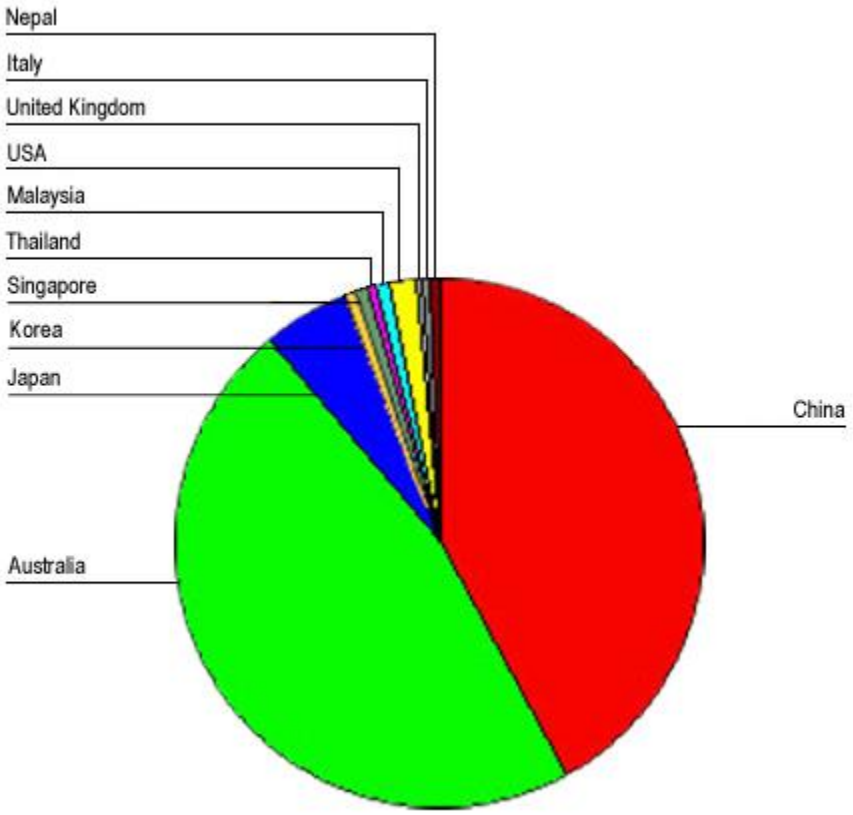


Figure 2: Age

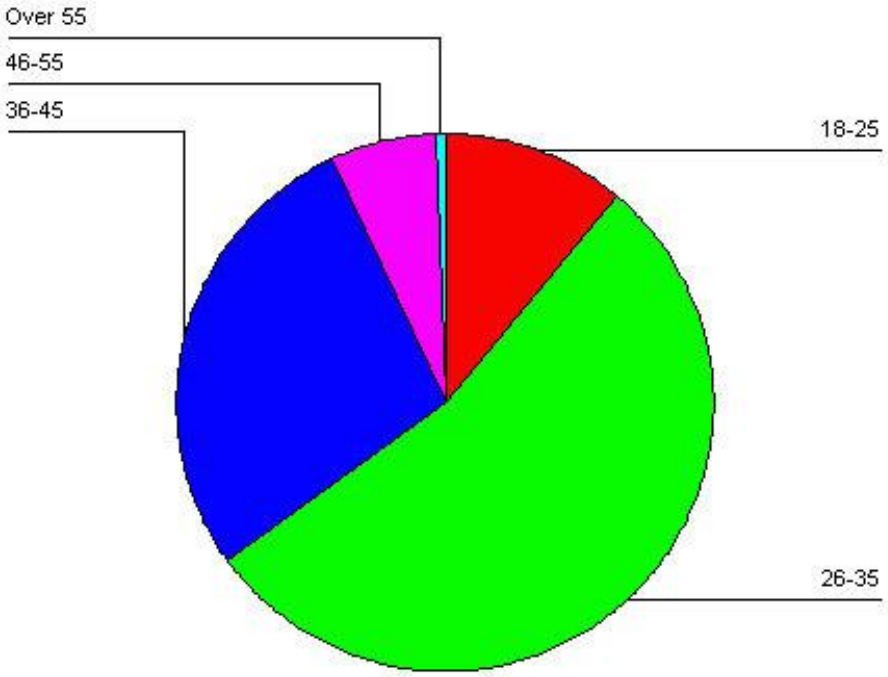
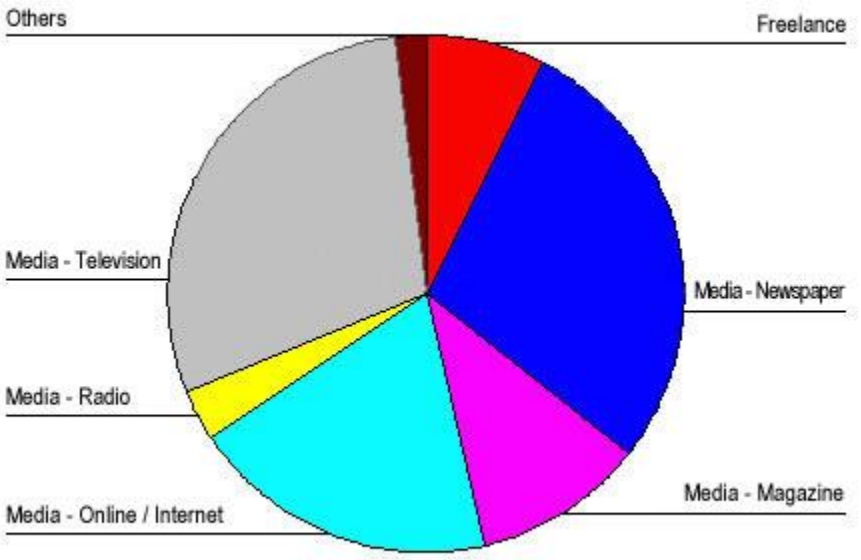


Figure 3: Profession



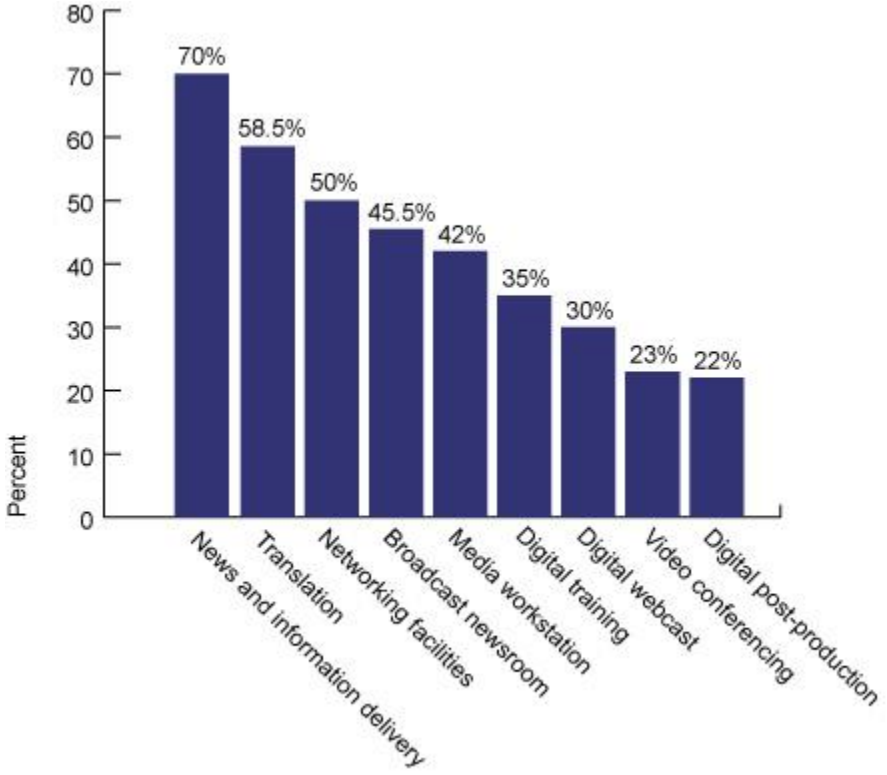
The survey found that digital communications would be a key factor in distributing news and information during the 2008 Beijing Olympics. More than 75% of respondents agreed that digital technology would play a major role in communications at the Beijing Games. Although only 30% of them had already used Digital Media Centres at previous Games in Atlanta 1996, Sydney 2000 and Athens 2004, they had all worked with digital technologies in their respective fields, and are all likely to be involved in the Beijing Olympics as potential users of the Centre.

According to those surveyed, the three major advantages in using a Digital Media Centre were rapid dissemination of information, improved reliability and reduced cost. The aspects that were seen to be in need of improvement were technical support, Internet security and communication network issues.

In terms of the importance of services being offered by a Digital Media Centre, the respondents were asked to rate a range of services on a scale from “not important” to “very important”. They are listed below, in decreasing order of the percentage of respondents who rated that service as “very important” (see also Figure 4):

- News and information delivery (70%)
- Translation (58.5%)
- Networking facilities (50%)
- Broadcast newsroom (45.5%)
- Media workstation (42%)
- Digital training (35%)
- Digital Webcast (30%)
- Video conferencing (23%)
- Digital post-production (22%)

Figure 4: Importance of Services



Seventy per cent of the respondents felt that fast delivery of news and information is the most important service provided by the Digital Media Centre. This is supported by the majority of both Australian and Chinese respondents. More than half of all respondents preferred RSS news feed to ensure immediate delivery to the readers. Over 58% said that a translation service is a priority, in particular for the Beijing Games, as the organisers do not speak English; for those foreign journalists who do not understand Chinese, multilingual translation services are essential. Fifty per cent of respondents indicated that networking facilities are also important, so that the Centre can serve as a media hub.

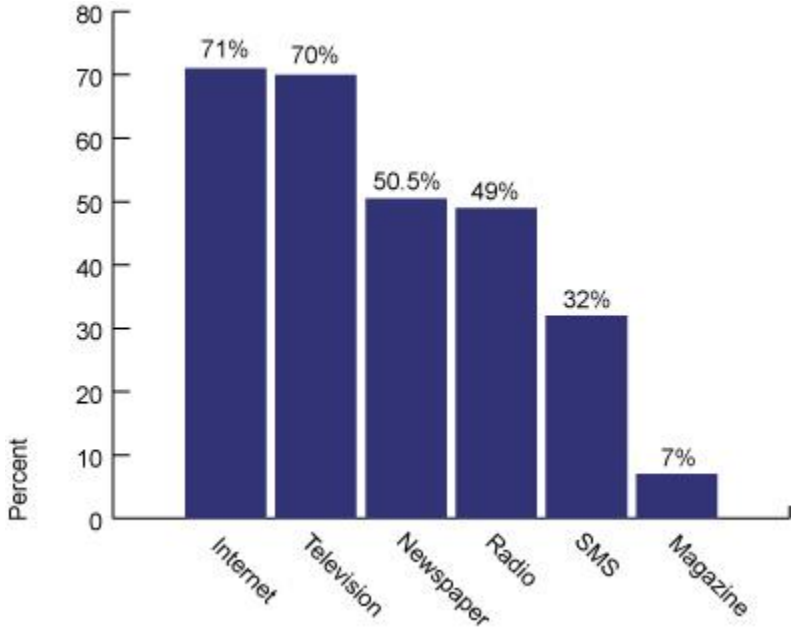
Thirty-five per cent of the respondents suggested that there should be additional services

for training in digital media, implying that not all journalists are familiar with the new digital technologies, particularly those from the "old school" who learned their skills in traditional media.

Seventy-three per cent of the respondents were very interested in receiving information about media coverage arrangements for the Beijing Games, while 55% were very interested in interviews with Olympic athletes. Thirty two percent of the respondents were interested in details of sports rules and regulations for the 2008 Olympics.

The Internet and television were regarded as the most popular communication media for the Beijing Olympics, with around 70% of the respondents rating themselves as very interested in each of these. Newspaper was also a popular choice for over 50% of the respondents (Figure 5).

Figure 5: Preferred Media



Most respondents (85%) have already used Olympic Web sites to access news and information, including the IOC, 2000 Sydney Games, 2004 Athens Games, BBC and NBC Web sites. They found the information on Olympic venues, competition schedules, results and Games services were useful. However, some of them felt that these sites could be improved; for example, the NBC site for America (USA) was good, but trying to secure information on South American and Southern African performers was very difficult, according to veteran sport journalist, Colin Turner. Unfortunately, he added, the IOC site seemed only to be interested in giving information on champions from previous Olympic Games (Turner, 2007). Although blogs (Web logs) have become popular in recent times, only a small percentage (10%) of respondents have used Olympic blogs such as the Athens Games Blog and Torino Winter Games Blog. This could be, some respondents suggested, because journalists are too busy filing stories and meeting the tight deadlines for covering Olympic events.

Seventy-six per cent of respondents believe the major aspects of a Digital Media Centre that would make their work more effective are speed and efficiency. The majority of both Australian and Chinese respondents agree that rapid news delivery would make their work more efficient. Over 60% of respondents want to get the latest news and information through services such as News and Photos on Demand. Around 50% believe a good search engine will be helpful to search for the information they need (Figure 6). Sergey Brin and Lawrence Page, who designed the Google search engine, state that "the most important measure of a search engine is the quality of its search results; the goal of searching is to provide quality search results efficiently" (Brin & Page, 2000). Many of

the large commercial search engines seemed to have made great progress in terms of efficiency, for example, the Google search engine has two important features (PageRank and anchor text) that help it produce high quality results.

Apart from the benefits of digital media, 55% of respondents indicate communications network breakdown is a major impediment to their work. Another major concern is the technical problems they may encounter (Figure 7**).**

Figure 6: Effective Aspects

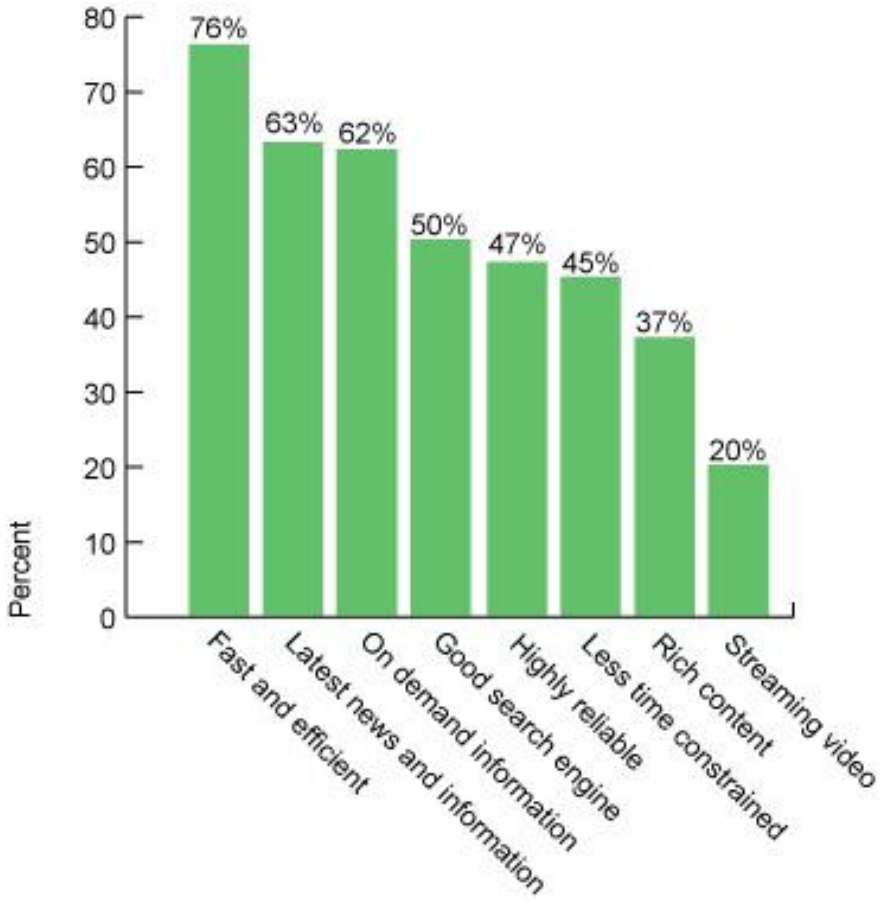
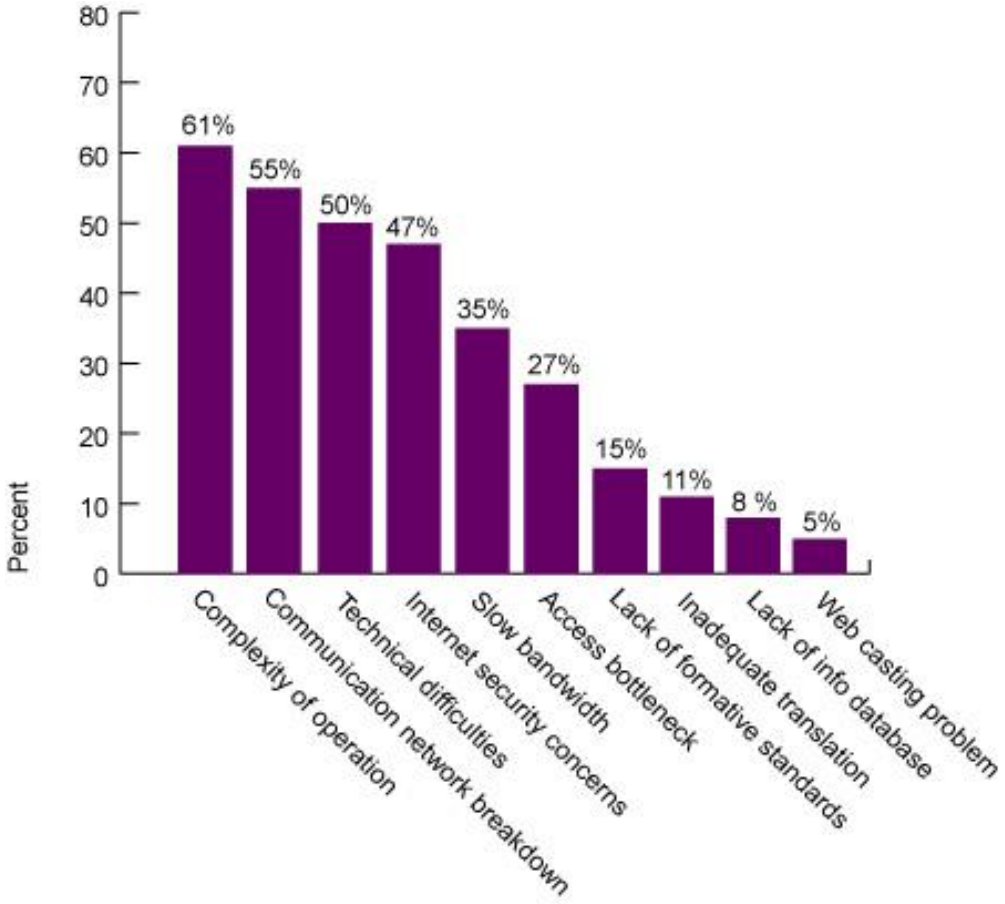
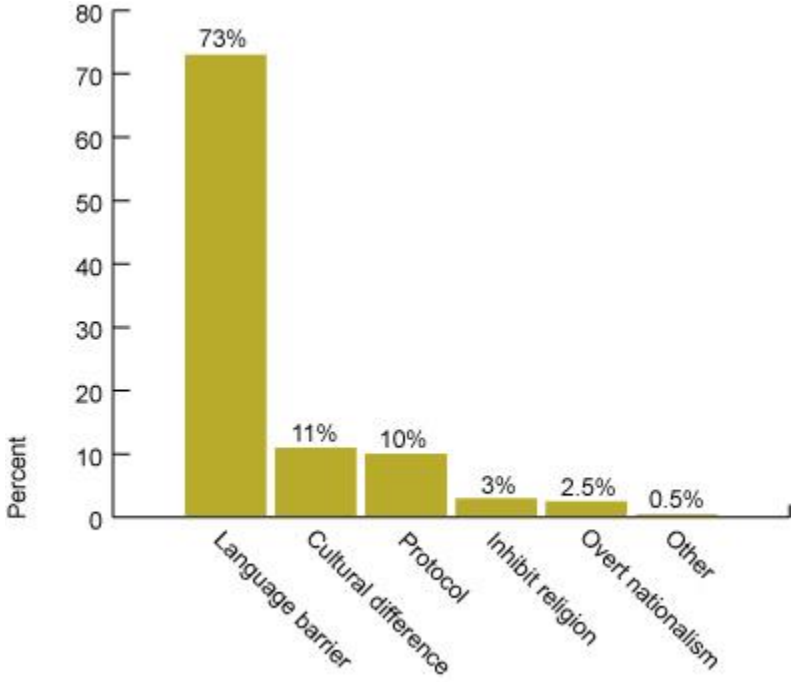


Figure 7: Impediments



A significant percentage of the respondents (73%) believe that the language barrier would be the major cultural issue facing foreigners who attend the Beijing Olympics. The remaining respondents believe that other issues including cultural differences (11%) and protocol (10%) would be significant, while overt nationalism (2.5%), restrictions on religion (3%) and other factors were viewed as less important (Figure 8).

Figure 8: Cultural Issues



3.2 Survey Analysis

I used the predictive technology of SPSS to analyse my survey data. Predictive analysis offers a number of advantages in revealing the inherent value of existing data, providing a quantitative and strategic foundation for rapidly identifying and objectively evaluating statistical information.

Insights drawn from this survey can be used to develop a new, innovative and relevant Digital Media Centre. Digital technology is a relatively new phenomenon, and this is reflected in my survey; a significant proportion of respondents had limited experience in the use of digital media. As already mentioned, the survey revealed that only 30% of the respondents had previously used a Digital Media Centre in Sydney, Melbourne, Atlanta, New Zealand or Athens in the period from 1996–2006. Although generalisations cannot be made from this relatively small sample size, some differences and similarities can be

presented. It is important to recognise that the response to this survey reflects the views of a sample from a varied audience of active media professionals around the world.

The survey revealed that more than 50% of the respondents are in the age group from 26-35 years who have had experience in using digital technology, whereas only a small percentage (2%) are aged over 55 years. This indicated that the majority of digital technology users are younger and internet savvy, irrespective of their gender. The implication of this trend is that the older generation of experienced media professionals needs to be educated and acquire skills in using the new digital technology and adapting their work practices accordingly.

Another issue that has been emphasised is that more training in digital technologies would seem to be required, particularly for those from less-developed countries who have limited access to new developments. Some respondents suggested that without such training an increasing "digital divide" would ensue, thus resulting in a "knowledge gap". Thirty-five per cent of respondents felt that training in digital media should be offered as an additional service. Further to this, the complexity involved in the operation of digital technology was a major impediment to their work for 61% of the respondents. This indicates that simplicity for users is a major consideration and will drive the increasing acceptance of digital media.

Feedback from survey respondents indicates a number of benefits to be derived from the use of digital media technologies. These include rapid dissemination of information,

improved reliability and reduced cost. This illustrates that the priority for users is quick and easy access, as well as cost-effectiveness. This view is shared by a majority of both Australian and Chinese respondents who responded to the survey focusing on my key research questions.

More than 70% of the survey respondents believe the Internet to be an important medium for the communication and promotion of sport and the Olympic movement. Although information technology was used as early as the Tokyo Olympics, the Internet era did not start until Atlanta 1996, with the first official Web site of the Organising Committee (ACOG) (www.atlanta.olympic.org/), with a total of 185 million visits during the 16 days of the Games.

Before the Sydney 2000 Games, the Organising Committees for the Olympic Games had recognised the need for "intranet" information management, but since Sydney, the use of information and communication technologies (ICT) has extended the borders of the Olympic organisation itself in an unprecedented worldwide communication program.

The NBC introduced a new form of coverage for the Sydney Games; it initially included statistics, sound, photography and hypertext, but evolved over the next few years into a new form of multimedia transmission, including extensive high-definition video images, that will be a paramount feature of the Beijing Games coverage.

Technical support and security issues are major concerns for users, according to the

survey participants. Users regard technical backup as an essential requirement to minimise the risk of communication breakdown and to restore services as quickly as possible if technical difficulties occur.

This suggests that adequate technical support, perhaps in the form of Help Desk on a 24-hour daily basis, is important for the reliable operation of the services offered by the Digital Media Centre.

To meet users' needs, the Centre should provide multimedia content creators not only with high-end production facilities at affordable prices, but also with much-needed technical support from leading experts in the field. This should help address one of the major problems faced by the industry, in particular for small- and medium-sized media organisations and freelancers.

Some younger respondents suggest that facilities for user-generated content, such as "I-Reporter" should be offered in order to encourage participation and creative input from journalists, an idea supported by a majority of the respondents from western countries. On the other hand, some older respondents from China have different perceptions on user-generated content, such as blogs, believing that it would be blocked by the Chinese government. This has major implications for the design of the Digital Media Centre, in deciding whether or not the Web site would allow views and opinions on different perceptions.

Other respondents suggest that official information on Olympic venues, the Games schedule, Olympic records and archives should be provided. A majority of western participants (over 70%) commented that an information guide on travel, accommodation, medical services, banking, shopping, catering and emergency aid in China should be provided, as these areas were identified as what most foreign visitors to Beijing would need.

Internet security concerns are a high priority among users. More than 50% of the respondents are concerned about Internet security and are worried about what may happen to their personal information over the Internet. This needs to be addressed; precautions should be taken against the threat of cyber attacks. Network surveillance should be implemented, particularly with regard to Internet-related products.

The cultural background of users is linked to their personal experience. This opinion, shared by both Western and Chinese respondents to the survey, supports the proposition that digital technologies can help users to transcend cultural boundaries. Most respondents from Western countries regard language barriers as the major cultural issue, while some Chinese respondents believe that other factors, such as protocol, local customs and religions, can have an influence. Therefore, familiarising people with the use of digital technology and providing Web sites in the language they prefer will help to facilitate the use of a Digital Media Centre across different cultures.

3.3 The Challenge of Cross-cultural Communication

Cultural diversity can make intercultural communication more difficult. Culture is a crucial element in communication, strongly affecting people's communication behaviour; it strongly influences people's beliefs, values and worldviews, which are reflected in their use of language, their non-verbal behaviour, and how they relate to others.

From an historical perspective, successful intercultural communication has been the exception rather than the rule; the history of mankind is a catalogue of ongoing hostilities toward those who are different. The world has endured the Holocaust and various conflicts such as those in Korea, Vietnam, Iraq and Afghanistan and is now faced with the aftermath of the destruction of the World Trade Centre in New York City and the ensuing war on terrorism. In addition, there are numerous ongoing religious, ethnic and tribal clashes that seem beyond resolution.

Understanding the characteristics of other's cultures, as well as one's own, is the first step toward meeting the challenge of successful intercultural communication. Gannon suggests that to understand another culture one needs to investigate "dimensions such as achievement, motivation ... uncertainty, avoidance, time horizon, and femininity or assertiveness" (Samovar & Porter, 2004).

More specifically, it is necessary to recognise and understand cultural disparities in the use of language. Language is significant because it provides labelling, interaction, and transmission functions, where labelling serves to identify or name persons, objects, or

acts, so that they may be referred to in communication.

In most Asian cultures, a primary function of speech is the maintenance of social harmony; a Japanese saying states, "The mouth is the cause of calamity." The use of indirect language, therefore, helps to facilitate face-saving so as to maintain social harmony, whereas the speech in Western cultures, such as North America and Australia, is more direct and to the point; this may be misinterpreted from an Asian perspective as being impolite. The use of direct and indirect language is a major linguistic difference between Western and Asian cultures, such as the Chinese. Most Westerners say yes or no as a way of stating their individual views, while the Chinese usually say yes or no to express respect for the feelings of others. This contrary-to-face-value aspect of Asian verbal language behaviour is often confusing to people from Western cultures.

Appreciating this simple fact about Chinese language usage might help one to understand why the ability to find hidden meanings is highly desirable in the Chinese culture. Also, understanding the Chinese view of language could influence practice in exchanging messages with members of the Chinese culture and dealing with ambiguous responses.

As noted earlier, I asked survey participants about cross-cultural communications and what cross-cultural issues a foreigner would expect to encounter at the Beijing Olympic Games. Although most participants acknowledged that being cross-culturally aware was very important in a multicultural society and for those working in an international environment such as the Olympic Games, some of their interpretations revealed strikingly

that "being cross-culturally aware" could be easily misunderstood. A majority of respondents (73%) believe the language barrier is the major obstacle to cross-cultural communication, in particular for people from non-English-speaking backgrounds.

For some people cross-cultural awareness seems to come naturally, while others blindly hurtle forward, unaware that their ignorance is offensive to others. Being sensitive and aware of other cultures is significant in the development of a diverse Digital Media Centre, according to the survey respondents, and understanding other cultures must start with an awareness of one's own cultural identity:

> Once we understand how values and biases influence people we can use this information to enhance relationships with them. Being aware of and sensitive to other cultures will help people feel more comfortable with differences, and can be useful in predicting how people who come from different backgrounds will act, speak, think, make decisions and perceive the world (Thissen, 2004).

3.4 Digital Technology and Culture

Today, digital technology has emerged as one of the most prominent aspects of everyday life; the new technologies have produced tangible changes in the ways we live, since in many ways the form and capabilities of technology profoundly affect our culture.

These changes are just as significant in the workplace; one example comes from the newsroom, where journalists have increased their work efficiency and speed and reduced costs, by using new technologies, ranging from speech recognition to desk-top publishing,

that have initiated a new era in graphics-based information. New technology and advanced information systems continue to encourage and facilitate cross-cultural interaction. Communication satellites, sophisticated television transmission equipment, and fibre-optic or wireless connection systems allow people throughout the world to share information and ideas instantaneously.

The impact of the Internet on communications has been profound; it embodies a broadband, wide-area computer network that gives each individual user an equal voice — or at the very least an equal opportunity to speak. An increasing number of people are attracted by the technology's ability to facilitate and legitimise their public self-expression, as well as by the freedom it provides from traditional barriers of space and time.

However, local and regional ways of thinking do not disappear in the face of imported cultural influences; while globalisation is indeed irreversible, the global has not destroyed or replaced the local; the very concept of culture rests on difference. We are moving into a new cultural era — one that is sceptical, questioning, connected with the world, and hungry for information and change. Digital media have changed the history of the media; in the future, advanced technology will continue to change and rewrite history.

Digital Olympics

There is no doubt that sports have become increasingly global in what Microsoft Chairman Bill Gates calls "the digital decade" (Gates, 2006). The fusion of sports and the

media, particularly television, has helped to support and transform major events such as the FIFA World Cup and the Olympic Games, a process in which sports journalism is deeply involved.

Digital media are significantly changing the environment within which journalists operate, the main impact being to accelerate the pace at which news and information circulate between media platforms.

Simon Hayes, an IT journalist with *The Australian* newspaper, recognises the journalistic challenges that the digital news environment brings; he believes that the technological switch to new media makes it far easier for journalists to communicate and send stories back to their home bases; but it also creates more pressure to file faster, perhaps resulting in copy that is less thoroughly thought-out. It also puts more demands on journalists to seek out unique and interesting stories, since their readers or viewers have direct access to many of the same original source materials as they do; for example, they can watch scores and read press releases online.

Digital media will play key roles in communication and message processing within the Olympics, and in radio and TV broadcasting. As the President of BOCOG, the Beijing Organising Committee for the Olympic Games, Liu Qi, told the press:

> We hope to strengthen our communication with the media, develop a better understanding of your needs and obtain your opinion and suggestions so as to

> improve our work and lay solid foundations for better media services and successful coverage of the Games (Liu, 2006).

This statement reveals that BOCOG is prepared to open up communications and address the needs of the international media for coverage of the Beijing Games in the digital age. To do this, BOCOG is in the process of building a robust high-speed digital news system and other information systems that will guarantee the integrity of collecting, collating, disseminating and transmitting a variety of Olympics information. Beijing will take advantage of the Sydney Olympic Games' successful experience and learn from its knowledge and expertise. One of the significant successes of the Sydney Olympics was that its Media Centre delivered a timely and reliable information service to media all around the world. BOCOG will benefit from the insights and experience of John Hunter, Telstra's Olympic Project Director for the Sydney Games, who was closely involved in delivering these services, as they build their strategy for implementing a Digital Media Centre at the Beijing Olympics. The criteria for success in establishing a diverse and user-friendly Digital Media Centre stem from Hunter's belief in the philosophy that "You only understand your customers by talking to them."

It is expected that 220 countries will attend the Beijing Games and about 20 to 30 of them will bring large contingents of media people and broadcasters, creating a need to cater for many different cultures and languages.

> You need to put services in place that are very simple, functional and useful. Customers have different expectations and needs and we have to understand

> that. Organisers and service providers need to talk to all the media organizations and ask them what they need and expect. It is important to build rapport with your customers so then you can tailor specific packages for their different needs (Hunter, 2005).

He also warned that language issues would be particularly important in Beijing because the organisers are non-English speaking. Beijing organisers will need to have personnel with expertise in major languages such as English (particularly), Japanese, French and Spanish.

With regard to changes in media technologies at the Olympics over the past decade, Hunter indicated the following developments:

Print Media

In terms of the evolution in print media between 2000 and 2008, Hunter believes the underlying requirements for this medium will be much the same as at previous Games, such as those at Barcelona, Atlanta and Sydney: journalists will need to get information quickly, compile their stories and distribute them to their media organisations as early as possible. Sydney also established an Intranet for information services, so that terminals provided information on events, such as times, results and so on, that could be printed out at high speed. This system has been further developed in Athens and will be more advanced in Beijing.

One key element that characterises the digital sports news environment is the pace at which sports news stories are circulated in and across a range of media platforms. The currency and pace of news is important, not only challenging the authority of traditional print media, which simply cannot keep up with delivering breaking news to their readers, but also offering an opportunity for news organisations to extend their brands through an online presence.

At the BBC, for example, journalists input copy that is then carried across the range of media platforms carrying sports news for the Corporation. As Andrew Thompson, Head of BBC Sport News, Interactivity and Digital Media, points out:

> People want to be able to get their sport news wherever they are on a range of different platforms. From text alerts, to the Web, to BBC News 24 for the latest sport news, to the more crafted news bulletin. The multi-platform authoring system that we have introduced over the last year, which allows people to write the story once and for it to go out across a range of platforms from Ceefax, the Web and mobile texts, makes it easier for journalists, so technology has played a role in that (Boyle, 2006).

Broadband Technology

Hunter indicated that the main difference in Beijing would be broadband technology, which will allow easier collection of information and much faster distribution. In the past Games for example, Athens had ADSL while Sydney had narrow-band technology, mainly using dial-up services. This worked efficiently enough for the collection of text

based information, but was extremely slow for the transmission and download of high definition digital images.

Massimo Martino, a photojournalist with Asia Pacific News Agency, indicated that the main difference from past practice is in the workflow. Previously, a photographer was asked to investigate a subject and record it on film, then play a waiting game with laboratories and darkrooms to finally see the results.

> Today we check our work instantaneously but then we can't stop. We become graphic designers (treatment of raw images into workable files for Editors to use), archiving assistants (filing of images in structured digital archival systems), sales people (images can be put on Web sites and downloaded). Timing has become more important than ever, due to the availability world wide of Internet access, and sales very often not only depend on the quality of images but with their speed of arrival on Editors' desks (Martino, 2004).

Broadcast Media

Today's television covers sporting issues in a manner unrecognisable a decade ago, as well as offering streaming video of events or live media conferences via the Internet generally, or through dedicated Olympic Web sites. The Athens 2004 broadcasts saw several technological firsts, with broadcasters from some countries making streaming video and highlight clips with mobile phone handsets using 3G technology. For the first time in summer Olympic history, the host broadcaster provided High Definition

Television (HDTV) coverage. In addition, rolling radio news means that another source of information is available both to fans and to other sports journalists. The impact of these changes is to quicken the pace at which information get circulated over all the media platforms.

The main difference in Beijing will be a 100% use of high definition television for the contribution circuits. By comparison, Sydney had about 90% standard definition and 10% high definition; Athens had a greater percentage of high definition transmissions. There will be more channels and programs available at the Beijing Games to satisfy the audience's needs. Hunter estimates that audio feeds will be similar to those in the previous Games, but with about a 20% increase in feeds, compared to Sydney, from the sporting venues to the rights holders and Beijing Olympic Broadcasting (BOB).

At the Beijing Olympics, most cellular services will be 3G (third generation). The expansion in wireless products will result in a corresponding decrease in fixed services; there has been an increase of about 5% in total services at each Olympics from Seoul to Barcelona onwards and this peaked in Athens, where wireless started to cut in on the mainstream fixed services; however, fixed phones will continue to offer better reliability, particularly during emergencies and times of heavy congestion. Hunter predicts that, compared to the Sydney Olympics, the total volume of services will be 10% more in Beijing.

Technology for Future Olympics

Hunter has revealed that, back in 1992, when Telstra's network was in its planning stage, one of the greatest challenges was to forecast what equipment would be needed for Sydney 2000. Beijing now takes over that challenge.

While basic equipment for services for the Games tends to change little – reliable and flexible telephony, data, video, and audio transport will always be required –changes in the modes of transmission of these services are a constant challenge. In Seoul, microwave links played a key role; optical fibre was in wide use in Barcelona and carried the majority of traffic in Atlanta, and was used in even greater quantities in Sydney.

Technological advances will offer more flexibility and the possibility of greater reuse of equipment, given that hundreds of kilometres of cable are installed in venues and only used for a few weeks; Internet Protocol (IP) and wideband wireless networks will replace the need for much of this. These technologies will also reduce time pressure on venue installation, since they can be deployed quickly. In addition, routine use of the Internet by the media, officials, and athletes will drive the requirements for comprehensive wideband network connection.

3.5 Discussion of Findings from Interviews and Questionnaires

As stated earlier, I conducted an online survey and personal interviews with a number of media professionals to discuss the functional parameters that a Digital Media Centre should realise, to best enable the global user base to achieve its goals according to its

various cultural perspectives, I also wanted to gauge the extent to which the respondents agreed or disagreed with a number of statements regarding the relationship between digital technology, cultural issues and the Beijing Olympics.

To do this, and also to assess the impact of new media technology in a cross-cultural context, I set out to test the following key conjectures against the opinions of the survey respondents:

- 1: Technology needs to be customised for different cultures.
- 2: Behaviours of people will be changed by the introduction of new technology.

1: Technology needs to be customised for different cultures

A majority (67%) of the communication professionals surveyed believed that new media technologies need to be customised for different cultures; although most of them**,** particularly the non-Chinese speaking respondents, believe that language differences are the major hurdle to understanding, some think that other cultural differences are also important. Herbert Chen, Director of Tsinghua University Science Park, said "Language is the only barrier", whereas Wu Jia, Sydney Bureau Chief, China Radio International, said "They may have different ways of thinking, different values and backgrounds. I think language barrier makes up only a small part of the problem."

Of the 220 countries participating in the Beijing Olympics, about 20 to 30 will bring large contingents of media and broadcasters, according to John Hunter, Telstra Olympic Project Director, who emphasised the need to cater to those different cultures and

languages. To address cultural differences between users, he suggests that flexible packages can be designed not just sporting, but history (featuring landmarks, etc.) can be distributed through tourist organisations in different languages. Also promotional information and broadcasting material was made available to the broadcasters and media. In essence, digital media can provide a variety of choices for users from various cultural backgrounds who speak different languages.

Joe Wang, Sydney Bureau Chief, China Central Television, believes digital media can serve the needs of people from diverse cultural backgrounds. New technology can integrate with culture as people adapt to it:

> English language has become the major language in international communication on the Internet. I think to preserve your own cultural value and compare this with different cultures will enable people to benefit from learning each other's culture (Wang 2004).

The Internet is not just another communications technology, but a new cultural form. English is one of the four most used languages in the world, along with Spanish, Chinese and Arabic; however, the latter two are much more difficult to display on Web sites because their written forms use different systems of characters and different modes of reading; for example, some Internet technologies do not display bi-directional text such as Arabic, making it more difficult to fully provide for Arabic communications. Consequently, and also because of its origins, the Internet is predominantly a medium of written English language, either formal or colloquial.

Lucian Beebe, Product Manager, Macromedia, indicated that this puts non-English speakers at a disadvantage. However, Dr Barry Harper, Director, University of Wollongong Digital Media Centre, believes the issue is not so much with the differing international languages or cultures but the diverse language used by professionals from various disciplines. For example, a Web designer may use different language terminology from that used by an engineer:

> All the cultural barriers started to break down as soon as we got an opportunity for researchers from different research backgrounds and processes to work together on the one project. Personal issues then overcame cultural issues so the projects could become quite successful.
>
> This is a major issue for a multi-disciplinary centre because all of these groups use a different language; they think about research differently; often have a different research process. You have to pool all of that together to get them to work together (Harper, 2004).

This is relevant and significant in the development of a Digital Media Centre, as it will pool different professionals in a multilingual and multicultural environment. With the increasing use of Internet communications technology (ICT), cross-cultural communication is becoming an important issue for anyone needing to co-operate across languages and borders in a virtual or online setting.

With English the dominant language and culture of the Internet, it is relevant to ask

whether the Internet is "globalising culture" by this means. But languages are constantly evolving, and thus people will have limited success if they try to use a computer to say everything for them. Many computer-based translation devices are limited to very basic phrases and cannot distinguish between various dialects and jargons or detect those subtle changes in expressions or moods or tones that a multilingual person would otherwise be able to see easily. Professionals should be encouraged to become multilingual, giving them skills they can use whether or not they have an electronic device with them.

2: Behaviours of people are changed by the introduction of new technology

More than 58% of the respondents agree that behaviours of people are changed with the introduction of new technology; for instance, communications professionals are under more pressure to produce stories more quickly to meet tight deadlines and have to examine a lot more information than in the past. Simon Hayes, IT journalist with *The Australian*, believes technology makes it far easier to communicate and send stories back to journalists' home bases, but also creates more pressure to file faster and hence, perhaps, produce less thought-out copy. Technology also puts more demands on journalists to seek out unique and interesting stories, tending to make the stories briefer and more to the point, but it can also reduce the quality.

There is also greater potential for dishonest manipulation of information. Massimo Martino, a photojournalist with Asia Pacific News Agency, considers it is obviously quite easy to change the content of a digital file and thus substantially modify the original intentions. He suggested that in order to guarantee the validity of a picture, only minor

cropping (mainly to straighten subjects) and colour balance correction should be allowed; then editors can change the size according to layout requirements. Without these precautions, nobody could rely on the validity of a picture.

The smart technology that takes advantage of human-computer interaction, so that more and more elements of our lives are automated, also patterns our thinking and behaviour. This patterning is subtle but ever-present in contemporary everyday life; what is occurring is a form of technological adaptation to the cybernetic designs of products. The capacity to adapt to new technology is noticeably more rapid with younger people than older people. Nonetheless, we all experience a learning process with any new program, any new television channel-selection system or any new mobile phone system, which require users to work out the ways it works best and adapt themselves to them; over a period of time, these processes become second nature; in other words, they become normal and relatively mundane. For example, the procedures for using a mobile phone for SMS messaging were originally onerous, yet regular users have now come to consider this as just another form of communication.

It is important to isolate and analyse those particular instances where the technology is alien and difficult, such as some digital technology, and the process of learning the appropriate way to use it is "unnatural and lugubrious", as David Marshall describes it:

> We as users experience the frustration of interactivity that does not acknowledge our own unique cases as it attempts to group likely problems and issues. This feeling of disjuncture with a cybernetic system helps us understand

> the way that a particular system demands adaptation and also the way it regulates our behaviours into regularised solutions (Marshall, 2004).

Much modern technology tends to be designed by relatively young, technically sophisticated people; it appeals specifically to other young people and is understood best by them, whereas others may face real difficulties and frustrations or find the systems unworkable. It is vital to make new devices much simpler to use, even for those people who are not particularly comfortable using new technology.

Telstra Olympic Project Director John Hunter envisages that the Beijing Olympics will be totally digital, as by 2008 everyone will be using digital technology, "no matter what". This is supported by most (over 75%) of the survey respondents, who believe that digital media will play a very important part in major events such as the Olympics, the most important aspect being news and information delivery.

The most effective aspects of digital media are speed, reliability and lower cost; 76.5% of the respondents to the survey said that its most important aspect is fast delivery, while 32.5% said that its second most important aspect is reliability. Massimo Martino, a photojournalist with Asia Pacific News Agency, agreed, saying, "One of the most important aspects of new media technologies relies on the ability to disseminate information at the touch of a button." Consumers today demand instant access to the latest information and they can let information providers know instantly whether their needs are being satisfied.

Will Berryman, Chief Technology Officer with SBS, indicated that in terms of content, the audience now has a greater feel and greater expectations, and they can give input into the show itself, so that their opinions can be heard and that they have a greater expectation of them being understood, factored in and worked on. There is a greater immediacy of information now. Indeed, the public today expects media to be available in real time and of real-world quality. As the technologies improve, both the commercial and private markets will expect better, faster and clearer information. New forms of media and entertainment, such as the Internet and interactive games are expected to grow at more than twice the rate of traditional mainstream media in the next five years, providing content for a new generation of platforms.

The responses to this survey demonstrate how communication professionals can enhance their work by using the greater flexibility and variety of choices provided by the new media technologies. We have seen the emergence of new communication products that are more and more computer-based, that are non-linear (for example, hypertext), use multimedia and allow users to control form, function and timing. More media products are reaching the end user in real time via online and satellite technology. Consumers are demanding instant access to the latest news on all major events, whether these are sporting, political or technological.

In the next few years, digital TV will offer viewers a greater variety of choices to suit their personal needs and interests. As Joe Wang, Sydney Bureau Chief, China Central

Television, predicted, “By Beijing 2008, CCTV aims to broadcast the Olympic Games by high definition TV with high quality broadcasting and show this significant event to the world.”

Beijing will use digital technology for many aspects of the 2008 Olympic Games, providing high-quality information services. BOCOG aims to ensure that anyone, any time, anywhere, can enjoy safe, convenient and efficient access to an affordable, multilingual and intelligent information service. To achieve this objective, Chinese Olympic Committee Vice President, Tu Mingde, revealed that BOCOG will introduce and apply international advances in mature and reliable digital technologies (Tu, 2005). It will also bring the initiatives of the domestic information industry into full play and strengthen its team-building and human resource management. Beijing has already developed information strategies, such as the Government broadband digital networks, to provide favourable conditions for the implementation of the “Digital Olympics”.

Communication lies at the heart of the Games. To help visitors even further, all the signage around the city is to be standardised; Beijing is determined to see that the message gets across in a language visitors will understand. Tu revealed that, as part of its huge face-lift program, Beijing is promoting the learning of foreign languages among its citizens; “bilingual” is the buzzword and everything: road signs, public notices, menus and descriptions at scenic spots will be updated. Citizens of Beijing, young and old, have found that improving their foreign language proficiency is an urgent and important task. In order to lift the foreign language level of the citizens and enhance Beijing’s image as

an international metropolis, the Beijing Municipal Government has made a decision to carry out a "Beijing Speaks English Program". The objective of the program is to make most citizens capable of speaking one hundred sentences for everyday use in at least one foreign language by the end of 2007.

> BOCOG will promote the Games as a bridge for cultural exchanges in order to deepen the understanding and enhance the trust and friendship among the peoples of different countries. To promote the Olympic Games and Olympic Movement, BOCOG will organise diversified cultural and educational programs to cater to the needs of people, especially the younger generation, for spiritual and cultural activities (Tu 2005).

3.6 Digital Freedom of Expression: Some Personal Observations

With the eyes of the world focused on Beijing in the 2008 Olympic Games, the concern is whether China will seriously address issues such as freedom of expression on the Internet or whether the Olympic rhetoric will be merely a public relations exercise.

Some foreign journalists, who have not actually visited Beijing and experienced it first-hand, may be sceptical, and view the official information on the Beijing Olympics as public relations hyperbole.

I travelled to Beijing in 2005 to cover and film a documentary on the build-up to the Beijing Olympics, and I have personal experience of very interesting discussions with the China Central Television crew on the focus of the stories for the Beijing Olympics. Fan

Lixin, a Chinese cameraman, told me that some foreign journalists and crews only wanted shots of old Beijing buildings, "Hutong" (old, narrow lanes), street children or beggars with dirty clothes, or people spitting, and so on. It is very difficult for foreigners to understand that changes have taken place in China when they keep looking back at the past and at the history of China in the Cultural Revolution. Fan asked:

> Why do these foreign journalists keep portraying the same old, negative image of China? Indeed, China has changed a lot over the last decade – new high-rise buildings, modern infrastructure, affluent yuppies, and computers everywhere. Why not look at the other side of China, that is, a "new" Beijing and a glimpse of the future?

I can see his point, as the theme of my documentary is "New Beijing, Great Olympics". The storyline is focused more on the latest development of Beijing in the lead-up to the Olympic Games 2008, rather than on outdated notions. Indeed, journalists should have an objective point of view and not be biased by the stereotyped belief of an "old, red China". Stereotypes tend to impede intercultural communication in that they repeat and reinforce beliefs until often they are taken as the "truth"; for instance, Chinese stereotypes are still adopted by some Westerners, who say, "This is so Chinese!" As Samovar and Porter have pointed out, "stereotypes, like culture, are learned in a variety of ways ... and many stereotypes are provided by the mass media." (Samovar & Porter, 2004)

However, this striving for modernity should not obscure issues of freedom of expression, which should not be overlooked or understated. China's media are tightly controlled by

the country's leadership; hundreds of international Web sites remained blocked and thousands of Chinese Web sites were shut down, according to a Amnesty International report (Amnesty International News, 2007).

As part of its bid to host the Olympics, the Chinese government assured the International Olympic Committee (IOC) that it would comply with Article 51 of the Olympic Charter, which stipulates that the IOC should take "all necessary steps in order to ensure the fullest coverage by the different media and the widest possible audience in the world for the Olympic Games".

So far, China's most significant step forward for media freedom was the introduction on 1 January 2007 of new regulations giving greater freedom to foreign journalists to cover news stories in China in the run-up to and during the Olympics. These new rules were announced with much fanfare in the official press, as stated by Leo Tallay:

> BOCOG expects 5,600 print journalists and photographers as well as 16,000 broadcast journalists to be accredited for the Games. This means that there will be a lot of people interested in covering stories about China that go beyond sport.

Tallay notes that promises of greater freedom for the foreign media have not materialised in practice. The Foreign Correspondents' Club of China (FCCC) reported no less than 157 contrary incidents between 1 January and mid-September 2007, including arrests, surveillance, intimidation of sources, and violence or threats (Tallay, 2007).

Digital freedom of expression remains an unresolved issue of concern for many journalists. New York University Professor Jack Balkin argues that Internet and digital technologies help us look at freedom of speech from a different perspective. This is not because digital technologies fundamentally change the ways that freedom of speech is defined. Rather, it is because these technologies change the social conditions in which people speak, and by changing the social conditions of speech, they bring to light features of freedom of speech that have always existed in the background but now been brought into the foreground:

> The digital revolution places freedom of speech in a new light, just as the development of broadcast technologies of radio and television did. The digital revolution brings features of the system of free expression to the forefront of our concern, reminding us of things about freedom of expression that were always the case, but now have become more central and thus more relevant to the policy issues that we currently face (Balkin, 2004).

Taking up Professor Balkin's points, although the digital revolution makes possible widespread cultural participation and interaction, at the same time, it creates new possibilities for limiting and controlling them. The digital age makes the production and distribution of information a key source of wealth, creating a new set of conflicts over who has the right to distribute and gain access to information. Not surprisingly, the free speech principle is central to these.

The implications for the Digital Media Centre are that, with freedom of expression, digital technology should allow both accredited and non-accredited media to have the right to contribute and gain access to its news and information. The Centre should be run by a professional media body, independent of government control, who will appoint a monitor of Web discussions. The challenge is to decide to what extent should the Centre be opened up to net citizens; as a free open site like YouTube, or as a site with more control such as that of the BBC. This will be determined not only by the Digital Media Centre's Web moderator, but also by the "Great Firewall" enforced by the Chinese government.

The "One World, One Dream" initiative is a challenge and also an opportunity to open up China to the world. As Briar Smith (2008) points out, the Olympics represents an important rite of passage in which new approaches to media freedom, government transparency, and environmental stewardship could lead the way to a new, more globally participatory Chinese era (Price and Dayan, 2008). The goal of the Olympic Movement is to contribute to building a peaceful and better world through sport practised without discrimination of any kind, and in the Olympic spirit, which requires mutual understanding with a spirit of friendship, solidarity and fair play.

There may be a "cultural clash" between the East and West, but these differences can co-exist in a diverse cultural environment. The problems and challenges facing anyone trying to adapt to a new and often strange culture are numerous. Adaptation is less troublesome if one is aware of the characteristics of the host culture; a cultural education

program for visiting journalists may help to prevent stereotypes by encouraging them to make fair and honest judgements about China and Chinese people.

Massimo Martino, a photojournalist with Asia Pacific News Agency, believes one must have knowledge of the cultural background and protocols associated with the people of the country in which the Olympics will be staged. He cited a relevant example: at the start of the fourth leg, in Tauranga (New Zealand), of the 2003 Around Alone solo yachting race, where a group of Maori warriors of the local tribe were performing a Haka (challenge) in front of the New Zealand skipper Graham Dalton and his boat. During such a performance, the convention is that nobody is allowed to get close and in front of them. An accredited American photographer was standing in front of them to get the best shots and, after being warned twice without response, was simply pushed over into the sea with all his digital cameras. While not condoning this act, it is important to recognise the cultural value of ceremonies that the host country will put in place.

Understanding cultural diversity is important for achieving effective communication. This includes familiarity with the cultural heritage, learning style preferences, linguistic rules, non-verbal behaviours and gender-role expectations. The flexibility of digital media has important cultural repercussions; for example, language-learning programs simultaneously employ textual, aural, and visual media, which can be paced and customised by their users. Although the dominance of the English language within new media is controversial in cultural politics, the Internet also fosters many sites for small, ethnically and linguistically distinct groups. This supports the notion that new media

technologies can be adaptable across cultures and can help to break down the communication barriers existing in the traditional media.

The challenge of a new Digital Media Centre is to deliver news and services, technology and support, in ways that are culturally relevant to users. Therefore, we have to free our minds of our prejudices and start thinking like the users; in planning for a successful Digital Media Centre, it is important to listen to them, so that the Centre will cater to the needs of people from diverse cultural backgrounds.

Chapter 4: Virtual Digital Media Centre

A Digital Media Centre necessarily exists as a virtual experience – one in which the experiences are mediated through computer technologies, and are thus open to various forms of manipulation. The use of digital effects to manufacture "virtual realities", is likely to have significant effects on the whole process of information delivery and audience interpretation, which may enhance technology-mediated experiences of the past, whilst possibly undermining the quality of people's understanding. In this chapter I want to explore the interfaces between the virtual and the real world and the ways of encoding them, using the facilities and content of the Digital Media Centre.

In virtual reality, lifelike changes in the visual scene appear in response to the actions of the participants. Such realistic feedback often leads subjects to report that they feel "in a place" while they are negotiating the computer-simulated world. For instance, subjects experiencing a computer simulation may have the feeling they are in the Beijing Olympic Media Centre. This subjective experience of "presence" in the virtual environment is the intentional essence of virtual reality, and has potential use in my proposed Digital Media Centre.

4.1 Digital Media Centre Prototype

It is important to note that the virtual Digital Media Centre is a semi-functional prototype development site, a creative part of my research project, rather than a fully functioning element of the BOCOG infrastructure – assuming it ever progresses to that stage. The

Web template has a modern look and interface. The Digital Media Centre logo is designed using Flash and its movement symbolises the constant change of media and technology in the digital age.

The Digital Media Centre Web site http://www.asianmediacentre.com.au/dmc/index.html will feature the following content focused on the interests of users, based on my research findings. The site will also create links to the official Beijing Olympics Web site and relevant portals to the Digital Media Centre.

I have provided a link to a relevant page of the Digital Media Centre site:

*** News on Demand** (http://www.asianmediacentre.com.au/dmc/news-on-demand.html)

The Digital Media Centre will provide a multimedia news-on-demand service for subscribers, allowing viewers to select the news items they want to read or watch in their chosen format. The Centre will provide Beijing Olympics-related content with audio, video, graphics and podcasts, including Games history, interviews with athletes, the latest Olympic news and information.

*** Photos on Demand** (http://www.asianmediacentre.com.au/dmc/photos-on-demand.html)

In addition, the photos-on-demand service will feature a Web-based portal offering photos on a subscription basis, covering Olympic sports, news, athletes, creative shots, culture and topics about China.

Sorted by category, the database will allow photo editors and reporters alike to view a

photo or portfolio, and then place their order online by submitting their subscription details.

*** Mobile Olympics** (http://www.asianmediacentre.com.au/dmc/mobile.html)

Users will have access to various wireless systems, while the official Olympic carrier China Mobile has promised to deliver 3G technology in time for the 2008 Beijing Games.

The Digital Media Centre offers a wide variety of content as both text and video including the latest news, sports, as well as the breaking news on the Beijing Olympic Games via subscriber SMS as it happens.

*** Podcasting (**http://www.asianmediacentre.com.au/dmc/podcasting.html**)**

Podcasting allows users to download the latest Olympic news audio feeds to their iPod or MP3 player so they can listen whenever and wherever they like. The service is compatible with both PCs and Macs. All they need is to download and install on their computer, an application such as iTunes or iPodder, both of which are free.

*** Games Schedule** (http://en.beijing2008.cn/cptvenues/schedule/)

The Digital Media Centre site features the 2008 Beijing Games competition schedules by creating a link to the official BOCOG Web site.

*** Olympic Archive** (http://en.beijing2008.cn/education/curriculum/index.shtml)

The Archive contains a collection from the Beijing Olympic database, and daily summaries of the 2008 Games. The users can easily find Beijing Olympic Games background information through the online database index.

*** Creative Zone** (User-generated Content)

(http://www.asianmediacentre.com.au/dmc/creative_zone.html)

The Creative Zone is where users can post their reportage and choose the terms of the licences under which they can publish and distribute their work. This idea was inspired by the Creative Commons, founded by Lawrence Lessig, a Professor of Law at Stanford University (see Chapter 1).

The significance of this Creative Zone is that it offers a vibrant environment in which new ideas can be generated. Its purpose is to enable users to take their ideas forward and to maximise their potential for use with the Digital Media Centre.

*** Feedback** (http://www.asianmediacentre.com.au/dmc/feedback.html)

The Feedback section will allow users to express their views from an independent and different angle**,** increasing the amount of cross-national and cross-cultural communication that the virtual Digital Media Centre generates.

The ideas and information generated from users' feedback will be ongoing and will contribute to the progressive development of a Digital Media Centre up to the 2008

Games and beyond. This information can be used as reference material for future digital media projects by academics and professionals alike.

*** Olympic Venues** (http://en.beijing2008.cn/venues/)

This section contains information on the Olympic competition venues in Beijing. Users will be able to find the location of venues on the e-map easily. The dynamic map features special columns on four hot topics, including the Olympic competition venues, Olympic-licensed stores, subway stations, and the traditional dwelling blocks in Beijing — Hutongs.

The map also serves as a practical city guide platform with 12 wide-ranging categories of classified information available, such as government institutions, health and medical facilities, academies, entertainment, media, shopping, real estate, legal chambers, sports venues, scenic spots, catering, and hotels and restaurants.

*** Facilities** (http://www.asianmediacentre.com.au/dmc/facilities.html)

The Digital Media Centre will provide a comprehensive and professional service to the international media representatives in the lead up to and during the Beijing Olympics.

The Centre will be set up with state-of-the-art telecommunications facilities including work stations for journalists, a news conference centre, a briefing and interview room, a digital image resource library and a 24-hour Help Desk.

*** Round-the-Clock Help Desk** (http://www.asianmediacentre.com.au/dmc/help-desk.html)

The Centre will also offer a range of services and expertise to assist journalists and media professionals through the provision of hardware, software and 24-hour technical support.

*** WorldLingo Translation** (http://www.worldlingo.com/)

The Digital Media Centre site will be multilingual and will also contain a link to the WorldLingo translation service, with 141 languages, to cater for users whose preferred language is not available on the Web site. WorldLingo is one of the Internet's leading translation services, performing thousands of translations every day. Online translation and order service is available worldwide 24 hours a day, 7 days a week. This is a pay-as-you-go service with a fast turnaround time, which uses only accredited native-speaking translators.

*** Beijing Official Guide (**http://www.ebeijing.gov.cn/)

The Digital Media Centre Web site will create a link to the Beijing Official Guide, which provides consulting services and information about Beijing including travel, accommodation, shopping, banking, health, study, business and investment, etc.

Beijing is the first Olympic city to provide “one-stop” services, offering efficiency and convenience to journalists. The “one-stop” system allows international journalists covering Beijing, and the preparations for the 2008 Olympic Games, to conveniently

utilise services and access information from 29 different departments and organisations throughout Beijing, all at one centralised location, the Beijing Olympic Media Centre.

The 29 bureaus and organisations participating in this "one-stop" service system include: the Ministry of Foreign Affairs; the State Administration of Radio, Film and Television; the State Administration of Foreign Exchange; BOCOG; the Bank of China and the Beijing Municipal Public Security Bureau.

*** Accessibility** (http://www.asianmediacentre.com.au/dmc/accessibility.html)

The Digital Media Centre is committed to ensuring its Web site is accessible and inclusive for all its users.

Web accessibility focuses on ensuring that all users, regardless of their physical and mental capability, are able to access the content and services on a particular Web site, designed to the following guidelines:

The W3C Web Accessibility Initiative (WAI) www.w3.org

The Australian Disability Discrimination Act

The site offers a link to BrowseAloud (http://www.browsealoud.com/) This is a free tool that enables speech of Web site content. It offers a practical Web site access service to people with reading difficulties and those who find it easier to listen to, rather than read the content of the site.

*** Contact** (http://www.asianmediacentre.com.au/dmc/contact.html)

This section will list contact details for two-way communications between the Centre and a diverse range of users, functioning as a point of contact between content authors and users. In cases where a user needs clarification on some aspect of the virtual Digital Media Centre or seeks the consent of the author to re-produce or use some content from the site for their own research/work purposes then the contact section will allow the user to make this request and discuss these issues with the author.

4.2 Virtuality and Globalisation

The encouragement of "virtual reality", virtual communities and virtual identities, has been one of the most significant potential outcomes of new media technologies, such as the Internet.

Gordon Graham describes the momentum that drives cyberspace thought as

> The suggestion that we are on the verge of a new kind of reality – virtual reality – in which we will become possessed of the power to create for ourselves a world of experience which is free from the limits of ordinary contingency. (Graham 1999: 19–20).

Early experiments in virtual reality in the 1990s, involving the creation of immersive, computer-generated environments, remained a peripheral activity. However, the rapid development of the Internet, together with advances in digital media technologies, has

heightened awareness of the extent to which virtuality is becoming a characteristic feature of cultures where computer-mediated communication is predominant.

Sherry Turkle has argued that computers are not simply a tool for communication, but are also a mirror that "offers us both a new model of mind and a new medium on which to project our ideas and fantasies". More importantly, the networked culture of the Internet has meant not only that communications media could be used to construct and imagine other forms of the self, but also that this could interact with a myriad other self-formation projects in the parallel universe made possible by the Internet (Turkle, 1995).

Globalisation has also been identified as a source of trends in the development of new media technologies. While, for electronic communication, the reduction in the significance of distance has been a characteristic of the new media, it is particularly the development of the Internet that has promoted globalisation and the "death of distance" (Cairncross, 1997). Through common worldwide Internet protocols, broadband networks are enabled to transmit a diverse range of digitised signals across vast distances; hence the value of the Internet to its users as a global media and information archive.

The globalisation of new media offers the possibility of emergence of a global village, where technologies that enable greater communication across borders promote heightened inter-cultural awareness and communication (McLuhan & Fiore, 1967). McLuhan's observation is supported by the majority of the survey respondents, who indicated that new media technologies can help to break down the cultural barriers.

Language is still viewed as the main obstacle in cross-cultural communication. However, some respondents argue that the cultural barrier is not solely an ethnic language issue, that is, whether you speak English, Mandarin or Japanese, but it can also refer to a different cultural perspective within various professional groups**.**

The Digital Media Centre will take into account survey respondents' views on these cultural issues, as it adapts to the needs of a virtual community from diverse backgrounds around the world. Ideally, it would be better to translate the entire Digital Media Centre Web site into each of the languages important to the audience, as well as adding content of local interest to the audience in those countries. However, due to the limited resources for complete translation, an alternative would be to allow users to choose their preferred language for translation, so overcoming the language problem. A solution would be for the Digital Media Centre site to be multilingual, with a pull-down menu offering maybe 12 different languages (for instance, English, Chinese, Japanese, Korean, Vietnamese, French, Spanish, German, Italian, Greek, Russian and Arabic), and with a link to the Worldlingo translation service to make it more accessible for other languages of the global audience.

4.3 Creating a Virtual Community on the Web

We cannot ignore the creation of virtual communities in the Internet or Cyberspace arenas, as they emerge and evolve at a rapid rate. This is reflected in the responses to my survey, in which potential users from diverse cultural backgrounds indicated that a virtual Digital Media Centre via the Internet would be their most preferred medium for receiving

news and information on the Beijing Olympic Games.

The active participation of members is essential, as S Jones describes:

> If we are to create a sense of community beyond mere recognition, we require far more than its construction, physical or virtual – we also require human occupancy, commitment, interaction, and living among and with others. The sense of community that is created on the Internet is in large part incidental to activity that takes place therein ... (Jones, 1997, pp. 15–17).

Consideration of recognised community design principles and incorporation of existing aspects of current best practice will foster the creation of a sense of place and a feeling of community. Ultimately, however, success will stem from the community's ability to meet the real needs of its members.

The community must find ways to provide and maintain places of assembly and interaction for its members – whether these places are virtual, physical, or a combination of the two. And if these places are to serve their purposes effectively, they must allow both freedom of access and freedom of expression. This has far-reaching implications and potential for the virtual community, with its emerging and evolving characteristics. Ideas about the landscape of the cyberspace virtual community have changed. A communication channel, such as a feedback facility on the Digital Media Centre Web site should be made available for members to voice ideas and opinions; the voice of the individual must be heard.

With ongoing development, the virtual community has become a new force that cannot be ignored by anyone: individuals, organisations, government or societies. When there is active participation in a virtual community, with synergy created among different virtual communities, collective intelligence is unleashed – towards a true global community or in other directions. This all depends very much on the users, on how they want to contribute and shape the eventual outcome. Therefore, a Creative Zone is available for the virtual community of the Digital Media Centre where users can post their reportage and choose the terms of the licences under which they can publish and distribute their work. The significance of this Creative Zone is that it encourages user-contributed content and participation from the virtual community. Its purpose is to enable users to take their ideas forward and to maximise their potential for use with the Digital Media Centre.

4.4 A Design Concept for the Digital Media Centre

The design of the virtual Digital Media Centre aims to explore the key elements for a design brief for such a site, by researching and specifying its ideal functionality, and by creating a template to illustrate these ideas, identifying the features and characteristics that potential users of a Digital Media Centre would require.

Usability and accessibility are critical issues in designing the virtual Digital Media Centre, according to Andrew Francois, Lead Designer, Institute for Interactive Media & Learning at the University of Technology, Sydney. "A usable and accessible Web site appeals globally, is fast to download, easy to navigate, and available to all potential users including those with a disability," Francois stated (Francois 2006).

By implication, a usable and accessible Web site should be inclusive for everyone, regardless of their background. Ideas, motivations and creative experiences should lead the design process – it is about the participants, their needs, feelings and motivations.

Good usability transcends age, geography and culture, according to Web usability guru Jakob Nielsen. It does not matter if a Web site targets an Internet surfer who is 20 or 50 years old, or is Asian and not American. The site will succeed in attracting visitors if it is designed according to how humans think and behave. Dr Nielsen suggested there is also little difference between internet users in Asia and those in the United States or Europe, because "they depend on the fundamental characteristics of the human brain, which are the same all over the world".

A further caution:

> There will always be new technology, but setting your sights too high backfires. Early adopters are a minority. It takes time for audiences to accept and learn new interactions. Effective designers understand and support people's cognitive and physical abilities, and remain true to their objectives. Technology may change, but people's innate capabilities remain constant (Neilsen & Loranger, 2006).

Sophisticated designs are planned, organised and unpretentious. Truly elegant Web designs are visually pleasing as well as functional. The implications for the Digital Media

Centre Web site are that the users should be kept at the centre of the design and their feedback taken into account. Creativity and usability must combine to achieve a harmonious and effective design.

International usability is the key to the virtual Digital Media Centre development in order to serve the global audience. Neilsen has suggested that, because of the myriad issues in international usability, it is advisable to perform international usability testing with users from several countries in different parts of the world. No guidelines yet published are sufficiently complete to guarantee perfect international usability, so an empirical reality check is always preferred. Fortunately, the Web makes international usability testing relatively easy.

Consequently, I decided to implement international user testing and to analyse the feedback about their needs expressed by the target users covering various countries: Australia, China, USA, UK, Japan, Korea, Thailand, Singapore and Malaysia.

The success of most Web sites today depends on whether users perceive the site to be credible. There are two things happening when people assess credibility online. The user notices something (prominence) and then makes a judgement on it (interpretation), as was stated in a prominence-interpretation theory research study on Web credibility conducted by Stanford's Persuasive Technology Lab (Fogg, 2002).

Fogg has indicated that the predominant factor affecting prominence may be user involvement; "when a user goes with a high level of motivation to a Web site, he or she

will notice more things about it. However, as the interpretation component suggests, users do not interpret identical Web site elements in the same way, because culture plays a role in making these judgements" (Fogg, 2002). Therefore, initiatives to promote cultural sensitivity and recognise diversity are crucial. Cultural differences need to be addressed and considered in designing the virtual Digital Media Centre without permitting stereotypes and quick judgments to influence user's encounters.

Tony Faure, CEO of ninemsn, believes the criteria for a successful Web site in a cross-cultural environment should focus on the different cultures:

> I think, in general terms, for any Web site to work well it has to have, at its heart, what it is the consumers want from it; and deliver that as clearly as it possibly can … in a cross cultural environment, my instinct is that you need to be focused on what are the things that span all the different cultures are interested in and build on that (Faure, 2007).

A major advantage of a virtual Digital Media Centre is the likelihood that barriers to participation, such as gender, age, race, nationality, disability and economic status, become less relevant in online environments. The value of participation in a network grows exponentially as more people use the interactive Creative Zone to communicate and express their ideas and thoughts to the other users of the network.

The role of the editorial team will be to moderate the user-created content and monitor the postings according to media industry guidelines as specified by the International

Federation of Journalists (IFJ). A contribution may be edited or not published if the editors consider it to be defamatory, or if it violates laws regarding harassment, discrimination, racial vilification, privacy or contempt. The editors reserve the right to publish or delete items in the Creative Zone at their sole discretion. All contributors will be required to comply with the Digital Media Centre codes and ethics that are based on the principles determined by the IFJ (IFJ, 2003).

As David Silver suggests, interface design can have a substantial impact on the fulfilment of a site's intentions. Kollock (1996) notes in “Design Principles for Online Communities”, that online environments should be designed to encourage user cooperation, maintain a community-based institutional memory, and include elements of the physical environment through which the users travel.

It is crucial to combine issues of discourse, access and design when discussing applications and the use of new media in the Digital Media Centre. These issues come together in the relatively new field of participatory design, an approach pioneered in Scandinavia and currently making inroads in the United States. As Schuler and Namioka (1993) note, participatory design "represents a new approach towards computer systems design in which the people destined to use the system play a critical role in designing it" (Silver, 2000).

4.5 Comparison of Olympic and other International Sports Web Sites

A comparison and evaluation of Olympic and other International sporting Web sites, including FIFA and the 2006 Asian Games, is necessary, judging by the user experience gained from previous Olympic Games; this can help the Digital Media Centre Web site to prioritise its usability.

Web site	**Key Features**	**User-Generated Content *(UGC)**	**Flash**	**Video**	**Metadata/ Keywords Search**	**Languages**
Sydney 2000 Olympic Games Archive site	About Australia, Sports news, Olympic results, Games venues, Media centre, Photo gallery, Torch relay, Entertainment & getting around, Accessibility	No	No	No	1 Keyword See appendix 3.	12 different languages: English, French, German, Spanish, Italian, Greek, Russian, Chinese, Japanese, Korean, Vietnamese, Arabic.
Athens 2004 Olympic Games – site dismantled, no access for analysis.	–	–	–	–	–	–
Beijing 2008 Olympic Games	News, Sports & venues, spectators, Welcome to Beijing Media operations, volunteers, Olympic spirit, Olympic education, Olympic culture, Torch relay, Fun page, Good luck Beijing My Olympic	Users can contribute pictures and their own Olympic stories so that others can share in their experience.	Flash animation, Flash video	Yes	8 Keywords See appendix 3.	English, French, Chinese.

	story China through my eyes e-Map					
London 2012 Olympic Games	News, Sports and venues, Get involved, Our plans, Blog, About us, In your area Web accessibility	Yes, blog	No	Yes	6 Keywords See appendix 3.	English
Asian Games 2006	News, Schedules & results, Athletes & teams, Sports, Venues, Spectators, Media Centre, Photo galleries, Torch relay, Merchandise, Spirit of the Games, Fun pages, Corporates	Yes	No	No	112 Keywords See appendix 3.	English
FIFA World Cup	About FIFA Overview, News, Videos, Photos, Matches, Teams Statistics, Awards, Preliminaries, Fan Fest, Classic Football, Advertisement	Yes Fan Fest – Have your say, poll	Flash animation	Yes	15 Keywords See appendix 3.	English, German, French, Spanish.
Youtube.com	Videos, Categories, Channels, Community, YouTube Mobile, Popular videos for mobile devices, Create Custom Players, YouTube User Gatherings, Upload by users,	Yes Videos	Flash video	Yes	4 Keywords See appendix 3.	English

	Help Centre					
News.com.au	Breaking news, National, World, In-depth Features, The other side, Weather, Interactives, Galleries, Archives, News lab, Advertisement	Blog News Lab	Flash animation, Flash video	Yes	33 Keywords See appendix 3.	English

* Blogging has proliferated and been integrated into major news sites since 2006.

Evolution of Olympic Web sites

The official Olympic Web sites (as they moved from Sydney 2000 to London 2012) developed from a state of simplicity to more involved interactive and database-driven sites, complementing the original design with applications that have evolved and kept pace with technology along with the organiser's marketing objectives. The objective of content developers is to formulate a message that will have maximum impact on users.

Web page mark-up languages have also developed (eg. HTML, XML, XHTML, CSS), and now include Web scripting languages (eg. Javascript) and animation tools (eg. Macromedia Flash). In addition, the developers have provided Web search facilities to help users to find exactly what they are looking for.

The Web site content is extensive, ranging from Olympic history, Olympic news and information updates, results, statistics and an interactive venue guide, to new categories. such as an Olympic Fun Page, and Online Games on the Beijing 2008 Web site, and an Olympic blog on the London 2012 site.

These Web sites are multilingual; for example, the Sydney 2000 Games offered 12 different languages (English, Chinese, Japanese, Korean, Vietnamese, French, Spanish, German, Italian Greek, Russian and Arabic), since Australia is a multicultural country, very different to China, whereas Beijing 2008 is currently offering only three languages (English, Chinese, French). The lesson for the Digital Media Centre is that a multi-lingual site is more accessible to users from different cultures.

Moreover, new technology allows the users to view the latest news updates, results, photos and videos on their mobile phones, based on their selected favourites, as was the case with the 2006 FIFA World Cup Web site. In addition, the Beijing 2008 Web site has launched a RSS news-feed service; viewers can simply use an RSS feed reader or news aggregator and subscribe to news headlines that interest them. The RSS reader will then automatically get the latest news associated with the selected headlines.

Another innovation to facilitate online mass participation and interaction is Web 2.0, which has been adopted for building a new addition to the sports channels for the official Beijing Olympic Games Web site. Users are encouraged to contribute, collaborate and improve a Web-based application based on the features, functionality and content that they deem to be important, entertaining and informative.

By implication, Web 2.0 has given people the power to connect, create and improve the application that they are contributing to, more effectively than at the previous Games at Sydney and Athens.

News and Information Delivery

The Olympic organisers aim to deliver accurate news and information on the Olympic Games, with accessibility for all users, including those with a disability, so that they can participate in an inclusive Olympic Games experience.

For the international media more specifically, their mission is to allow journalists to cover the Games comprehensively and to ensure that information is disseminated in the most accessible ways to the widest possible global audience.

To this end, the new official Web site for the Beijing 2008 Olympic Games was launched in 2007. The new site is based on a solid foundation, with quick Games-time turnaround, making use of mainstream technology, an appealing colour scheme and artistic design, with a simple structure that is easy to navigate.

Since 2001, the official Web site of the Beijing 2008 Olympic Games has undergone numerous facelifts of a modest Web site used solely for reporting news at the outset, and gradually evolving into a comprehensive platform for news about the preparation for the Games, society and sports news, as well as providing for interaction with Web users. The volume of official Web site visitors passed the 1.3 million mark the day the official mascots were released in 2007. Changes in the official Web site of Beijing 2008 reflect the continuing progress of the preparations for the Games.

According to BOCOG, the new official Web site combines insights from multiple discussions among various groups, including the design team for the new Web site,

professionals from the IOC, professionals from internet project groups, and the contractor Sohu.com Inc., incorporating the browsing experience of visitors. From a design angle, the new official Web site adheres to the Beijing 2008 image and look, using green-blue and Chinese Scholar Tree Green as its main colors. In terms of content design, the new official Web site places more emphasis on the visitor's experience as well as service functions (*China Daily*, 2007).

The new official Web site uses page code technology, various media technologies, giving users a different experience compared to the previous site with a range of interactive products such as Fun Page, and newly-added service functions thereby adding to its level of appeal and service standards.

These additional features, which did not appear on the previous Sydney and Athens Olympic sites, reflect a more Asian flavoured content with Chinese characteristics. The Fun Page includes fun activities, online games, screensavers and frequently asked questions by the users.

Microsoft Technology Evangelist Laurence Moroney has revealed that BOCOG has envisaged an application whereby you could go to the Web and see the progress of the torch relay around the world in its journey from Athens to Beijing. In addition, you can drill down into particular cities and see a map of the route for the torch through that particular city.

> We have worked with sohu.com in offering a blogging service by which you can go to the blog and place your photos so that others around the world can share this unique experience. This way we can build the concept of "One World One Dream" (Moroney, 2007).

Individual users can contribute to the blog and organisations such as China Tourism can contribute by providing content. Moroney cited an example, if you click on the Lama temple in Beijing, you will get a beautiful animation that lights up in English and Chinese text, with photos that you can go in and interact with, and then link on to the Lama temple Web site.

In addressing the issue of designing the Olympic Web site with a diverse range of users from different cultures, Microsoft Developer Evangelist Michael Kordahi believes good design transcends language.

> For example, a German shopping Web site I demonstrate, even though it's all in the German language I can still read it, because of good visuals and the interactivity is right. You can apply this to any users including Chinese and this is where Silverlight comes in because it's visual communication. You simply highlight over an icon and you know there is an action there. Expression Web coupled with Silverlight will give you that high interactivity so you can rely less on language and more on visual metaphors. Good design is about structuring your site the way the user would think (Kordahi, 2007).

What I Have Learnt from the Data: Implications for the Digital Media Centre Web Site

Building upon the experience, and learning from previous Olympic Games, can help the Digital Media Centre Web site to prioritise its usability and design resources. In particular, for success on the Web, more emphasis should be placed on content usability, having the information users need and presenting it in a clear, concise style. Also, it is important to work on search and navigability, which are major influences on people's ability to use the Web site**.**

Search Essentials

Good information architecture will always lead to good usability. The site should be structured to mirror the users' tasks and their view of the information space. Despite the primacy of search, the site needs to be grounded in a strong sense of structure and navigation support. All pages must make it clear where they fit in the larger scheme of the Digital Media Centre Web site. Search should be easily available from every single page on the site. Google should be available as the main search engine for external searching, with a customised internal search engine to provide an effective search function on the site (http://www.asianmediacentre.com.au/dmc/index.html).

Nielsen//NetRatings ranks the top 10 search providers by number of users and share of total searches for the month of August in 2007, Google ranks number one of the list with more than 53% of share of the total searches. (Nielsen/NetRatings, 2007).

The fact is that search engines have become the dominant tool for users looking for information they want. Using Google search you can search by author, by words anywhere in an article, or quickly look up an article by its citation. Most searches can be done right from the home page. But sometimes users want more precision in their searches, usually to avoid having to look through too many results. The users can 'fine tune' their searches on the Advanced Search page and get just the results they need such as vision searches and non-text files**.**

Metadata and Keywords

A good Web page contains information that people are looking for, so it is necessary to consider the search terms or keywords people would enter to find it from the Digital Media Centre Web site.

In addition to page abstracts for a search-results listing, it is best to add a list of keywords in a META tag in the page header. The keywords list should include both simple terms and compounded terms because users search frequently for multi-word queries as suggested by Jakob Neilsen (Neilsen, 2000).

Navigation

Poor Web site navigation presents obstacles to the user; this is an area that needs to be improved. Consistency is a fundamental concept in navigation; a consistent navigational structure assists users to visualise their current location and options, minimising

guesswork. Nielsen and Loranger have pointed out that good navigation is predictable and makes people feel comfortable exploring the site. They do not need to study or memorise it, because it reflects their impression of how information should be represented in Web space; it has sense and order, and there is little or no ambiguity about where items are. Users can move forward, backtrack, explore, while feeling confident that they will not lose their way (Nielsen and Loranger, 2006); the Digital Media Centre Web site has adhered to these guidelines for easy navigation so that users can find their way through the site.

Web Accessibility

Making Web sites usable by people of all abilities and disabilities should be a major consideration in the Digital Media Centre Web site design process, so that all users can have equal access to information and functionality.

Taking an example from the Sydney Olympic Games, only one legal case concerning Web accessibility is known: *Maguire vs. SOCOG*. Bruce Maguire lodged a complaint with the Human Rights & Equal Opportunity Commission (HREOC) under a law called the Disability Discrimination Act. Maguire alleged that the Web site of the Sydney Organising Committee for the Olympic Games (SOCOG), was inaccessible to him as a blind person. On 24 August 2000, the HREOC supported Maguire's complaint, ordering certain access provisions to be put in place. SOCOG ignored the ruling and was subsequently fined A$20,000.

London 2012 organisers are fully committed to ensuring their Web site is accessible and inclusive for all its users. Their aim has been to make London2012.com accessible to all who may be interested in finding out more about the London 2012 Olympic Games and the associated Paralympic Games. Design and construction has taken into account the following guidelines:

- The WC3 Web Accessibility Initiative (WAI) www.w3.org/
- The Disability Discrimination Act (DDA, part three) – www.disability.gov.uk/dda

Sydney and London realise the importance of providing access to their official Olympic Web sites for people with disabilities. This was not a feature of the Athens Games site, nor is it included in the Beijing Games site at this stage although BOCOG has indicated they will take this issue into account in the development process. Consequently, the Digital Media Centre Web site has adopted guidelines similar to those featured on the Sydney and London Olympic sites to ensure accessibility for all users.

Content Design

Quality content is one of the two most important determinants of Web usability, the other being whether users can find the page they want. One the Web, "quality content" means something different than in traditional media. Precise writing in simple language is preferred. Nielsen and Loranger suggest that one must be in touch with the interests, culture, needs, and limitations of the users in order to write for them. Start with the conclusion, then reveal supporting facts. This structural convention is known by journalists as the inverted pyramid. It gives readers the gist quickly and then lets them

burrow into the details if they choose to read on (Nielsen and Loranger, 2006). Taking these issues into account, the content of the Digital Media Centre needs to be much more oriented toward providing fast answers and being useful to the journalists.

As Toohey and Veal have pointed out, perhaps concentrating purely on content is not the most fruitful or indeed the most appropriate approach when trying to decode Olympic media meanings. It is important to acknowledge that audiences are not entirely passive. It may be that it is their input, influences by cues external to the Olympics, that provides the conclusive, multifaceted and ultimate meanings to the Olympic messages (Toohey & Veal, 2000).

This implies that consolidating the content of Digital Media Centre Web site can provide substantial benefits. For users it can bring superior discoverability (through enhanced search, grouping of content based on audience needs, consistent navigation) and more consistent and authoritative content (through better processes and resourcing).

A prerequisite for the consolidation of content is built on user feedback and direct research with audiences that have highlighted problems or inadequacies with finding or utilising information and services.

Flash Video

For a sporting site, such as the Beijing Olympics, Flash video (FLV) can be particularly effective, because it is possible to show action shots including highlights of events, clips

from interviews with athletes, and so on. Flash video starts playing quickly, and provides immersive and interactive experiences. The Flash player is the most widely distributed media player, reaching a vast majority of Internet users across different browsers.

The Digital Media Centre has used Flash video (http://www.asianmediacentre.com.au/dmc/creative_zone.html) for showing high quality short video clips as this will enhance the users Beijing Olympic experience. It will appeal to users from many diverse backgrounds because it is a visual experience, not affected by language barriers.

In summary, every icon, picture, graphic, animation and video will serve a purpose and communicate something meaningful. Effective interaction design understands and supports user's cognitive and physical abilities, and remains true to their objectives in the design of the Digital Media Centre prototype.

A main aim of this research is to help the Digital Media Centre take advantage of the Web to inform, communicate and interact with the users, and provide services to them. Usability for the end user is the main consideration in the building of a Web site. It is imperative when a site is built that it be easy for the viewer to navigate. As technology continues to change and improve, and more users have high-speed access, the presence of multimedia is becoming more prevalent. Done well, video, animation, and sound can enrich the user experience and delight audiences.

Chapter 5: Conclusion and Recommendations

Competing at the Olympic Games is the pinnacle of achievement for most athletes. The Olympic ideals of "faster, higher and stronger" can be applied to a Digital Media Centre in terms of its technology and the speed and quality of the messages being transmitted to the global audience.

However these advances bring their own challenges. There will be a massive oversubscription of the accredited places for media at the 2008 Beijing Games, according to Jayne Pearce, a media consultant to the Beijing Olympic Games. Approximately 20,000 accredited media will bring the 2008 Games to the world. She believes that there is already unprecedented interest in Beijing, for both positive and negative reasons. There is an operational need to provide the media, both accredited and non-accredited, with "optimum working conditions – ability to access information, including people, and ability to transmit reports, photographs easily and efficiently" (Pearce, 2007).

Richard Sleeman, who has been involved in media operations for five Olympic Games, emphasised the point that all media should be treated equally. He has stated that non-accredited media are not "second class"; it is just that the places available for media accreditation are so limited**.** In order to maintain a high level of services for the world's press, the International Olympic Committee (IOC) maintains a strict quota. For the Beijing 2008 Olympic Games, the IOC has set a quota of 5,600 for members of the written and photographic press – the same as for Athens 2004 and Sydney 2000.

Clearly, there will be a demand for a Digital Media Centre to meet the influx of international media for the 2008 Beijing Games coverage. The Digital Media Centre will need to have the scope, speed and physical storage capacity to accept thousands of hits per hour, accessing wide ranging information bases. Many people accessing such a Centre will be looking for sporting results, biographical details of participants, descriptions of Olympic sports, and venue, location and historical information.

The Beijing Olympic Games will be the largest ever sports news operation covered by Reuters, according to a report by BOCOG (BOCOG, 2007). There will be "roughly between 250 and 280 people" including journalists, technical and supporting staff and perhaps some China experts at the Olympic Centre. By comparison, Paul Radford, Sports Editor of Reuters stated, for the Sydney Olympics in 2000, Reuters had a staff from 170 to 180. For the Athens Olympics in 2004, it had around 200. He said he had led news teams to cover the Sydney and Athens Olympics, as well as many other world sports events.

Radford revealed that one third of the total stories to be filed by the Reuters during the Beijing Olympics would not be directly linked with the sports events, but related with the life in the street, and the influence of the Games on Chinese society. There will be considerable interest in cultural, historical and anecdotal information about the host nation, so cultural background and protocols associated with the people of the host country and recommendations about behaviours with regard to cultural mores will be of value to many intended visitors, both before and during the Olympic Games.

> It will be interesting for international readers to know how Beijing deals with issues such as environment and transport. The Olympics will also lend a good opportunity to Chinese people to change and reduce some of the old stereotypes built around their countryside (BOCOG 2007).

For Hidehito Fujiwara, Asahi Shimbun Beijing Bureau Chief, an Olympic Games in Beijing is almost as important in Japan as if it were held there. Asahi Shimbun has invested lots of money and human resources; a special "Beijing Olympics Command Centre" has been established in Tokyo, which has never happened before, Fujiwara revealed.

> We wonder will Olympics change China greatly and will China hold a successful Olympics. Besides, we also care about the spectators' behaviours and media reception during the Games. Beijing is facing tough problems like language, food safety and traffic, which arouse great interest to Asahi Shimbun and many other foreign media (BOCOG 2007).

TF1, the biggest general and family oriented TV network in France, covers a wide range of reports, with more features than news. Anthony Dufour, TF1 Beijing Bureau Chief has indicated that, unlike many TV stations in the US, TF1 broadcasts features that are more about daily life rather than politics and economy.

> We have done lots of stories on people's daily life such as the renovation of toilets. They are trivial, but closely related to their lives. Our focus is on ordinary people, so we don't often interview the officials. I remember we just

have interviewed BOCOG officials twice **(**BOCOG 2007**).**

Like TV broadcasters, the Digital Media Centre needs to be relevant to the audience. For instance, the global audience may want to see stories about the city's environment, such as pollution and traffic jams. They want to know the real China and what impact the Beijing Olympics will have on the ordinary people who live in this country, and their fate as the times change.

The Digital Media Centre site will meet these opportunities and the demand for citizen-originated content and non-accredited reportage by providing a Creative Zone where contributors from around the globe can express their views from different perspectives. This will also allow provocative new ideas and will add value to the current state of the Beijing Games site.

The Feedback section of the Digital Media Centre Web site can be a valuable source of constructive comments for users during the period of the Games. A sample of media professionals, potential users of the Digital Media Centre, have provided the following feedback on the concept of the site:

> As a frequent user of media centres, both real and virtual, I think one of the key qualities of a good media centre is access to information from a wide variety of sources. The Digital Media Centre for the Games should have comprehensive real-time information on the Games itself, a good contacts database for journalists unfamiliar with China, and plenty of usable background information on the Games. It

should have separate sections for print and broadcast journalists, as well as good video and images (Simon Hayes, Journalist, *The Australian*).

> Immediacy of access to results, background information and video clip post-event taking into account copyright issues with streaming video. Readily downloadable copyright-free graphical content should be available via the Digital Media Centre. The Centre should also provide conference calls/lines and access to commentators and interviewees for users. Multilingual platforms to support use of media centre by different language bases of the world. Travel information such as internal infrastructure for access to Olympic sites
> (Pip Grant Taylor, TV Producer, Channel 7).

As for the newer communication technologies, the digital approach across different devices will help deliver something that is very compelling, with more flexibility and simplicity. However, in celebrating the success of these advances, one should not forget that the ability to adapt and innovate is fundamentally a human talent. Empowering people to work more efficiently and effectively in the "digital work place" should be at the centre of a development strategy for a cross-cultural Digital Media Centre. The combination of high speed and wide reach makes digital communication powerful indeed. People can access the tools and data that they need for work anywhere, anytime. High speed internet access, affordable video conferencing and instant messaging are available on mobile devices thus empowering the users to work more efficiently and effectively.

Some issues of concern are the political constraints and economic feasibility of a Digital Media Centre, whether there will be sufficient funding to support digitisation and/or creation of the proposed content and facilities. The Centre needs secure funding, whether from the government, corporate sponsorship, subscriptions of news and photos service or a combination of these. At the same time, it is important to maintain a Digital Media Centre that is economically viable and adds significant value, but is still able to provide independent views and balanced reporting of the Beijing Olympic Games.

5.1 Proposal for a Successful Digital Media Centre

As a result of my research project, here are some findings that I recently presented to BOCOG on the most desirable key dimensions for the development of a Digital Media Centre, pinpointing the users' needs in a digital environment. I have conceptualised and addressed my research questions about the Digital Media Centre site as a practical demonstration of how these key elements have been included in the Web site design**.**

*** Accessibility**:

The Centre should provide all the latest up-to-date information and be easily accessible and functional, 24 hours a day for all media (both accredited and non-accredited). For the Beijing Olympics in particular, speed and accuracy of information delivery is vital. Succinct articles or bites of information, clarity, easy click-through and quick response times are highly desirable.

*** Mobility**:

The Olympics are the world's most watched sporting event, and having the Beijing Olympic highlights on mobile phones will make them even more accessible to viewers anywhere and at any time.

Apple's iPhone has introduced an entirely new user interface based on a revolutionary multi-touch display and pioneering new software that allows users to control it with just a tap, flick or pinch of their fingers. Users can subscribe to services that include receiving SMS or emails whenever a news item is posted about upcoming events or activities in relation to the Beijing Olympic Games.

*** Content Customisation**:

One of the promises of digital media is customisation, the ability for individual users to specify the news that they want, when they want it and in the amount that they want it.

The Digital Media Centre should provide a multimedia news-on-demand service allowing viewers to select the news items they want to read or watch in their chosen format. The Centre will provide Beijing Olympics-related content with audio, video and graphics, including preparations for the 2008 Games, and the latest Olympic news and information. These would cater to the different needs of a diverse range of users relating to the Olympic Games.

For instance, some of the global audience may simply be interested in elite athletes

breaking world records. Others may be interested in seeing how well the hosts can stage a huge international event, that is, in the different Olympic venues, the infrastructure, public transportation and various facilities for athletes, media professionals and tourists.

* **Information Management**:

Experience from Atlanta showed that there was loss of productivity and cohesive planning in information management, since staff needed continually to check the accuracy and currency of information with their colleagues.

A comprehensive electronic database was deployed in SOCOG. This managed and controlled the language of the Sydney 2000 Games and was known as the Games Codes System. As Kristine Toohey and Sue Halbwirth suggested, "this was an excellent foundation for a professional information system management from which to develop a solution to future information and communication demands" (Toohey and Halbwirth, 2001).

On the basis of the Sydney 2000 Games experience in information solutions for the Beijing Olympics, the Digital Media Centre would provide a shared environment for the creation and dissemination of information and knowledge as well as promote the sharing and linking of existing data. The concept is the "one stop information shop". The challenge is to provide a method of codifying and organising the information in a user-friendly way. The control of language and terminology and the logical grouping of information are key components in the success of a diversity solution.

* **Universal Standards**:

Among the barriers standing in the way of a global digital environment are the lack of universal standards for converting, distributing, and maintaining digital media and this results in a lot of duplication. So there is a need to set a common standard for digital media in this aspect so it is possible for users to share content freely.

The Moving Picture Expert Groups (MPEG) has started a number of new standard lines: MPEG-A "Multimedia Application Format" provide application-specific standards by integrating multiple MPEG technologies. Solutions with advanced multimedia functionality are becoming increasingly important as individuals are producing more and more digital media, for personal as well as professional use. The need for technological solutions to these challenges is motivating the MPEG-21 Multimedia Framework initiative that aims to enable the transparent and augmented use of multimedia resources across a wide range of networks and devices.

* **Copyright Control**:

One of the most contentious debates concerning the regulation of cyberspace has revolved around the violation of intellectual property. Copyright infringement on the Internet is rampant, and the action is often passed off as falling under free speech protection. As the Internet and World Wide Web and other communications systems become more entrenched as interactive global media, the question of international regulation constantly arises.

The challenge is to prevent the widespread copyright infringement that the Internet makes possible without limiting the creativity and access to information that it also provides.

The Digital Media Centre needs to adopt an effective way to coordinate national copyright laws that protect the intellectual property of authors and publishers. It is suggested an agreement such as the Creative Commons (http://creativecommons.org/licenses/by-nc-sa/1.0/) could be adopted that would enable users to share resources across international borders, and offer global solutions that respect and accommodate national copyright laws.

* **Reliability**:

As a design concept, reliability concerns an application's ability to operate failure-free. This includes ensuring accurate data input and data transformations, error-free state management, and non-corrupting recovery from detected failure conditions. “Creating a high-reliability application depends on the entire software development lifecycle from early design specification, through building and testing, to deployment and ongoing operational maintenance”, Microsoft guidelines (Microsoft, 2007).

Take the Sydney 2000 Olympic Games as an example. Before embarking on the final design of the Millennium network for the Games, Telstra paid close attention to the following factors: timing, reliability, design, performance, ability to support, customer services required, interaction with national and international networks and flexibility.

As is the case with any major event, especially the Olympic Games, any disruptions in telecommunication services have the potential to be noticed by millions of television viewers around the world. For example, to guarantee service to a fixed line telephone, users need control over the phone, venue cabling, local exchange connection, service activation and assurance, and possibly over some of the services used, such as long distance or Internet service provider (ISP) connections.

The Digital Media Centre should implement a high level of security and reliable infrastructure so that communications will not break down. Technical support is required to ensure operations at the time it is needed. At the Sydney 2000 Games, Telstra-led technology management for the Olympics was staffed on a 24-hour basis, and it contained an Olympic-wide fault reporting centre and staff to facilitate the restoration of service after any outages. It worked closely with Telstra's Global Operations Centre in Melbourne to facilitate integrated repair work as well as monitoring the Olympic network in micro detail.

* **Internet Security**:

The Centre should make use of I.C. technology, which provides persons related to the Olympics with a secure, reliable, convenient and unified intellectual means for dealing with the processing of multi-individualised information services, such as user registration, certificates of authority, payment and service. PIN access to the Web site for registered users is crucial for security purposes.

It is important to establish an insurance system for Olympic information security, to provide information and back-up technology for the Olympic networks as well as an information security system in order to effectively impose supervision and control. Coordinating information resources in Beijing, establishing comprehensive security information systems so as to provide support for handling unexpected incidents, preventing terrorist activities and ensuring public security, will be major requirements.

* **Flexibility:**

Through the provision of real-time support, rich multimedia functionality and familiar development tools, the Digital Media Centre should allow developers to create flexible, connected and compact devices through the comprehensive development environment. For instance, real-time information and mapping helps to ensure that the critical information is available in case of emergency, and passed to managers during the events so it can be monitored from the various locations where and when it is needed. The Centre would provide real-time data for the Beijing Olympic Games, including a real time monitoring network focused on hazards, activity and functioning of media services.

* **Interactivity**:

In recent years, public expectations of “interactivity” and new “interactive media” have been pushed almost to the breaking point in terms of what will become technologically possible, the services that will be offered, the economic gain, and more. The concept seems loaded with positive connotations of high-tech, hypermodernity and futurism.

The Digital Media Centre embraces the concept of interactivity. For example, adding a Creative Zone provides a valuable interactive communication platform between the users and the content providers. The Creative Zone invites user-generated content that will enable new types of participatory engagement.

*** Cultural Diversity**:

The Digital Media Centre should ensure that the vibrant cultural diversity is reflected in the development process, as well as encouraging participation from a wider global audience, including those currently without access to digital technology, so as to enhance equal opportunity for using the Centre.

It should be adaptable to users from different professional and cultural backgrounds. To take the Athens Olympic Games as an example; the Games attached great importance to diverse cultural activities. The opening ceremony featured not only the ancient Greek mythology of the host country but also displayed the diverse cultural backgrounds of the participating nations. This received high praise around the globe and was regarded as an indispensable part of the success of the Athens Games. Moreover, Athens effectively combined its thousands of years of ancient civilisation with the preparations for the Olympic Games, and used the Games as a platform to showcase Greece's culture and history and thus promote the development of the tourism industry. This valuable experience can be emulated at the Beijing Olympics.

* **Multilingualism**:

The question of language is a key issue in a shared cultural space, and a significant concern of its users. In order to address this issue, multilingual e-translation and language services would be provided for major user groups including English, French, German, Spanish, Italian, Greek, Chinese, Japanese, Korean and Arabic. Software such as translation and terminology tools can be developed.

Users can access multilingual broadcasting in a number of ways, through sub-titling and teletext; multi-channel broadcasting; bilingual or multilingual moderation in radio; or time-banded broadcasting. The Centre should make every effort to use visual communications and artificial intelligence technology to understand natural languages, so as to remove language barriers and offer multi-linguistic intellectual information services of various kinds.

* **Networking**:

One of the missions of the Centre is to develop a creative network for its members that will be delivered through Web interaction, Web-based conferencing and multicast events that will create alliances, and by providing access to new technology and networking facilities, such as a Creative Zone that will offer a vibrant digital environment in which new ideas are generated by the users. Also, social networking can be facilitated through informal functions such as media tour, cocktail receptions, cultural activities etc.

5.2 Conclusion

Digital media will continue to transform the communications landscape for many years into the future. As new media technologies evolve, one should keep an open-minded approach to changes and also encourage the creative and innovative application of new technologies. The advent of affordable digital acquisition formats, such as movie cameras, picture and video messaging, will mean that it is easier than ever before to get involved, and to be creative. For instance, the user-generated content is a good initiative which will enable Digital Media Centre members from different countries to share fresh ideas and deliver content internationally.

Today, a demand for new forms of media and communications is emerging, as revealed by the majority of respondents to my research survey, in which quality news, global information access, instantaneous reporting, interactivity, multimedia and customisation of content are seen as paramount. The Internet, mobile phone, streaming technology, wireless networks and information-sharing capacities of the World Wide Web are nurturing new media that can more effectively communicate messages across cultural and geographical boundaries. The emerging trends in cross-media multi-platform have been taken into account and realised in the design concept of a Digital Media Centre that can provide effective and robust services in the real world.

As Westerbreek and Smith have noted, the serious beginning of wireless sport applications has arrived. Telecommunications companies are now taking advantage of the delivery of real time sport scores and delayed replays of important sporting moments, in

the form of compressed digital data that can play short bursts of LCD video on the new generation of mobile phones. In addition to Western nations, a handful of developing countries are well placed to capitalise upon technological opportunities…China offers outstanding, if uncertain, markets for sporting organisations to introduce strategically crafted penetration strategies. In many cases, these strategies are so well supported by technology that they may require little more than a customised, language-specific Web site (Westerbeek and Smith, 2003).

This study attempts to provide the best options for prioritising Web usability, and a set of criteria for the development of a user-friendly Digital Media Centre based on ideas and feedback from potential users. It has demonstrated that it is crucial to understand the users' needs in order to meet the challenges in this competitive new media environment.

My research has identified many positive benefits that the Digital Media Centre can contribute to the Beijing Olympic Games. These include speed, accessibility and reliability of information, mobility and interactivity, multicultural qualities and openness to user contributions. Also it deals with some of the issues that need to be confronted – such as language, culture, copyright and media freedom – given that the event will be held in Beijing.

The major constraint of this research project is the rapidity with which change occurs in such a fast-growing medium. Hence critical thinking, further research and investigation are necessary to test the capability of a Digital Media Centre to ensure it effectively

meets the users' needs from diverse cultural backgrounds.

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Appendix 1
Survey Questionnaire

1. Have you previously used a Digital Media Centre provided by a large international event? If not, please go to Question 4.

Yes ◉ No ○

If yes, where did you use the Digital Media Centre?

When did you use the Digital Media Centre?

2. If you have used a Centre, please list 3 aspects you think that worked most effectively.

a.

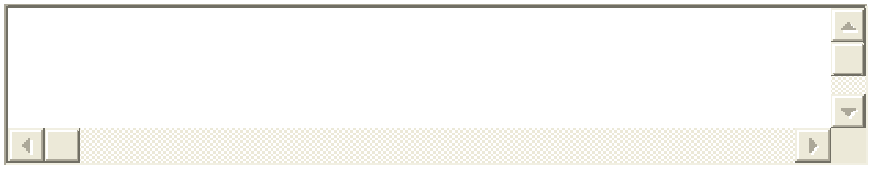
b.

c.

3. What were three aspects that could be improved?

a.

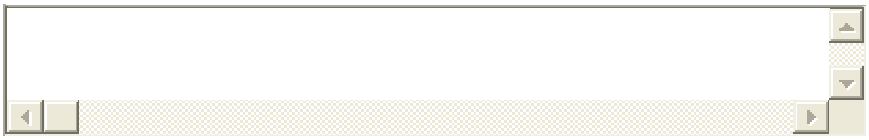
b.

c. 

4. On a scale of 1 to 5, please indicate how important to you are the following services being offered by a Digital Media Centre:

a. News and information delivery	Not Important	1	2	3	4	5	Very Important
b. Translation	Not Important	1	2	3	4	5	Very Important
c. Media workstation	Not Important	1	2	3	4	5	Very Important
d. Broadcast newsroom	Not Important	1	2	3	4	5	Very Important
e. Digital Webcast	Not Important	1	2	3	4	5	Very Important
f. Digital post production	Not Important	1	2	3	4	5	Very Important
g. Video conferencing	Not Important	1	2	3	4	5	Very Important
h. Digital training	Not Important	1	2	3	4	5	Very Important
i. Networking facilities	Not Important	1	2	3	4	5	Very Important

5. In addition to the above services, what other services would you like to see a Digital Media Centre provide?



6. Thinking about the Beijing Olympics in 2008, what kinds of information would you be interested in? On a scale of 1 to 5, please rate the level of importance that you place on the following information.

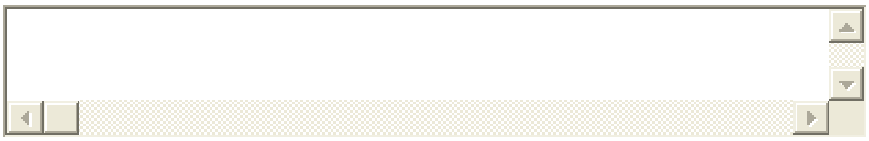
a. Background information about the Olympic Games movement.	Not Important	1	2	3	4	5	Very Important
b. Details on 2008 Olympic sports rules and regulations.	Not Important	1	2	3	4	5	Very Important
c. Details on media coverage arrangements for the 2008 Olympics.	Not Important	1	2	3	4	5	Very Important
d. General information about Beijing and China.	Not Important	1	2	3	4	5	Very Important
e. Interviews with past and present Olympic athletes.	Not Important	1	2	3	4	5	Very Important

7. In receiving the information on Beijing Olympics, please indicate your level of preference for each of the following communication medium:

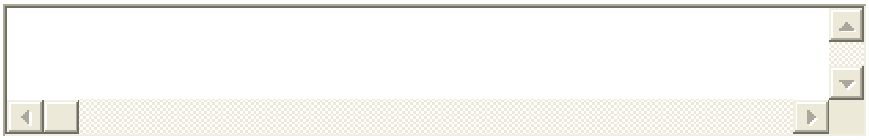
a. Television	Not Preferred At All	1	2	3	4	5	Much Preferred
b. Newspaper	Not Preferred At All	1	2	3	4	5	Much Preferred
c. Internet	Not Preferred At All	1	2	3	4	5	Much Preferred
d. Magazine	Not Preferred At All	1	2	3	4	5	Much Preferred
e. Radio	Not Preferred At All	1	2	3	4	5	Much Preferred
f. SMS	Not Preferred						Much

At All 1 2 3 4 5 Preferred

8. What is the major aspect of a Digital Media Centre that makes your work effective?



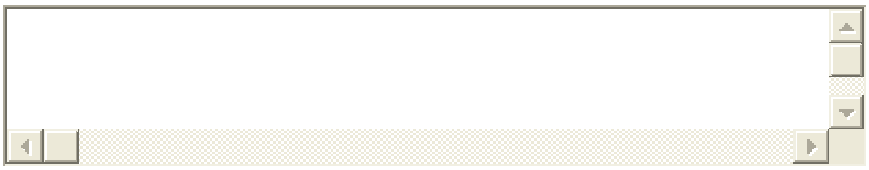
9. What is the major aspect of a Digital Media Centre that impedes your work?



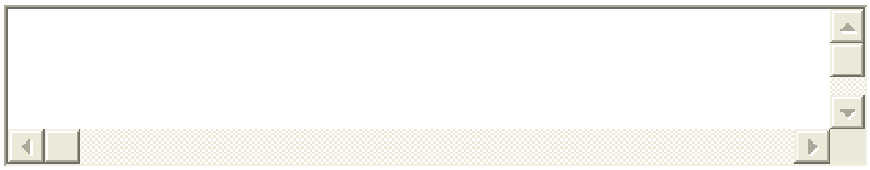
10. On a scale 1 to 5, please indicate your level of agreement with the following statements:

a. "Technology needs to be customised for different cultures"	Not Agree	1	2	3	4	5	Agree
b. "The behaviours of people are changed with the introduction of new technology"	Not Agree	1	2	3	4	5	Agree
c. "Digital communications are an important aspect of major events such as the Olympics"	Not Agree	1	2	3	4	5	Agree

11. Have you used Olympic Web sites to access information? If so, what aspects did you find most useful?



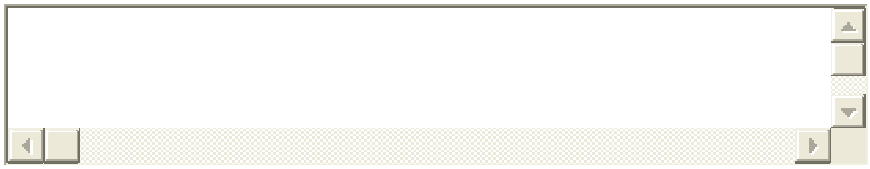
12. If you have used Olympic Web sites that are less than satisfactory, how could they be improved?

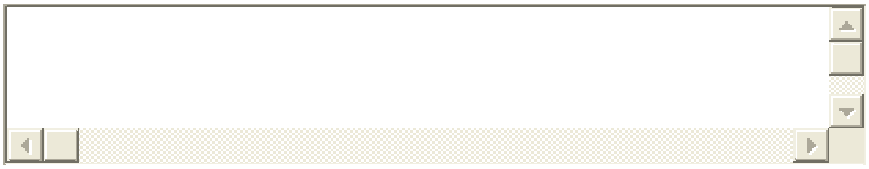


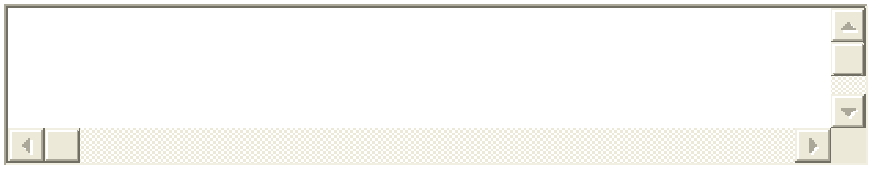
13. Are the cultural issues for foreigners simply to do with language barriers when they attend the Olympics?

Yes ◉ No ○

14. If not, in your experience, what other cultural issues or problems do you think foreigners might have when they attend the Olympics?

a. 

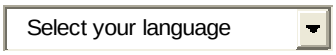
b. 

c. 

15. What is your country of birth?

Select 

16. What is your native language?



17. What is your gender?

◉ Female ○ Male

18. Please indicate your age group:

19. Please indicate from the following, which best describes the profession you are in:

Select a Profession

Specify Other:

20. How long have you been a journalist or in your current profession?

21. Do you have any other comments?

Follow-up

Can we contact you in the future for a follow-up interview? If yes, please provide us with your preferred contact details.

Name:

.

Email:

Submit Reset

Appendix 2

UNIVERSITY OF TECHNOLOGY, SYDNEY
CONSENT FORM –STUDENT RESEARCH

I _____ *(participant's name)* agree to participate in the research project "Evolution of New Media Technologies – Digital Media Centre" being conducted by Mimi Chau, of the University of Technology, Sydney (PO Box 123 Broadway NSW 2007) for the purpose of her research degree.

I understand that the purpose of this study is to examine the evolution of new media technologies from a cross-cultural perspective to assess how a Digital Media Centre should be set up and administered in a successful manner.

I understand that my participation in this research will involve an interview and completion of a questionnaire within 30 minutes.

I am aware that I can contact Mimi Chau (Tel:) or her supervisor, Prof. Andrew Jakubowicz (Tel: 61 2 9514 2298), if I have any concerns about the research. I also understand that I am free to withdraw my participation from this research project at any time I wish and without giving a reason.

I consent to one of the following:

I agree that the research data gathered from this project may be published in a form that will not identify me, or my institution, in any way.

_____ ____/____/____
Signed by

Or,

I am happy for the information provided by me in interview to be published in a form that identifies me, and my company.

_____ ____/____/____
Signed by

_____ ____/____/____
Witnessed by

NOTE:
This study has been approved by the University of Technology, Sydney Human Research Ethics Committee. If you have any complaints or reservations about any aspect of your participation in this research which you cannot resolve with the researcher, you may contact the Ethics Committee through the Research Ethics Officer, Ms Louise Abrams (ph: 02 9514 9615, Louise.Abrams@uts.edu.au). Any complaint you make will be treated in confidence and investigated fully and you will be informed of the outcome.

Appendix 3

Web site	Metadata/Key Words
Sydney 2000 Olympic Games	meta name = "robots" content = "index, follow"> This is found in the archive version of the Games Info site.
Athens 2004 Olympic Games	site dismantled, no access for analysis.
Beijing 2008 Olympic Games	meta name="description" content="The Official Web site of the Games of the XXIX Olympiad" /> meta name="keywords" content="The Official Web site of Beijing Olympic Games, the Games of the XXIX Olympiad, Beijing 2008, Beijing 2008 Olympic Games, 29th Olympic Games, 13th Paralympic Games, Beijing Olympics, BOCOG" />
London 2012 Olympic Games	meta name="keywords" content="London 2012, Olympics" /><meta name="description" content="London 2012, Olympics" />
Asian Games 2006	meta name="Description" content="Official Web site of the 15th Asian Games Doha 2006"> meta name="Keywords" content="2006, 15 asian games, 15 asian games doha, 15 th asian games, 15th, 15th asian game, 15th asian game 2006, 15th asian games, 15th asian games 2006, 15th asian games doha, 15th asian games doha 2006, 15th doha, 15th doha asian games, 2006 asia games, 2006 asian games, 2006 asian games in doha qatar, 2006 cycling asian games cycling, 2006 doha, 2006 doha asian games, about asian game in qatar 2006, about qatar, artistic gymnastics coaches in doha, asia doha, asia game 2006, asia game doha, asia games, asia games 2006, asia games doha, asia games doha football, asia games qatar, asian, asian 2006, asian game, asian game 15th, asian game 2006, asian game 2006 doha, asian game doha, asian game doha 2006, asian games, asian games 15, asian games 2006, asian games 2006 doha, asian games 2006 doha offical Web site, asian games 2006 doha qatar, asian games 2006 football, asian games 2006 logo, asian games 2006 qatar, asian games 2006 video, asian games doha, asian games doha 2006, asian games doha 2006 football news, asian games doha football, asian games doha football singapore, asian games doha qatar, asian games doha Web site, asian games doha-2006, asian games football, asian games football 2006, asian games football 2006 schedule, asian games football doha kyrgyzstan, asian games history, asian games in doha, asian games in qatar, asian games logo, asian games official site, asian games qatar, asian games qatar 2006, asian games qatar tickets, asian games qualifying round 2006, asian games Web site, asian games, doha, asian games,doha, asian olympic games, asian olympic games in doha, asian olympics 2006, asian rowing, asiangames, athlete, basketball animation, ceremonies, corporate, dagoc, dagoc 2006, dagoc opening ceremony, doha, doha 2006, doha 2006 asian games, doha 2006 basketball, doha 2006 basketball preliminary round, doha 2006 games, doha 2006 logo, doha 2006 oryx, doha 2006 uniform, doha asean games, doha asean games 2006, doha asia, tennis match play schedule for doha 2006, the asian games, the games in doha 2006, tickets, torch relay, torch relay asian games doha 2006, venue, volunteers, where is doha, where is qatar, world asian games, www.doha 2006, www.doha asian games 2006, www.doha torch relay videos">
FIFA World Cup	meta name="description" content="FIFA.com The Official Web site of the Fédération Internationale de Football Association" /> meta name="keywords" content="FIFA, FIFA.com, FIFA.com homepage, Football, Soccer, World Soccer, World Football, FIFA World Cup, World Cup, League tables, fixtures, results, matches, FIFA on the Internet, FIFA Internet" />
Youtube.com	meta name="description" content="Share your videos with friends and family"> meta name="keywords" content="video, sharing, camera phone, video phone">

News.com.au	meta name=“description” content=“News from Australia and the world, featuring the latest national, world, business, sport, entertainment and technology news. Drawing on News Limited's worldwide resources and newspapers.” /> meta name=“keywords” content=“news, News Interactive, News Limited, breaking news, latest news, headlines, newspapers online, news interactive, news limited, Australia, NEWS.com.au, Australian news, Oz news, Murdoch, entertainment news, travel news, business news, NSW, VIC, QLD, ACT, NT, TAS, WA, SA, New South Wales, Victoria, Tasmania, Northern Territory, Australian Capital Territory, Queensland, Western Australia, Southern Australia” />