Leading Rich Media Implementation Collaboratively:

Mobilising International, National and Business Expertise

FINAL REPORT
2011

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LEADING RICH MEDIA
mobilising international, national and business expertise

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ACRONYMS

AARNet	The Australian Academic Research Network Pty Ltd
AV	Audio Visual Technology
IT	Information Technology
JANet	The JNT Association trading as JANET(UK)
SURFNet	The National Research and Education of the Netherlands
JISC	Joint Information Systems Committee (UK)

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Dr Wiebe Nijlunsing (Adviseur Onderwijs en ICT Training en Consultancy, The Netherlands)

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EXECUTIVE SUMMARY

Rich media technologies could be lighthouse technologies for reducing costs and environmental footprints across the higher education sector while improving the efficiency of administration and research as innovations in pedagogy for learning and teaching emerge. Surprisingly, our research indicates that rich media technologies are sinking into the wash of the e-learning tide in Australian higher education, rather than cresting the wave of the social communication software swell.

The Leading Rich Media Technologies Collaboratively project began late in 2007 with the aim of contributing to improved teaching and learning outcomes and increased institutional efficiency and effectiveness by providing frameworks for decision-making about the use of rich media technologies which will be applicable to its use in learning, teaching, administration and research.

Outcomes

The impact of this project lies in its potential to stimulate leadership for systems change and from this, effective user support which will lead, eventually, to improved student outcomes, particularly for distance and distributed students. The project team hope that **others will build on this work in the future**.

The project set out to achieve five goals and it has largely succeeded in its aims. These goals have been wholly or partially achieved during the life of the project as acquitted below:

Goal 1: Investigate, promote and provide frameworks for strengthening learning and teaching when engaging with and using rich-media technologies

This outcome has been achieved by our work on the taxonomy of technology www.richmedia.edu.au/technology, our publications in international journals and edited volumes, case studies and resources found at www.richmedia.edu.au

Goal 2: Investigate and develop sustainability and scalability frameworks for the sector by building on emerging corporate research by acknowledged analysts of unified rich-media technologies Wainhouse Research and ServicePoint Australia

The Project Findings are summarised below and presented in detail in Parts 2 and 3 of this report. The project team's review of literature and survey research as well as the consultants' reports shows the extent of our investigation into current practice within the higher education sector, nationally and internationally, and within the corporate sector. The reports can be found at www.richmedia.edu.au

Goal 3: Instigate an Australian Community of Rich Media Educators (ACRME) across Australian universities that address the use of new enhanced rich-media technologies capacities

During the life of the project, it became apparent that the technical dimensions of rich media technologies were the dominant driver for interaction within the established community of videoconferencing and rich media technologists. Thus, the team interacted with a community of practice which exists as the AARNet Voice, video, and collaboration listserv https://lists.aarnet.edu.au/mailman/listinfo/vvc-l. With the establishment of the *Leading Rich Media Project* Website, we hope to link further communities of practice, particularly amongst users of rich media technologies.

Goal 4: Connect, engage and contribute to a key international community of expertise (The Dutch Webstroom Community, SURFNet (Netherlands) and JISC (UK))

Internationally, our primary engagement has been via conference presentations throughout the life of the project and with our evaluation team member in the Netherlands. We have used videoconferencing to meet with him wherever possible and teleconferencing where videoconferencing was problematic. Email correspondence and access to the project wiki have provided access to project materials, resources and papers. These interactions have been very positive and greatly benefited the project team. Now that our website is available, it will be linked to The National Research and Education of the Netherlands (SURFNet), the Webstroom Community and thus to the Joint Information Systems Committee (UK) (JISC).

Goal 5: Work with key corporate associations such as Wainhouse, ServicePoint and AARNet for the purpose of forming a multi-faceted group capable of initiating and supporting sustained change across the sector.

Our corporate associations with Wainhouse Research, ServicePoint and AARNet Pty Ltd have been very positive and have led to additional connections into corporate sector, particularly through participation in and presentation at AARNet Technology Roadshows and training days. Many of these connections have stimulated discussion around specific aspects to the benefit the project research and dissemination..

Project Findings

These findings and the approach used to derive them should have applicability across the sector. From these findings, individual institutions should be able to distil cues for work in their own contexts, especially in regard to policy development.

- The review of the literature for this project appears to highlight the question, not of whether rich media technologies are of benefit to higher education students, but—**how will institutions make decisions on which technologies to support in the improvement of teaching and learning for their students.**

- The **data** from our survey of the Australian universities sector **revealed that most institutions had no obvious strategy or policy framework underpinning purchase, implementation or support for rich media technologies** as an institutional focus. It appeared that planning for the use of sophisticated technology fell to whoever within the institution could afford to purchase the equipment.

- Most of the respondents to the university survey, who covered a wide range of positions within their institutions, were **very positive about the use of rich media technologies**. They believed that staff demand for the technology was nearly as high as the student demand, and that rich media technologies **could help alleviate the cost of funding travel, both in monetary terms and stress, and give staff more flexibility in teaching**, especially in multi-campus institutions.

- **No firm data could be found of sustained best practice in Australian entities such as large industry, government departments, and tertiary institutions despite much anecdotal information**.

- Three respondents acknowledged that they had a master plan for campus wide implementation of rich media technologies, and there was a strong correlation between this group and **the maturity and integration of the business planning processes that directly link to their university's strategic goals for teaching and learning**.

- That some corporate entities set out to transform their business internationally over a decade ago and now have rich media technologies so embedded in their business plans that they no longer gather data on the cost and efficiency savings it provides (Berriman, 2010) shows **how far behind the technology's potential current implementations lag**.

- The Wainhouse Research report shows that the best way to effectively utilise rich media technologies within the higher education sector, is to "**embed them as part of the organisations' DNA**".

- Nevertheless, the **case studies documented within the study reveal some well executed implementations** within organisations which show a commitment to the use of rich media technologies with a belief in a corresponding improvement in learning and teaching and a great opportunity for geographically diverse staff and students to communicate with one another.

- Rich media technologies have potential to contribute to virtual learning environments and are not adequately utilised for administration and research where **efficiency gains and cost savings could have significant impact on organisational viability and staff sustainability** which is being eroded by travel burnout.

- Our conclusion is that rich media technologies are generally **not well enough defined within organisational plans**, tend to be seen as interesting add-ons rather than core systems within the organisation, and are **not exploited for their potential** to provide significant reductions in travel budgets and environmental footprints.

STRUCTURE OF THE REPORT

This report provides an overview of the work completed by the project partners.

It is divided into six parts with Part One providing an outline of the project and its processes.

The chronological annotated bibliography is summarised in Part Two.

Part Three contains the reports resulting from the data gathering using surveys undertaken during the project. These include the survey of Australian higher education institutions concerning their use and planning for the use of rich media technologies. A second survey of the business aspects of using rich media technologies follows and then a summary of a report commissioned by the project team from the Wainhouse Research Group which contains a 'big picture' view of the trends in the use of rich media technologies internationally.

Case Studies carried out by the project team are contained in Part Four of this report. These case studies present best practice in the use of rich media technologies at snapshot points during the period 2008-2010.

The conclusions and recommendations of the project team for the use of rich media technologies in the higher education sector are contained in Part Five of this report.

One of the major outcomes of the project is a website which can be used to assist academic staff in using rich media technologies in their teaching. The website provides resources such as professional development modules, case studies of best practice, a glossary of terms used in rich media technology, and discussion of future technologies, along with the complete reports from the project research, the chronological annotated bibliography, and the Wainhouse Research report. The site also contains a discussion surrounding the issues relating to the use of rich media technologies. There is also a single page containing the absolute minimum that an academic staff member needs to know before venturing into the world of rich media. The website can be found at www.richmedia.edu.au

Part Six of this report lists all other forms of dissemination.

PART ONE: PROJECT OUTLINE AND PROCESSES

Definitions

Rich media technologies are described as the range of synchronous and asynchronous videoconferencing technologies now becoming 'as simply and easily accessible as the telephone' (Berriman, 2007, p. 4). This description encompasses those videoconferencing **technologies which facilitate interactive communication between users**, who can see, hear and interact with multiple communication streams synchronously or access **them** asynchronously (AARNet Pty Ltd, 2006). Rich media are further defined as media which approximate the immediacy of face-to-face communication where participants read non-verbal cues such as vocal inflection and body language (93% of all communication) to increase understanding and obtain rapid feedback (Daft and Lengel 1986, p. 560 cited in Baecker, 2003).

Project Approach

The project was carried out in two stages over the 24 months. In Stage 1 the project team established management protocols. Once the institutional project leaders had been briefed and the project officer/research assistant employed the literature review and the gathering of grey data — which would extend the AARNet sector survey (AARNet, 2006) and the earlier informal collection of grey data concerning management and use of rich-media technologies over the last two years — was commenced. The outcome of this stage was the identification of theory and practice in relation to current implementation of rich-media technologies and codification of data.

This information was then used by the team to formulate the questions for the survey of Australian higher education institutions on their use of rich media technologies. This survey also allowed our international partner to gain insight into practices within Australia which in turn could inform developments in the UK (JANet/JISC) and the Netherlands (SURFNet) and add further to the breadth of the professional development modules to be developed for the website.

The survey of Australian higher education institutions involved sending letters of invitation to participate in the project to all of the vice-chancellors in Australia's 39 universities. They were asked to fill in a form with the names, position in the organisation, and contact details for institutional staff that use or have an interest in rich media technologies. The survey was then sent to these contacts, resulting in a total of 40 respondents representing 22 Australian universities. The project team was very pleased with the number of institutions represented in the data collection, and felt that this would give a good overview of the use of rich media technologies in Australian universities. The complete analysis of this survey can be found in Part Three of this report.

At the same time a business consultant was employed to gain further information on the planning and use of rich media in government departments, business and higher education institutions from the business point of view. This process proved to be extremely difficult. Government departments and business who initially had shown an interest in providing

data for the project, failed to do so upon receiving the business consultant's survey. These institutions were followed up, but still declined to participate. The consultant could not persuade them to part with any data. The report from this research can be found in Part Three of this report.

A consultant from Wainhouse Research in the United States was also engaged to provide a report on the state of rich media technologies worldwide. This resulted in an extensive report www.richmedia.edu.au, which focused on the 'big picture' view of rich media technologies worldwide, and a review of the technologies that can be expected to impact on higher education in the near future.

During the research phase of the project, the project team kept in touch with the external evaluators for the project. All data and meeting notes were placed on a wiki, which the evaluators were able to access at any time. This allowed the evaluation panel to keep in touch with the progress of the project and offer advice to the project leader and team on how they viewed the progress of the project and plans for further work.

Factors Critical to the Success of the Project

We had a small project team comprising three academics, the Project Officer and AARNet representative. This size made it practical to videoconference regularly and so the team communicated often, facilitating timely completion of tasks and management of the project. Establishing roles and responsibilities for all team members, agreeing a dissemination strategy, timing and authorship as well as determining the regularity and means of communication, at the outset, were critical factors contributing to the project's success. The project wiki was used as a central repository for all records and enabled team members to step in when others were ill and keep the project moving forward. In addition, the employment of a qualified researcher as the Project Officer/Research Assistant proved to be most beneficial to the smooth management of the project. Involvement of the evaluators throughout the life of the project also contributed to its management and outcomes.

The integrated competing values framework (ICVF) (Vilkinas & Cartan, 2006) worked well as the primary operational framework to manage the project. It aided monitoring and tracking during significant phases of the project and became a reference point for both the Project Leader and Project Officer who used this framework to diarise activities within the project.. The ICVF enabled the team to ensure that various aspects of the project were adequately supported, monitored, resourced and achieved because it was situated within Sergiovanni's (Sergiovanni, 1998) conceptual framework of the 'professional community' which forecasts that lasting change will only occur in circumstances of respect, collaboration and consensus about directions for change. Here we are referring to the contribution of these ideas to the project itself as well as our thinking about its findings and outcomes. The evaluators used this framework to monitor our progress and judge the outcomes

The biggest impediments to the project were our inability to engage personally with groups of university executives, IT managers and financial officers, most of whom showed a lack of interest in the project.

Usefulness of Findings to Institutions and the Sector

If rich media technologies are to become viable and sustainable technologies contributing to institutional and sector growth and development in an increasingly visual digital world where reduction of environmental consequences of travel is seen as desirable, the project team forecasts the following for individual institutions and the sector:

- When rich media technologies are in popular use within the sector, they will become an integral technology for the sector because they will have a positive impact on teaching and learning outcomes.
- User support will be a policy requirement, costed into purchase and maintenance planning and be provided by appropriately experienced educational technologists and videoconference technicians rather than generic IT staff.
- Desktop applications will become the norm for person-to-person linkages.
- **Room systems will be essential** for group meetings and some learning situations.
- **Behavioural change strategies** aimed at encouraging the use of rich media technologies as a **low cost alternative for regular intra- interstate, national and international** travel will support the growth of one-to-one, one-to-some uses of rich media technologies in administration.
- Organisational champions will stimulate sector partnerships and institutional management.
- The scholarly research void will encourage **further research in the sector and individual institutions** so that the sector is not reliant on vendor information to inform practice.

Given our research which indicates that rich media technologies are at risk of sinking into the wash of the e-learning tide in Australian higher education rather than being on the crest of the wave breaking into the social communication software swell, we hope that these forecasts prompt adoption of rich media technologies, moving them some way towards their place as lighthouse technologies for administration and research while innovations in pedagogy for learning and teaching emerge. We similarly hope that others will follow our direction and build on this work.

Linkages

For the duration of the project, linkages in addition to presentations and conference attendances were maintained with the following groups and organisations as partners of the project team:

- AARNet Pty Ltd
- AARNet videoconference users group
- Industry Groups via AARNet Road shows
- Wainhouse Research Pty Ltd (USA)
- SURFNet (Netherlands)
- ServicePoint (now Durak Consulting).

Evaluation

The evaluation panel comprised Professor Tricia Vilkinas (School of Management University of South Australia) and Dr Wiebe Nijlunsing (Adviseur Onderwijs en ICT Training en Consultancy, The Netherlands). The project team and the evaluators agreed, at the outset, that an ongoing relationship would serve the needs of the project well and so videoconferences and teleconferences were held between the team and evaluators at key points during the project. In addition, the evaluators had access to the project wiki site where all documentation was stored and exchanged and were instrumental in refining key questions around consultants' reports. Their advice was most useful in managing dilemmas which arose, assisting with the grounding of data and findings beyond the local context, and shaping outputs from the project such as the web site so that these outputs could potentially be useful to external audiences nationally and internationally.

PART TWO: LITERATURE REVIEW

Introduction

The review of literature for the Rich Media Technologies project has proved rather more challenging than first expected. Firstly, the technology changes at a pace which is very difficult to define, with new technologies appearing constantly, whilst the use of 'older' technology has barely come into general use by tertiary institutions. There is a lot of overlap in the technologies being used or experimented with in universities, and review and research of the effectiveness of a particular media may appear some time after institutions have 'moved on' to newer technologies and applications. In order to gain a broad overview of the state of play in the use of rich media technologies by higher education institutions, We have constructed an annotated bibliography in chronological order, rather than the traditional 'literature review'. I believe by doing the literature review in this way, not only will this review provide details of and comments on the publications which have appeared on the use of rich media technology since 2002, but may also highlight the rapid change in technology use over a quite short period of time. This will give an extra dimension to the research that may not have been as easily seen in the standard literature review organised under headings such as how the technology is being used.

The project team has endeavoured to select up to 10 papers from each year, commencing with 2002. Search terms used included 'videoconferencing', 'rich media', 'higher/tertiary education', 'distance education', and has also tried to capture the newer technologies by using terms such as 'streaming' and 'real time communications'. Many of the articles revealed by these search terms can be described as little more than thinly disguised press releases by manufacturers of technological equipment. The team tried to refine the searches further by targeting journals such as the *British Journal of Educational Technologies* and *Distance Education*. These produced many articles with reference to media such as videoconferencing, but were mainly concerned with using Learning Management Systems such as BlackBoard. Therefore, there is quite a variety of articles included in this literature review, but the team has had very little success in finding articles which may give insight into the student perspective, which I believe should be a large part of examining the use of rich media technologies in higher education. Perhaps, this is an area which can be highlighted for further research.

2001

Although the 'brief' for this literature review was to use papers dating from 2002, one paper from 2001 has been included, as it gave an overview of the technology in use in the United States as at 2001. Though it is about distance education in general, the paper does say that videoconferencing and web-based instruction systems are the most common technology in use for distance education at this point in time (Motamedi 2001). Motamedi (2001) emphasises the point that technology cannot replace good teaching, but with the increase in the demand for distance education, the use of more and more sophisticated technological methods is becoming inevitable.

2002

The articles reviewed from 2002 pay particular attention to defining terms such as videoconferencing. It appears that rich media technology is new enough for these detailed explanations to be necessary. The papers, on the whole were detailing specific uses of the technology (Badenhorst and Axmann, 2002; Dent and Preece, 2002; Kinnear et al., 2002; McCright, 2002; McGrath, 2002; *Modern Casting*, 2002; *T.H.E. Journal*, 2002), although some of these are thinly disguised advertisements for particular brands of equipment. There is also advice on how to use particular technologies, such as how lecturers should 'perform' in a videoconferenced lecture (Haley, 2002). Two of the articles questioned whether enough thought goes into using videoconferencing technology and emphasised the need for more research into the student experience (Knipe and Lee, 2002; Laurillard, 2002), though some of the papers highlighted the benefit to students, for example, time saving (not having to travel to lectures), the coursework being more interesting for distance education students, and teachers becoming more accountable to their distance education students (Lemckert and Florance, 2002; Webster and Haberstroh, 2002).

2003

Only a small number of papers were found from 2003 in the literature search. They mostly describe specific uses of videoconferencing technology and propose advantages of the technology such as cost-saving in conducting meetings, and an increase in the number of students in a program (Leonard et al., 2003; Meserve, 2003; Olsen, 2003; Paulsen, 2003). The use of 'streamed video' (vodcasting) in distance education courses appears in the literature search (Shephard, 2003).

2004

Again, papers from 2004 describe specific uses of videoconferencing and how to plan and present videoconferences (Campbell, 2004; Holland et al., 2004; Koper and Tattersall, 2004; Powell, 2004; Starr, 2004; Wisehart, 2004; Zvacek, 2004). Other technologies are appearing in the literature search such as web casting (real time communications over the internet) and using the internet to share resources in collaborative projects and research (Lin, 2004). A number of papers about Learning Management Systems were found, but these have not been included in the review. An important addition to the types of papers appearing in the literature is one which emphasise the importance of technical support when videoconferencing (Brown, 2004).

2005

This year returned the largest number of papers found in the review. It appears that 2005 was a year of great interest in the use of rich media technologies in higher education. As well as descriptions of specific uses of videoconferencing, there was a range of other articles (Barney and Gordon, 2005; Colbert, 2005a; Colbert, 2005b; Finley, 2005; Flores and Baker, 2005; Fryer, 2005; Lynar, 2005; Moller, 2005; Murphy, 2005; Penniston, 2005; Perey, 2005; Selim, 2005; Skeekey, 2005; Stroud, 2005; *Technology and Learning*, 2005). A paper on the role of philosophy in a technological society possibly points to the range of disciplines interesting themselves in technology was widening. Hedestig (2005) advised on the importance of strong technical

support in the use of rich media technologies such as videoconferencing. The papers by Martin (2005), Savenye (2005) and Smyth (2005) show the importance of the student experience when rich media technologies are used, appearing in the literature.

2006

Full articles from the *British Journal of Educational Technology* were not available online from 2006, so this has hampered the research somewhat. The papers which were available mainly described specific uses of rich media technology (Beldarrain, 2006; Sheikh, 2006; Tyson, 2006. It was interesting to note in the Kidd and Stamatakis (2005) paper that they believed that distance education students perceived themselves as 'second-class citizens' if their videoconferenced lectures were run synchronously with on-campus students.

2007

In 2007, along with details of specific uses of videoconferencing and advertisements for equipment, the range of rich media technologies being trialled in higher education is increasing (Acar, 2007; Blair, 2007; Bloomberg, 2007; Business Wire, 2007; De Vleeschauwer et al., 2007; *Distance Learning*, 2007; Hernandez-Ramos, 2007; Hron et al., 2007; Mulum, 2007; Ransdell et al., 2007; Saw et al., 2007; Smyth and Zanetis, 2007; Williams, 2007). Technologies and computer programs for the improvement of teaching and learning which are being mentioned in the literature include open-source, real-time communication products which allow distance education student to interact with their lecturers and other students (Lunsford,), YouTube (Ryan, 2007), and 3G mobile technology (Yang and Chang, 2007) which would allow videoconferencing over the mobile phone network.

2008

The literature sampled from 2008 saw almost an explosion of references to rich media technologies. Comprehensive volumes such as Caladine (2008a), along with Caladine's (2008b) research into student use of technologies have opened up the sector for more research into the use of rich media technologies. Greenberg (2008) advises that, whilst videoconferencing has been taken up by most universities, the next round of rich media technologies will come into everyday use even faster. Higher education institutions may not be ready to handle the pace of introduction of rich media technologies – Caladine's (2008b) research for AARNet showed that Australian universities were not supporting real time communication software such as Skype in their institutions, but as their general use in the technological community increases, they may be forced into doing so. This brings us back to the problem that Smyth (2005) revealed – can universities allow enough time for their staff to learn to use the new technologies and prepare their teaching and learning activities to reflect the need for interactivity with distance education students. Other articles published in 2008 included the student perspective on videoconferencing in their course (Gillies, 2008; Ostlund, 2008); the use of social software (Leslie and Landon, 2008) and mobile technology (Shen et al., 2008; Wang et al., 2008) in teaching and learning; encouraging interactivity in online courses (Thorpe, 2008); as well as the specific uses for the technology (Bessis, 2008; Rushby et al., 2008; Torbay, 2008).

2009

The papers selected from 2009 do not list any of the advertising type of paper, though there were still many of these appearing in the literature search. One of the papers provides insights to how online teaching is being misused in higher education and while it is not directly related to rich media technologies the conclusions provided in the paper apply just as much to rich media as to any other technology used in higher education (Keegan et al., 2009). The papers by Pomales-Garcia et al. (2009) and Smyth (2009) show some research into rich media in higher education coming into focus. However, by the end of October 2009, there is not a lot of literature available into how rich media technologies can improve pedagogy in higher education. The surveyed literature is still very focused on online learning systems.

Conclusion

This has been an interesting, though sometimes difficult literature review to complete. The pace of technological change, which I believe is revealed to some extent in the chronological literature review, makes keeping research into the advantages and disadvantages of particular technologies very difficult to evaluate. New technologies are being used before any serious research is published on the former versions. Perhaps, this is why the literature review revealed so many papers on specific uses of technologies such as videoconferencing and an almost never-ending stream of press releases about equipment available for purchase. It was also difficult to obtain some of the more scholarly papers as the most recent are not offered online but have to be purchased or subscribed to.

After completing this review the question arising from it is not so much – what is the benefit to students of rich media technologies? Since it appears to be fairly obvious that distance education students will benefit from interaction with their lecturer, tutors, and other students, but – how will institutions make decisions on which technologies to use to aid student teaching and learning? The complete chronological annotated bibliography can be found on the project's website: www.richmedia.edu.au

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PART THREE: SECTOR SURVEY REPORT SUMMARIES

Report on the survey of the use of rich media technologies in Australian Universities

The survey of rich media technologies carried out in 2008/2009 by the Leading Rich Media Technologies Collaboratively project group was highly successful in gaining data for the research from Australian higher educational institutions. Twenty-two of the 39 universities in Australia responded to the call for information about their use of rich media technologies in their institution. A total of 40 responses were received covering a wide range of topics on how the technologies are being used and planned for, and many contacts were made for the project within the institutions.

- Eleven (50%) of the responding institutions spoke of rich media technologies being aligned with their Institutional Strategic Plan through supporting teaching and learning, and eight (36%) of the institutions said it aligned with their plan for research.

- Six (27%) of the institutions cited flexibility in the delivery of teaching programs, and five (23%) supporting multi-campus and/or distance education as being a part of their Strategic Plan and that rich media technologies enhanced these aims.

- Four (18%) of the institutions said that it was an aim of their strategic plan to be more responsive to students' needs, and two (9%) thought that the use of rich media technologies aligned with their desire to form a community of learning.

- Possibly some of the most interesting areas of concern about pre-conditions needing to be met before implementing rich media technologies were concerned with policy and legislation. Respondents stated that more policy would need to be developed for the implementation of the technology – specific issues being ethics, privacy and copyright.

- One of the interesting conclusions from this level of analysis is that none of the Directors of the ITD departments believed that the **sole responsibility for policy development** regarding rich media technologies should reside in their own departments. All of the ITD Directors who chose numerous institutional departments for the responsibility included the ITD department, but none felt it was their sole responsibility at present.

A great deal of data was analysed for this report, though in many cases the data has provided the project group not only with answers, but with many more questions to be asked. The data in this report provides the groundwork for the recommendations on the use of rich media technologies in higher education which the project will offer to the sector at the conclusion of the project in 2010.

Methodology

The Leading Rich Media Project aims to contribute to improved teaching and learning outcomes and increased institutional efficiency and effectiveness, through the use of rich media technologies. It is intended that the results of the project will do this by providing frameworks for decision-making about the use of rich-media technologies which will be applicable to its use in learning, teaching, administration and research.

Through the results of this survey the project leaders wish to move towards reaching the goal of investigating and providing frameworks for strengthening learning and teaching when engaging with and using rich-media technologies. In order to reach this goal the project team needed information from the Australian university community on how rich media technologies are being used presently and are being planned for in the future. This report aims to answer the question of how rich media technologies are currently being used in higher education in Australia, and how the use of the technologies can be improved for the future.

In order to obtain as much information about how Australian universities use and plan to implement rich media technologies in their institutions the project leaders decided to survey as many staff as possible in the universities. Letters inviting participation in the project, including information sheets for participants, were sent to every vice-chancellor at an Australian university, asking them to nominate up to five staff members from their institution, and offering them the results of the project, business plans and professional development units which should be of great use to them when planning and instigating rich media in their institution. The 'Contact Information Form' was included with the letter, along with a reply-paid envelope. The contact information sheet contained a request for contact information (name, position, address, email address and telephone number) for the Chief Operating Officer, the Videoconferencing Manager, Information Technology, and space for two more contacts. The variety of contacts requested was to allow the researchers to obtain different viewpoints from each institution. Replies were received from 22 of the 39 Australian universities naming 40 contacts in total.

A lot of thought and weeks of refinement of the survey questions by the project team, and experienced survey analysts from the University of New England, went into developing the survey. The researchers wanted to keep the survey at a manageable size, so that respondents would not exit the survey before they had completed it. On the other hand, a lot of information was required to inform the project.

Results

The discussion of results below is categorised by question focus with analysis interwoven into the presentation of the data.

Respondent and Institutional Details

A total of 22 institutions are represented in the survey results with 40 individual responses, and all Australian states are represented. We did not have any responses from the Australian Capital Territory or the Northern Territory.

Respondents included deputy and pro vice-chancellors, directors of ITD, Directors of Teaching and Learning Units, many involved with media and communications and videoconferencing managers, others involved with instructional technology and academic development, a program manager for learning environments, a visualisation officer, and those involved with media and communications and venues and events. This variety of respondents gives the project much scope to investigate how rich media technologies are being used in universities.

Institutional Context

Question 2 asked the respondents to describe the nature of their institution, whether it consisted of one or multiple campuses, and if their institution was involved in distance education. The majority of respondents came from institutions with multiple campuses (86%), and 36% of respondents represented institutions involved in distance education. Figure 1 shows the number of institutions represented in each category. Representing the 'other' section of the question were four institutions with international campuses and two dual sector institutions (university and TAFE) (Figure 1).

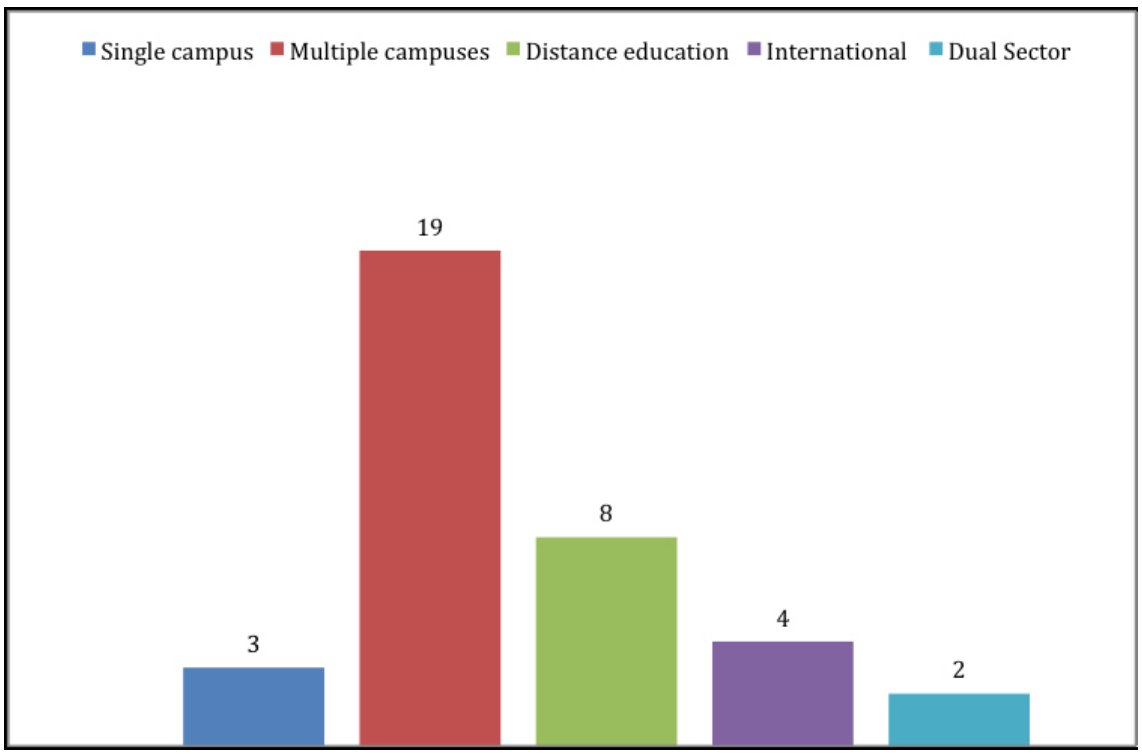

Figure 1: **Nature of institutions represented in survey**

Technologies in Use

Question 3 asked the respondents to select all of the technologies in use at their institution from a list provided. The responses have been grouped by university, not respondent, to give a clear view of the range of technologies at each institution (Figure 2). Videoconferencing was the most common technology in use – all of the universities responding to the survey used videoconferencing. Access Grid was the least used technology with 14 of the institutions reporting its use. The use of personal video conferencing (18 universities) and capture/ desktop technologies (20 universities) reflects the changing nature of rich media within higher education institutions. Greenberg (2008) predicts that the desktop type of rich media technologies will overtake the use of videoconferencing within the next few years.

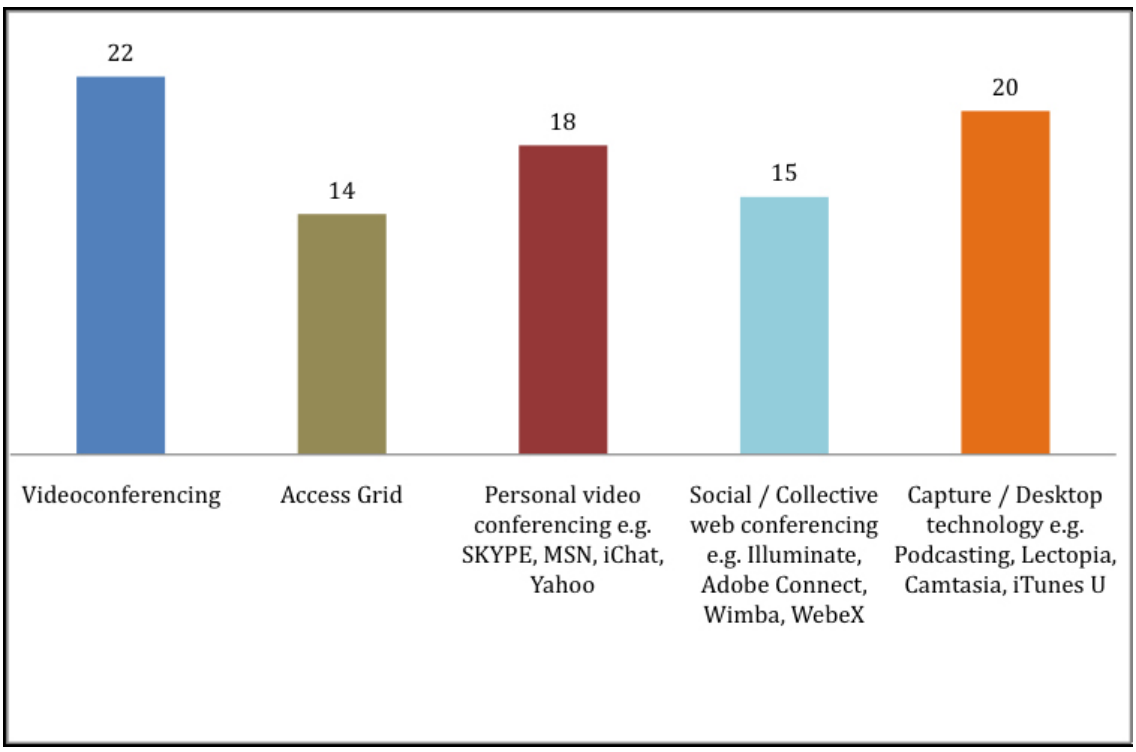

Figure 2: **The range of rich media technologies in use at institutions represented in survey**

As an aside, the question also asked the respondents to describe any other rich media technologies apart from those listed. Nine of the institutions responding to the survey replied that their institution was using other technologies:

- Online forums, wikis, blogs;
- Elluminate in pilot phase;
- Optiportal with hi-definition videoconferencing;
- Optiportal;
- YouTube Partner Channel;
- WEB 2.0 technologies (2 institutions);
- MediaSite Streaming (synchronous); and
- SitePal, Slidecasting, YouTube, iBrainz.

Technologies Planned for Adoption

Question 4 asked the respondents to choose the technologies which are being planned at their institutions from a list provided (Figure 3 – grouped by university not respondent). Although 14 of the institutions were planning to increase their use of videoconferencing and 13 Access Grid, the most increase in rich media technological use was in personal web conferencing (77%) and streaming, both asynchronous and synchronous (73%).

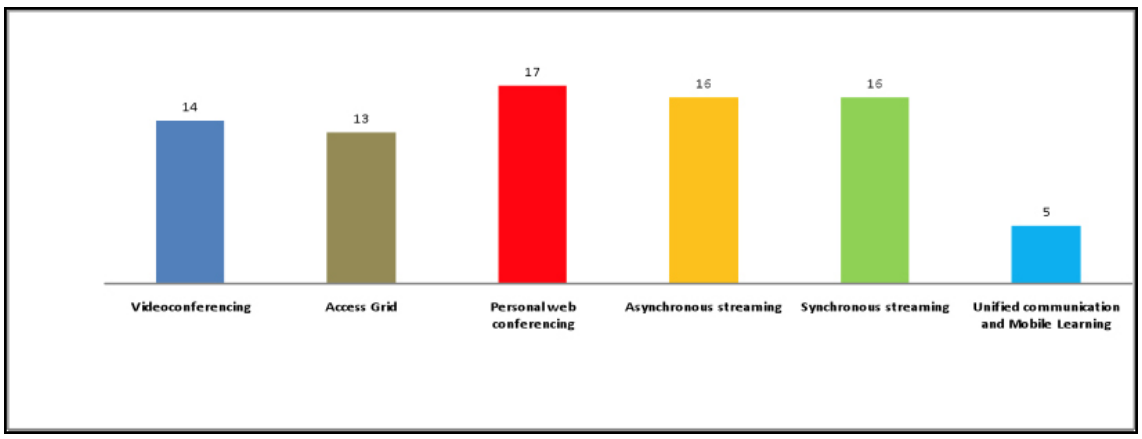

Figure 3: Rich media technologies planned to be introduced to Australian universities

These responses are in keeping with research by the Wainhouse Research group who predict that the use of web conferencing and video streaming would increase greatly in the next three years (Greenberg, 2009).

The respondents were also asked if any other technologies not listed were planned for their institution. Only five of the universities planned to implement the unified and mobile types of technologies. One university was planning to implement Optiportal, live DVN (digital video network) capability, and another was planning Elluminate. One said that they were making significant investment into mobile technologies as a part of their institution's vision, and another said WEB 2.0 technology.

None of the respondents reported that they were planning more use of social software such as Twitter or Facebook, or virtual world types of technology such as Second Life, though the Wainhouse Research group sees the use of these technologies increasing in the next three years (Greenberg, 2009). In their report to the Leading Rich Media Technologies Project Wainhouse Research reported that a survey of over 300 educators and administrators in a large US western state, one that is highly rural and struggles with many geographical obstacles similar to those found in Australia (long distances, sparse rural populations), found that the use of social software or virtual world technologies was expected to more than double in the next three years. This is not reflected in the responses of the Australian universities participating in the survey. This is perhaps as Caladine (2008b) found, in a survey of Australian universities on the use of peer-to-peer real time communications, that more than half of the respondents imposed restrictions or warnings on their use, and some attempted to manage or restrict the use of the technologies, even though they may allow the use of these technologies on their networks.

Uses of Rich Media Technologies

In question 5, the project team was trying to ascertain all of the ways in which rich media technologies are being used by Australian universities. The most common uses for the technologies were for learning and teaching (100%) and as a personal communication tool (86%) (Figure 4).

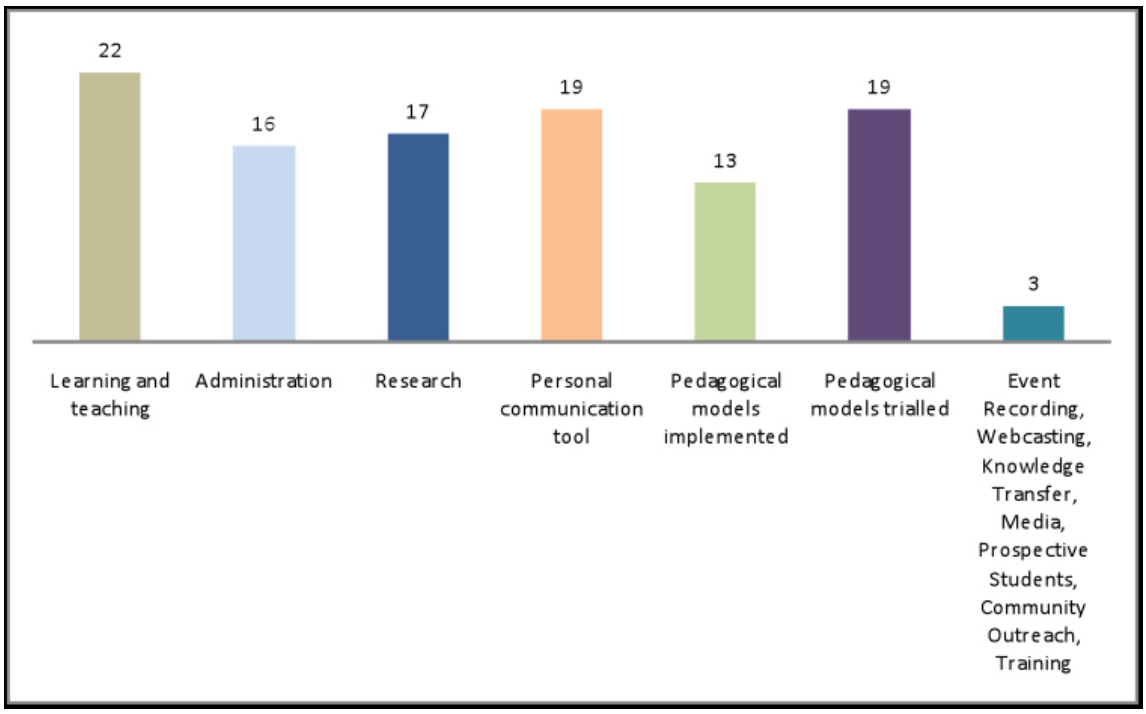

Figure 4: **The variety of uses made of rich media technologies (grouped by institution)**

The respondents identified uses in administration (73%), and research (77%), and three of the institutions reported that rich media technologies were being used in widely ranging fields such as event recording, webcasting, training, and for engaging with prospective students and community outreach projects. Nineteen of the institutions (86%) had trialled pedagogical models for using rich media technology and 12 of the institutions (59%) participating in the survey had implemented pedagogical models.

The results of this question shows that, in the institutions participating in the survey, rich media technologies are being used for a wide variety of purposes as well as for teaching, learning and research which would be the more obvious uses for the technology in higher education.

Responsibility for Rich Media Technologies

Question 6 of the survey required the participants to check a box indicating who was responsible for maintenance, bookings, policy and facilities at their institution. They were given choices for indicating the areas of responsibility – ITD, Teaching and Learning Centre, Library or Faculties, and also given the option of checking a box headed 'none' or 'various'. The project researchers wished to ascertain if there were any consistencies across the institutions represented and how rich media technologies are managed by the universities. A summary of the responses appears in Table 1.

Table 1: **Summary of responses to Question 6**

(Who, at your institution holds the rich media management responsibility for: Maintenance, Bookings, Policy and Facilities?)

	ITD	Teaching & Learning Centre	Library	Faculties	None	Various
Maintenance	18	7	2	4		4
Bookings	12	7	3	7		9
Policy	12	13	5	5	2	11
Facilities	13	5	4	8		8

All of the categories showed that the responsibility for rich media management fell to multiple departments in most of the universities responding to the survey.

The responsibility for maintenance fell solely upon ITD departments in 10 of the institutions, though 12 (over half) said that various departments were responsible for maintenance. When it came to booking the use of the equipment only six institutions nominated ITD departments as the sole provider of bookings, and three said that their Teaching and Learning Centre had sole responsibility. The other 13 institutions nominated various or multiple responsibilities for booking the use of rich media equipment. The responsibility for policy and facilities were even less clear according to the respondents to the survey. Twenty of the institutions nominated multiple or various responsibility for policy whilst only one said the ITD departments and one said that no one was responsible for policy on the use of rich media. The ITD department of four institutions claimed sole responsibility for the management of facilities in the institutions responding to the survey, and the remaining 18 institutions reported multiple or various departments claiming responsibility.

It would appear from these responses that the use, maintenance and policy for videoconferencing and other rich media technologies is not limited to a central department overseeing these technologies. This is in line with other evidence gathered in data and through the literature review into implementation of e-learning and rich media technologies (Keegan et al. 2005).

Contacts in the institutions participating in the survey

Question 7 asked the respondents to supply e-mail addresses for the person or persons with responsibility for maintenance, bookings and facilities in their institution. Due to the fact the project leaders promised anonymity to all participants in the survey, we cannot provide the addresses given in this report. Only three of the respondents did not supply any information on contacts in their institution to the project leaders.

Policies in Action

In question 8 the respondents were asked to provide the URL to their policies governing use of rich media technologies at their institution. Eleven of the responding institutions did not supply an URL to their institutional policy on the use of rich media, and of these three replied that they did not have any policy on the use of the technologies.

Three of the institutions' sites nominated for the policies on the use of rich media technologies could not be found or accessed for review by the project. The first policy URL listed by a Victorian regional university looked promising, but could not be found. A search of the site using the term 'videoconferencing' brought up over 80 documents, though many were related to making a booking. Many institutions placed caveats on the use of technologies such as 'Skype', which appears to confirm Caladine's (2008b) findings that the use of peer-to-peer real time communications systems is not being encouraged in the university environment and that limitations are being placed upon its use. Many of the other policies provided are generalised ITD policies, and not particularly aimed at the use of videoconferencing or other real time technologies which seem to be appearing faster than the policy-makers have the time to draft policies for governance of the technologies in the universities.

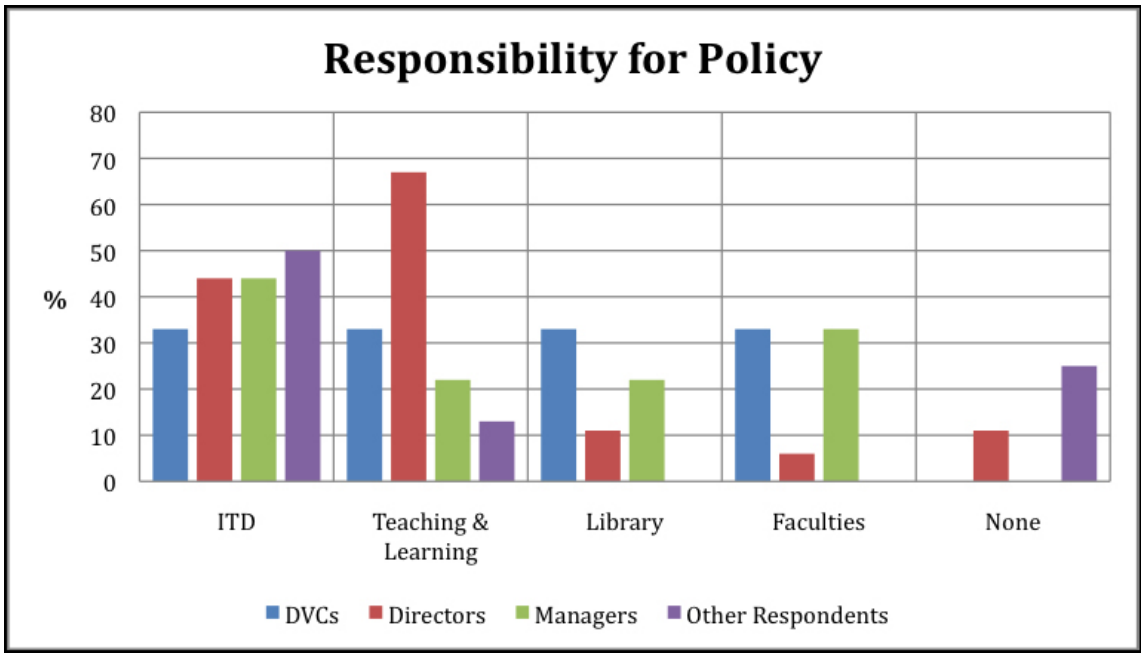

Figure 5: **Responsibility for Policy for Rich Media Technologies (categorised by position in the institution)**

Another way of examining the institutional view on policy for emerging technologies was to examine the answers given by position in the university represented in the survey participants. The survey participants were divided into groups by position in the organisation, as stated on their answers to the survey. They were divided into four categories: Deputy Vice-Chancellors (three), Directors (18), Managers (nine), and others which included lecturers and academic developers (eight).

The category 'various' has been left out of Figure 5 as the fact that many people ticked more than one box this category became superfluous.

It appears that in the opinion of the respondents to the survey, responsibility for policy on the use of rich media technology is spread across many areas of their institutions. This could mean a number of things. That the respondent is not sure where the responsibility for policy lies immediately comes to mind. It may also be that because these technologies are emerging so rapidly, decisions about the formation of policy regarding the technologies relies on input from many areas, possibly those who are using the technologies. As the investigation of policy documents showed, there is very little policy on the use of rich media technologies in Australian universities, and therefore it appears that no one is sure who has the responsibility for the development of policy.

In a further attempt to identify where the responsibility for the development of policies for the use of rich media technologies were located in each institution in the view of the survey respondents, the responses of the group 'Directors' (the largest group represented) was broken down into Directors of ITD, Teaching and Learning and Others (Figure 6). Eighteen respondents were represented in this group. Eleven of these felt that responsibility for policy was spread across a number of areas of their institution, six of these being ITD directors and five being directors in the other category (Figure 6). Two of the directors of ITD departments felt that there was not any specific area responsible for policy development, and one ITD Director believed that the responsibility for policy should be in the Teaching and Learning Centre. The one representative of Directors of Teaching and Learning Centres believed that the responsibility for policy development regarding the use of rich media technologies resided in the Teaching and Learning Centre. Three directors from the other category also felt that the responsibility for policy should sit in the Teaching and Learning Centre.

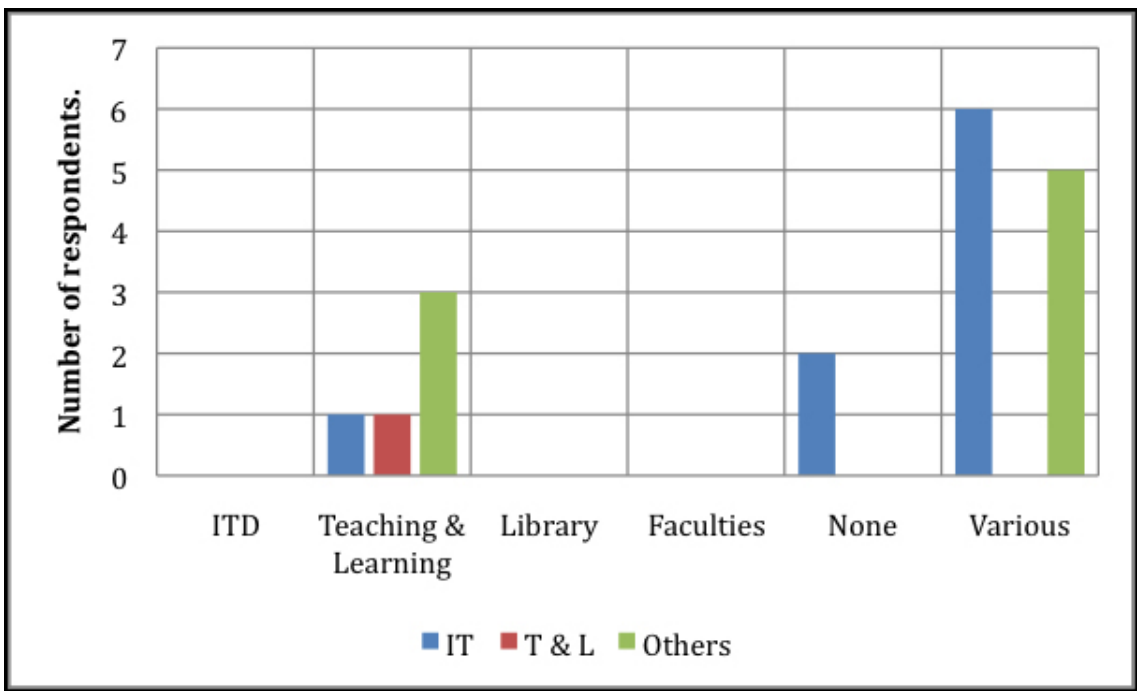

Figure 6: **Where the Directors felt that the responsibility for policy sat in their institution**

One of the interesting conclusions from this level of analysis is that none of the directors of the ITD departments believed that the sole responsibility for policy development regarding rich media technologies should reside in their own departments. All of the ITD directors who chose numerous institutional departments for the responsibility included the ITD department, but none felt it was their sole responsibility at present.

Strategic planning and Rich Media Technologies

Question 9 asked the respondents to describe how the implementation and use of rich media technologies aligned to their Institution's Strategic Plan. Two of the universities did not comment on this question.

Eleven (50%) of the responding institutions spoke of rich media technologies being aligned with their Institutional Strategic Plan through supporting teaching and learning, and eight (36%) of the institutions said it aligned with their plan for research. Six (27%) of the institutions cited flexibility in the delivery of teaching programs, and five (23%) supporting multi-campus and/or distance education as being a part of their Strategic Plan and that rich media technologies enhanced these aims. Four (18%) of the institutions said that it was an aim of their strategic plan to be more responsive to students' needs, and two (9%) thought that the use of rich media technologies aligned with their desire to form a community of learning.

Some of the more innovative uses of rich media technologies viewed from the universities strategic plans were:

- Encouraging community participation in university events (regional university);
- Maximising access to scholarly expertise and cultural collections (metropolitan university); and
- To foster community outreach (metropolitan university).

Drivers for Adoption

Question 10 enquired as to the respondents' view of what was driving the adoption of Rich Media Technologies at their institutions. This question has been analysed by individual responses, not by the institution represented by the respondents. Most of the respondents believed that the adoption of rich media technologies was being driven by student demand (83%), followed closely by demand by the staff at their university (78%) (Figure7). **Reducing travel budgets was also seen as a driver by 28 of the respondents (70%).**

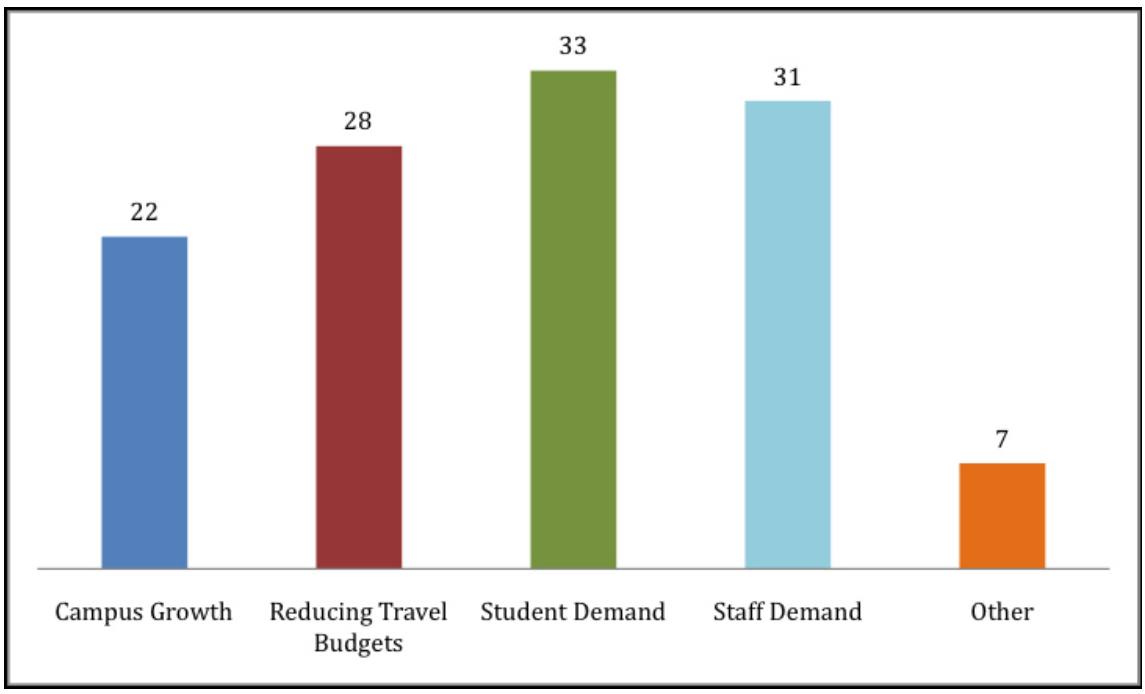

Figure 7: **Individual respondents' views to the drivers to the adoption of rich media technologies at their institutions**

Other reasons given for driving the adoption of rich media technologies were:

- Pedagogy to enhance the student experience, advance teaching and support learning. Support and enhance communication at a distance;
- Reducing stress and environmental impact of staff travel, rather than costs savings;
- Reduced inter-campus travel. Flexibility in teaching & learning delivery. Working in partnership to bridge the divide between pure and applied research;
- Increased number of remote sites requiring increasing levels of communication between sites;
- External student base, flexibility for remote learning and accessibility;
- Strategic Planning, in particular the drive for curriculum renewal;
- International and distance teaching e.g., remote health clinics and hospitals;
- Enhancing teaching, learning, scholarship and research;
- e-research initiatives;
- e-learning initiatives;
- The establishment of the Access Centres was the initial impetus;
- Social shifts and contemporary media demands;
- Technology enabled pedagogy;
- Innovation, market share, enhanced student learning outcomes and experiences; and
- Support for the University's Vision and Objectives.

Sources of Funding

Question 11 enquired from the respondents what they thought were the sources of funding for rich media technologies at their institution. This question has been analysed by individual responses, not by the institution represented by the respondents. The question asked the respondents to identify the sources of funding for:

- The initial purchase of rich media equipment;
- The upgrade and replacement of equipment;
- The operational costs of using rich media technologies; and
- The maintenance of the equipment.

For the initial purchase of the equipment the source of funding was most likely to be a project specific grant or source of funding, as well as capital pool development funding or the purchase being funded from central university funds (Figure 8).

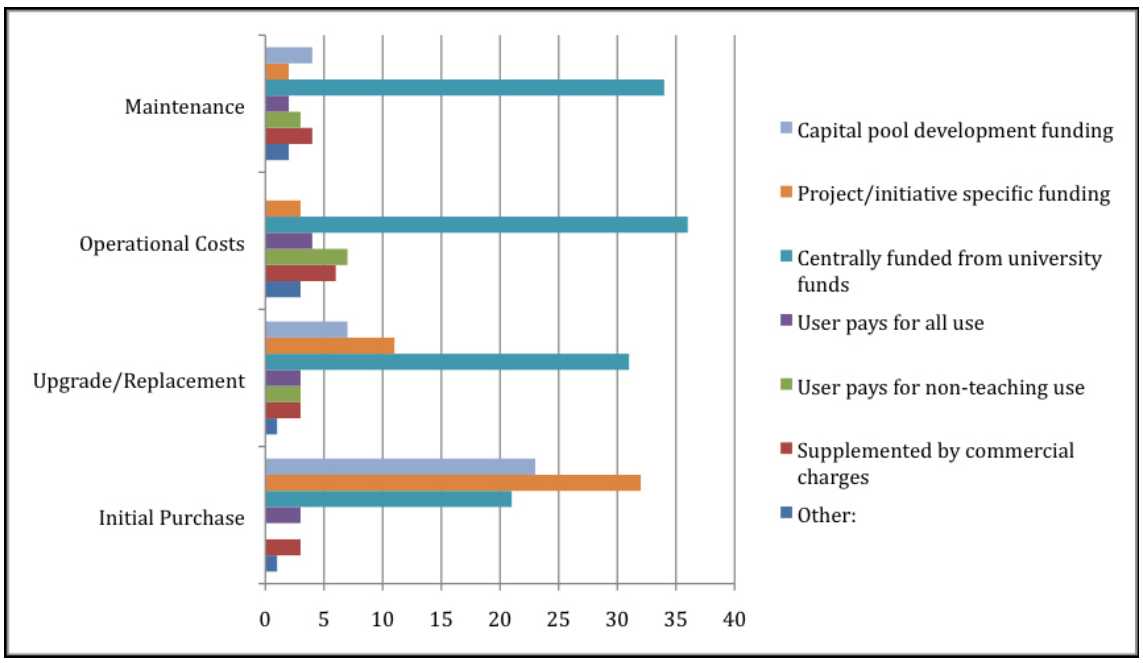

Figure 8: Sources for funding for rich media technologies

For all of the other categories, upgrade/replacement, operational costs and maintenance the respondents thought that the funds for these, on the whole, were sourced from central funding from university funds.

Support for Staff

On the question of how each institution planned to support staff in experimenting with rich media technologies (Question 12) the respondents were offered seven choices:

- Professional development;
- Seed funding;
- Online;
- Seminars / workshops;
- Formal courses;
- No particular plans at present; and
- Other (please specify).

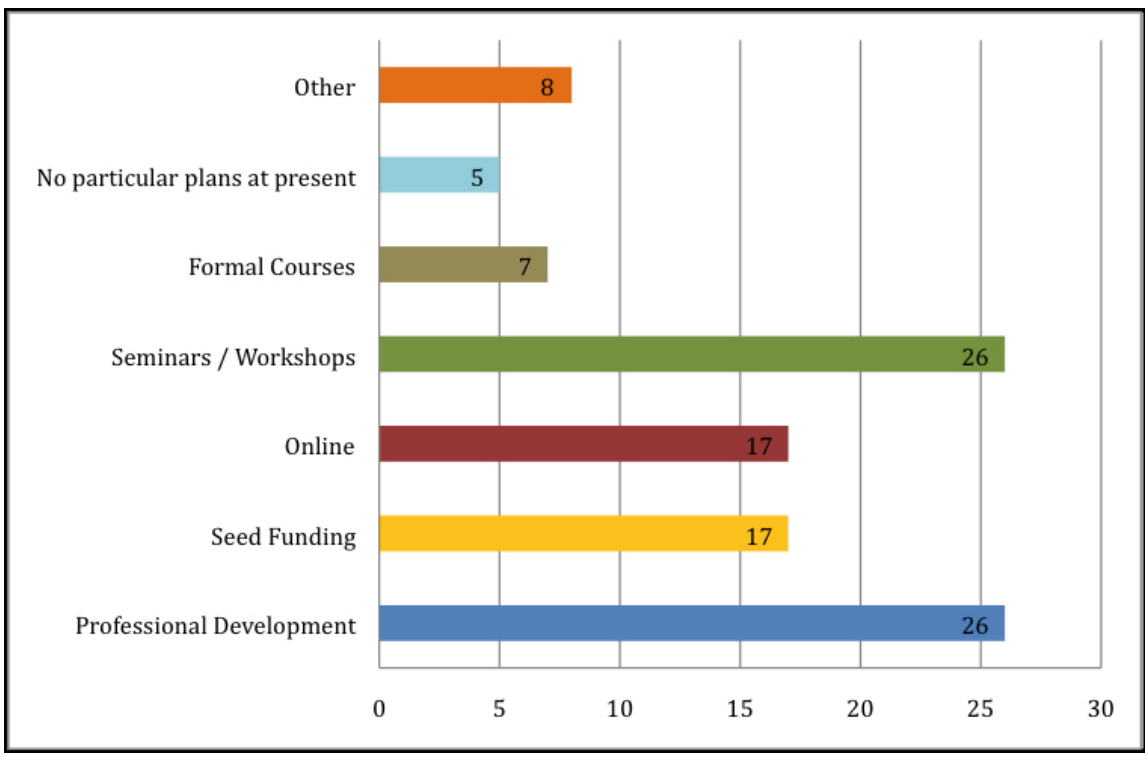

Figure 9: **How the survey respondents thought their institution would support staff in experimenting with rich media technologies**

This question has been analysed by individual responses, not by the institution represented by the respondents. Twenty-six respondents (70%) thought that professional development and seminars and/or workshops would be suitable tools for assisting staff in learning to use rich media technologies. Professional development is a very broad term and could perhaps encompass all of the other options, so it is surprising that all of the respondents did not choose this option. The next most popular choices for staff training in using rich media technologies were seed funding and online (46%). The least popular option was a formal course (19%), perhaps because of the already heavy workloads carried by academic staff. Five respondents (13%) said that their institution had no plans for staff development in the use of rich media technologies (Figure 9).

Other plans for staff development in the use of rich media technologies were:

- Conference attendance;
- In the context of planned and supported curriculum renewal projects that have both technology skills and teaching skills built in;
- Consultations (either one-on-one or with small groups);
- Via involving people in Pilots, supporting a media developers' community of practice;
- Technology Enhanced Learning Laboratory established to trial new Technologies in both an academic and L&T setting;
- Development of a Technology Enhanced Learning Laboratory;
- Trained IT staff currently support staff teaching three core courses which use MediaSite on a regular basis. — 'Train the Trainer' approach is being used for Adobe Connect — IT staff assist the current limited number of staff using the technology;
- Sandbox arrangements for trials; and
- Enhancing existing "MOU/SLA" frameworks, along with "Technology Councils".

When analysed by position in the organisation there is not a great deal of differences to the results obtained by respondent to the question of how to support staff in learning to use rich media technologies. Professional development, seminars and/or workshops, seed funding and online training still rated much more highly than formal courses (Figure 10). All of the Deputy Vice-Chancellors responding to this survey (even though it is a very small sample) approved of these methods. The directors approved most highly of professional development (67%) and seminars and/or workshops (67%), with the next most popular choice being online training (39%) (Figure 10). The managers thought professional development (67%), closely followed by seed funding and seminars and/or workshops (56% each). Thirty-eight percent of the 'other' respondents thought that their institution had no plans for supporting staff in the use of rich media technologies .

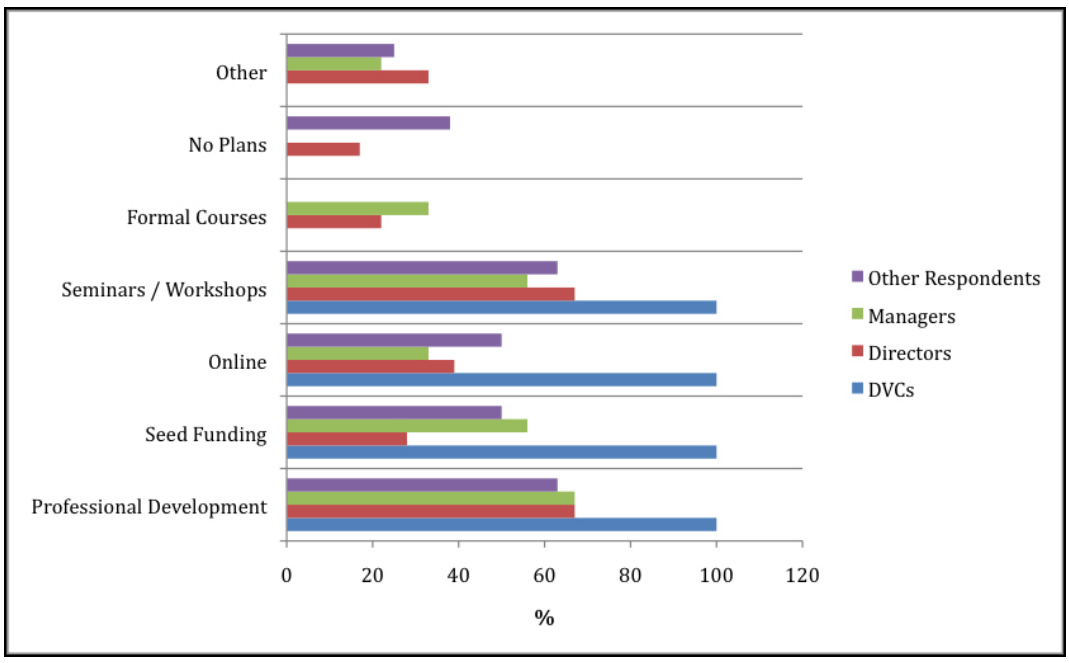

Figure 10: **How the survey respondents thought their institution would support staff in experimenting with rich media technologies – by position in the institution**

Barriers to Adoption

Question 13 asked the respondents what they thought would be barriers to the adoption of rich media technology at their university. The survey respondents were asked to rate the following options as to which would be the most difficult:

- Security policies;
- Financial support;
- Staff expertise;
- Network capacity; and
- Other (please specify).

Most thought that the lack of financial support would be the greatest barrier to their institution taking up more rich media technologies. The area which was seen as the least problem was network capacity. These findings align well with the results of the survey carried out by Greenberg (2009) who asked respondents to rate ten barriers to the adoption of rich media technologies. The greatest barrier in this survey was also funding, while network/ bandwidth capacity rated ninth (Greenberg 2009) (Figure 11).

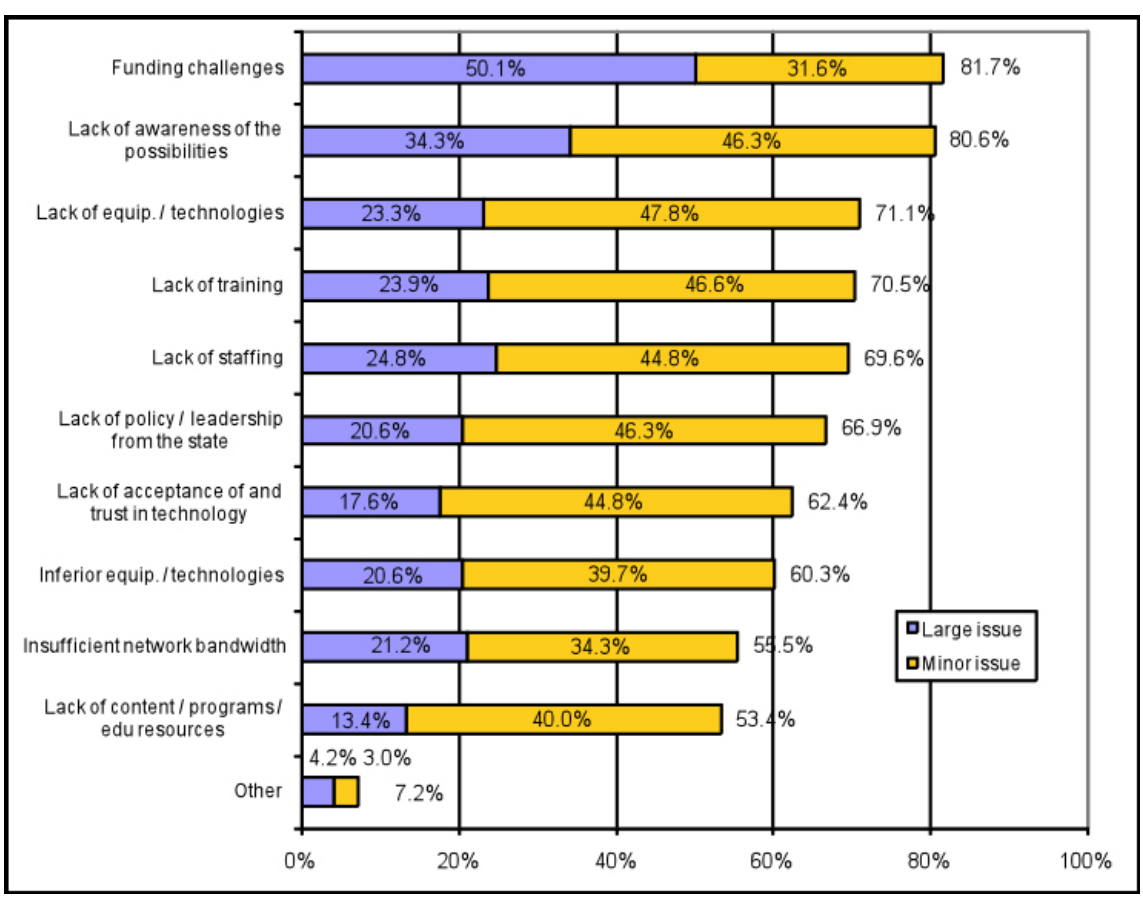

Figure 11: **Barriers to the use of rich media technologies in educational institutions (Greenberg 2009)**

Other Barriers

Some of the other barriers to the adoption of rich media technologies foreseen by Greenberg (2009) are also listed by the survey respondents in the 'other' section of the answer to question 13. However, they seem to add even more barriers than Greenberg had foreseen.

Other barriers to the adoption of rich media technologies:

- Coordination and knowledge sharing in a large institution;
- Compliance with restrictive copyright regulations for digital content;
- Silos;
- Achieving consistency in relevant hardware;
- Skills and Engagement of Academic Staff;
- Lack of staff resources to support new technologies;
- Policy support to establish remote endpoints in [capital cities] where staff would willingly video conference to students; and
- Rapid change in technology.

One university's statement about restrictive copyright regulations is emerging as a real issue with online teaching, and will probably become even more so with the use of rich media technologies (Caladine, 2008a). Monash speaks to the difficulties in coordination and sharing of technology in large institutions, which has been shown through the answers the survey respondents' gave to questions on policy and administration of rich media technologies in their institution.

Pre-conditions to Implementation

The following question (Question 14, Will any pre-conditions to the implementation of rich media technology be required at your institution?) gives even more detail of issues that will be needed to be addressed before rich media technology can synchronise with the everyday business of an Australian university. Five (23%) of the participating universities said that there were no pre-conditions to their uptake of rich media technologies. Seven (32%) of the institutions said that there would need to be more training for and professional development for their staff and only four (18%) said that they would require more funding. Five (23%) institutions said that they would have to ensure that the technology would enhance teaching and learning in their institutions.

Possibly some of the most interesting areas of concern about pre-conditions needing to be met before implementing rich media technologies were concerned with policy and legislation. Respondents stated that more policy would need to be developed for the implementation of the policy, specific issues being ethics, privacy and copyright.

Many concerns were raised regarding technical aspects of using rich media technologies. Some spoke of co-ordination and uniformity across all of their campuses, and others felt that infrastructure and networks would need to be upgraded.

Plans for On-going Funding of Rich Media Technologies

Question 15 enquired into the institutional plans for on going funding of rich media technology. The majority of respondents said that the ongoing funding of rich media technologies relied on central funding (55%), and external or internal grants and project based grants (27%). One of the universities said that they had no plans for on going funding and two did not answer the question. Four of the institutions responding to the survey said that costs may be carried by faculties or departments (18%). Other forms of funding for rich media technologies included a bidding system, annual infrastructure submissions and capital development pools.

One university said that on going funding would be dependent on the success of the implementation of rich media technologies, though they did not say how this would be quantified. Another said that funding would be dependent on 'structural cost reductions combined with growth in revenues from higher enrolments'. A regional university replied that funding for all technology was currently under review in the overall university budget.

Contributors to Case Studies

Table 2: Are you interested in contributing to a Case Study chapter in a book?

Answer Options	Response Percent	Response Count
Yes	25	10
No	32.5	13
Maybe	40	16
No Response	2.5	1

Conclusion

The Leading Rich Media Technologies survey has provided the project with some very useful information, which will be used to further the project research into the viability, scalability and sustainability of the uses of rich media technologies and to make recommendations to the participating universities. However, much of the information is confusing, which may reflect the state of the use of rich media technologies in Australian universities. The Megatrends Report of 2009, after studying why some e-learning programs in Europe had failed made five major 'conclusions and recommendations that are characteristic of all or nearly all of the initiatives, that were closed because they failed to reach targeted goals' (Weinstein, 2010; Keegan et al., 2009). These recommendations were:

- 'Hard-nosed market research is essential for the success of any e-learning initiative;
- E-learning initiatives should plan carefully for and control carefully their revenue and expenses. Seeding funding dries up quickly;
- Choice of courses and its accreditation is crucial;
- It is important that those planning e-learning initiatives should define precisely the relationships of their initiative to existing providers and define precisely the institutional model they will adopt;
- E-learning initiatives should plan carefully to manage both their educational and business activities.' (Keegan et al., 2009).

From the data, these recommendations point to the need for planning and policy in purchasing and the use of rich media technologies. As can be seen from some of the sections of this report, policy on the use of rich media technologies is lagging behind the use of the technology, and many institutions rely on grant types of funding to provide the infrastructure for the technology. The e-learning scene is changing so rapidly and all of the institutions participating in this survey are endeavouring to provide their students with the best possible means of enhancing their teaching and learning experience. They may however, need to allow more time for the development and implementation of policy regarding the use of rich media technologies. Institutions may also need to allow time to examine how these technologies rate in the importance of enhancing teaching and learning in their institutions, and plan for their continued use and upgrade of equipment. In these ways, viability, sustainability, scalability and pedagogical concerns may be discussed during planning processes, therefore, reducing risk of inappropriate implementation.

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PART THREE: SECTOR SURVEY REPORT SUMMARIES

Report on the survey of business modelling practices for large scale acquisition and implementation of rich media technologies in higher education

Andrew Berriman
February 2010

Executive Summary

From the outset of this project there has been a paucity of benchmark information available for the research into investment evaluation processes for rich media technology acquisition and implementation within industry, government and the higher education sector. What is abundantly available is literature provided by manufacturers of rich media technologies that in essence provide a simplified means to justify the purchase of their respective technologies but fall short of the mark when looking at all the elements of investment evaluation for the complex multivendor solutions that dominate large corporate, government and higher education institutions.

The research was ultimately confined to the higher education institutions and in particular responses from 13 Chief Operating Officers from Australian universities who are responsible for funding the acquisition and implementation of rich media technologies campus wide to aid teaching and learning.

The balance of this report contains information about the project, data gathering methodology and the survey findings. Despite the lack of available benchmark information, the findings definitely provide a beacon to 'better practice' from a handful of Australian universities that are leading the way by strategically linking the acquisition of rich media technologies with their overall institutional goals.

Introduction

The Australian Teaching and Learning Council (ALTC) funded project *Leading rich media collaboratively: Mobilising international, national and business expertise*, aims to develop a model for sustainable and scalable implementation of rich media technologies.

Rich media technologies are defined as those videoconferencing technologies which facilitate interactive communication between users, who can see, hear and interact with multiple communication streams synchronously or access them asynchronously. Rich media is further defined as media which approximates the immediacy of face-to-face communication where participants read non-verbal cues such as vocal inflection and body language (93% of all communication) to increase understanding and obtain rapid feedback.

One of the project aims is to investigate and research investment evaluation (business modelling practices) processes for large scale acquisition and implementation of rich media technologies in industry and education and training sectors with a view to identifying incidents of 'best practice'. The resultant information is to be used to develop a framework for sustainability (via business models).

The method of investigation and research included existing data and an online survey.

Methodology

In order to obtain information about how Australian universities approach and use business modelling practices for large scale acquisition and implementation of rich media technologies, the project authorised invitations for Chief Operating Officers (COO) to participate in an online survey.

This online survey followed a similar approach to the earlier survey conducted by the project to "report on the survey of the use of rich media technologies in Australian Universities" in as much as it was directed to key personnel in Australian Universities responsible for funding the acquisition and implementation of rich media technologies to aid teaching and learning practices at each university.

Invitations were sent to 20 of the 39 universities and responses were received from 13 COOs.

Considerable time was spent developing and refining the survey questions to ensure that the responses informed the project appropriately whilst not being too onerous on the survey participants.

The quality of the responses was high and the information provided by the many of the survey participants additional value to the online survey

Findings

An online survey was conducted with COOs from 13 universities who responded to a financial survey that focused on core linkages between their university's strategic business goals for campus wide teaching and learning and the degree of integration of the business planning processes adopted by them for the acquisition of rich media technologies and lifecycle support services to underpin or assist their university's delivery of teaching and learning. In particular, this online survey was seeking to uncover incidents of "Best Practice" in this vital element of fiscal policy given the increasing expenditure demand and the need to consider sustainability, viability and scalability when planning such acquisitions.

Although only three of the 13 respondents acknowledged that they had a master plan for campus wide implementation or rich media technologies, there was a strong correlation between this group and the maturity and integration of the business planning processes that directly link to their university's strategic goals for teaching and learning. This group had formal processes for investment evaluation and funding the acquisition and life cycle support services and all respondents from this group stated that they their plans incorporate the concept of unifying communications and that their plans were underway.

From the survey results there is evidence that these universities have a more centralised approach to the business planning process and the role of ITD is closely linked to technology policy and strategy in planning for acquisition of rich media technologies, where rich media technologies are just one element of the overall university technology plan. What is not certain from the survey results is whether the decision to adopt the concept of unifying communications has been a driver for the centralised approach to business planning or whether it is more likely to be an outcome of the centralised approach to business planning which is more closely aligned to the overall university strategic goals. Either way, the potential here is that these three institutions will become lighthouses for other adopters to imitate.

The remaining balance of 10 respondents confirmed that they did not have a master plan for campus wide implementation of rich media technologies to support teaching and learning. That said, only two of these respondents indicated that there was no linkage at all between the acquisition of rich media technologies and their university's overall strategic plan. The remaining eight respondents indicated that linkages existed and were mainly informal. This group generally had a less formal or no approach to investment evaluation and a more competitive access to funding sources for the acquisition and life cycle support services.

There was a mixed response from this group to the question of incorporating the concept of unifying communications. One confirmed that they had plans and were underway; one indicated that this had been identified as a business requirement; one had intentions to implement and the remaining seven respondents had no plans.

Report from Wainhouse Research, U.S.A.

A 'big picture' report was commissioned by the project team from Wainhouse Research in the United States, in order to give the project team a good overview of the progress of the use of rich media technologies worldwide in the higher education sector. The executive summary of the report appears below, and the complete report can be found at www.richmedia.edu.au

Executive Summary

The Leading Rich Media Project of Australia asked Wainhouse Research to provide feedback and offer high-level discussions on the state of distance education worldwide, with a focus on videoconferencing and related technologies. Specific topics include trends in:

1. technology;
2. policy and governance; and
3. research.

We add to the list our own criterion we believe important to understand, demand drivers (user climate), which are helping to shape the direction of the field of distance education. A few key points addressing the above questions are provided in this summary, and we encourage the reader to review the entire document.

Distance education and the rich media technologies that enable it work best when embedded in the DNA of an organisation; short of that core focus, organisations may founder, whichever governance model they choose. It typically requires inter-disciplinary committees that comprise multiple functional areas to create an effective team for governing and championing distance education; faculty committees alone, or IT making decisions alone, create obstacles to successful programs.

Research into video-based technologies, namely videoconferencing, streaming video, and lecture capture, has increased steadily (but not explosively) since 2004. Nonetheless, the research into the efficacy of video-based technologies is sparse when compared with the broader realm of educational technologies and online learning.

Videoconferencing-based distance education was in the early-adopter phase through the 1980s and 1990s, but is reaching mainstream status in higher education and beginning to move more deeply into primary and secondary education. The technology is now mature and is used heavily for many different applications, from classroom enrichment, full course delivery, research collaboration, professional development, student services, and finally, to general meetings.

Most research concludes the following:

- Interactivity is key. A large number of studies support the widely held belief that videoconferencing in particular is uniquely able to foster interactivity in a learning situation. In a similar vein, this research shows that practitioners are most successful when they design the instruction to be highly interactive. In other words, videoconferencing both supports interactivity and demands it; as we have noted, straight lectures are not the best use of videoconferencing for education. It is far more useful for extending the classroom, importing content and experts, enabling small group work, and providing a higher degree of research supervision.

- Video-based technologies can be cost-effective. While additional research needs to be done on this topic, there is a solid body of current evidence showing that video-based technology produces a good return on investment for educational institutions — and for the communities and governmental entities that invest in it. To achieve payback, appropriate technological infrastructure is necessary – which sometimes makes it more difficult to assess return on investment (ROI).

- **Lundgren** (2007) assesses the barriers to success in a literature review and analysis that summarizes four major obstacles: 1) equipment and technical support issues; 2) professional development and training issues; 3) concerns with time; and 4) fear of technology use.

- Some educators resist adoption of videoconferencing though at times obstacles are as simple a matter as lack of technical support (or training) or poor infrastructure, e.g., lack of bandwidth or firewall issues.

Wainhouse Research (Greenberg 2009) has published on this topic as well, finding that the major obstacles to adoption in primary and secondary schools are (in rank order):

1. lack of bandwidth and technology infrastructure, or old equipment;
2. inability to afford support personnel;
3. lack of interest at the educator or administrator level;
4. funding challenges; and
5. no state-wide or district-wide policy/standards/champions.

Yet almost 80% of administrators, policymakers, and educators interviewed in 44 US states indicated that interactive videoconferencing is helping their schools, districts, and states address and achieve their academic goals.

Several future technologies will impact extensively today's distance education technologies. Futures mentioned in a well known Delphi study described in this report include mobile technologies, cloud computing, geo-coded data (enabling educators to make use of the physical coordinates of places and objects), the personal web (methods of reorganizing web content), semantic-aware applications, and smart objects (a set of technologies that imbues ordinary objects with the ability to recognize physical location and respond appropriately).

Some of these technologies are long term propositions; cloud computing and mobility are here today and will influence distance education – but only to the extent, in Wainhouse Research's belief, of the ability for distance education practitioners to adopt them.

Research into distance education overall is somewhat more advanced than research specifically into videoconferencing. The US Department of Education announced in June 2009 that it had conducted its own meta-study and reached some far-reaching conclusions regarding online learning. The department evaluated over 1,000 empirical studies of online learning published between 1996 through July 2008. The resulting meta analysis of 46 suitable studies showed that "blended" instruction had a larger advantage relative to purely face to face instruction or instruction conducted wholly online.

Wainhouse Research believes that the most effective distance educators actually learn to treat remote learners with an equivalency to local learners. This has two consequences: remote educators feel more engaged and better able to monitor learner progress, and learners themselves feel more engaged and motivated to focus and progress on their work.

The physical presence of an advocate in a remote location is part of what has been shown worldwide to be an exemplary method of driving adoption of distance education, and we offer special attention to it for the Leading Rich Media Project. This model is followed in US states with large quantities of primary and secondary distance education, e.g., Kansas, New York, Michigan, Arkansas, Texas, and Indiana, as well as in institutions of higher education. Not using sufficient advocates – and lacking sufficient program content – were some of the contributing factors that have led some state-wide networks and university programs to atrophy. The reason distributed advocates are important is that they are living components of a marketing plan. They help overcome ignorance about distance education and its supporting technologies and the opportunities that exist for their learners.

PART FOUR: CASE STUDIES

Three case studies that highlight the use of rich media technologies in tertiary education are presented in this section of the report, along with a further study of a topic that has largely been ignored in higher education – whether rich media technologies should be managed by audiovisual or information technology departments with the institution.

All of the case studies from the centres or institutions presented show how rich media technologies can be embedded within the core business of the entity and become an integral part of the operation. All of the institutions state that the use of rich media technology provides opportunity for equality amongst their students, whether they reside in metropolitan, regional or rural situations. They believe that it is the distance between students, teachers and researchers which drives the use of the technology. A bonus is that costs can be constrained when staff does not have to travel great distances to carry out their work. TAFESA has also found that class sizes become viable when they can aggregate metropolitan and rural students into one class – making the ranges of subjects more extensive than if they had to rely on student numbers from one geographical area. SiMERR found that the greatest benefits of the use of rich media technologies were:

- Cost savings;
- Convenience;
- Improved collaboration because it is easier than travelling;
- Richer thinking because the technology enables deeper discussion;
- Easier management and progress tracking with remote projects;

TAFESA managers believed that the benefits of their extensive use of technology enable connections with other staff and students that provide more realism and sense of quality of connection. Both staff and students report dealing with real people, no matter where they are located. Staff particularly report that students feel more connected, and thus are more willing to seek help where necessary (Smyth, 2009).

The fourth case study deals with the ownership of rich media technologies within higher education institutions. Many institutions have an audiovisual department which in the past has managed the technology. However, the researcher asks the question:

Now that most videoconference equipment uses the internet does it make sense to change who ‘owns’ it?

This study raises questions that will have to be addressed by universities sooner or later. Perhaps by including this study in this report, we can move the discussion forward a little.

Case Study: SiMERR

Questions	Description
Name: **Institution/ Centre:**	
Faculty/School/Dept/Admin Unit	School of Education, University of New England NSW 2351 Australia
Email:	simerr@une.edu.au
Phone No:	Tel: +61 2 6773 5070
What best describes the character of your institution/centre?	SiMERR Australia works with rural and regional communities to achieve improved educational outcomes for all students in the areas of Science, ICT and Mathematics so that: Parents can send their children to rural and regional schools and know they will experience equal opportunities for a quality education; Students can attend rural or regional schools and realise their academic potential in Science, ICT and Mathematics: and Teachers can work in rural and regional schools and be professionally connected and supported.
What technologies are in use at your institution/centre?	Videoconferencing is the primary rich media technologies used for administration and research within the SiMERR hubs. The SiMERR National Centre has established a Hub in each state and territory. These Hubs work together with the National Centre in establishing links with teachers, education providers and relevant professional and community organisations within their own state or territory, identify research opportunities and priorities. Hub teams will also identify research opportunities and priorities, undertake research and professional development projects within their state or territory. Each Hub is established within and supported by a university. Funding of the Hubs is shared on a cooperative basis by the SiMERR National Centre and the host university.
What technologies are being planned for use at your institution/ centre?	We will continue t use network-based videoconferencing. For some of our research projects, our hope is to increase links with teachers in schools as desktop videoconferencing becomes available.
What is your institution/centre's main purpose for using rich-media technologies?	The primary purpose ids for research, project, planning and administration meetings. SiMERR was founded on the premise of saving time and travel costs by using videoconferencing across the Hubs. Within the State hubs, there are also discipline hubs for mathematics, ICT and Science so these groups also meet via videoconferencing.

Who, at your institution/centre holds the rich media management responsibility for: **Maintenance** **Bookings** **Policy** **Facilities**	The Executive Officer - Administration and Finance, holds the responsibility for overseeing all aspects of videoconferencing. Videoconferencing was a core technology from the establishment of SiMERR and is embedded into the operational management of the Hubs.
Do you have policies governing use of rich media technologies at your institution/centre?	No specific policies, rather expectations for practice. URL
How does the implementation and use of rich media technologies align to your institution/centre's Strategic Plan?	Yes. Use of rich media technologies underpins the Strategic Direction of SiMERR.
What are the drivers to the adoption of rich media technologies at your institution/ centre?	Geographic distance and travel constraints for a nationally based research centre. A stronger network of collaborators has resulted from the more frequent contact enabled by videoconferencing more regularly than would be possible if staff needed to travel for face-to-face meetings. Also, we have has more money to put into core business by limiting excessive travel expenditure.
What are the sources of funding for rich media technologies at your institution/centre? **Initial purchase** **Upgrade / replacement** **Operational costs** **Maintenance** **For example:** **Capital pool development funding,** **Project / initiative specific funding,** **Centrally funded,** **User pays for all use,** **User pays for non-teaching use,** **Supplemented by commercial charges**	Funding is by way of Commonwealth grants. Initial purchase included 3-year maintenance contracts paid for centrally but since then, responsibility has been devolved to hubs which now must plan for the technology.
How does your institution/ centre plan to support staff in experimenting with rich media technology?	Staff are encouraged to utilise videoconferencing technology to undertake research projects and to maintain contact with teachers and partners beyond SiMERR hubs. We probably have not expanded our usage to maximise the benefits from the capacity it provides but we are aware that it does support peer-to-peer contact outside SiMERR contact and for other research projects. Activity is ad hoc according to individual and hub needs.

What are the barriers to the adoption of rich media technology?	Videoconferencing is almost incidental to the running of SiMERR now and this lower profile means that it is often considered incidental to core business not a principle of core business. There is a risk that its use will not expand into new initiatives. Location of equipment in single offices often a barrier to shared usage. Lack of technical support in hubs is a potential risk.
Will any pre-conditions to the implementation of rich media technology be required?	Location of equipment in appropriately designed shared spaces. Policy development An increased number of access points so portability can be capitalised upon.
What are your institution/centre's plans for on-going funding of rich media technology?	Ad hoc. Assumed as a core principle but not actively planned for.
What are your institution/centre's plans for on-going funding of rich media technology?	Ad hoc. Assumed as a core principle but not actively planned for.
How has your institution/centre planned implementation of rich media technologies previously or currently?	Planned for in initial funding application and intended to continue as a core communications strategy in SiMERR.
How are you using rich media technologies? **with your students?** **in your day-to-day work?** **in research?** **for specific projects?** **Give details of:** **The types of rich media you are using;** **The types of uses you put them to;** **The types of classes/activities/ research/projects run using rich media.**	Mainly using videoconferencing for research activities and administration. In SiMERR for groups and hub meetings on a monthly basis nationally as part of larger research agenda Some staff are using it occasionally for post graduate supervision and with ICT education Masters students Staff would like to use it more generally in research Main use in specific research projects e.g with DET staff in Professional development context where we are trying to support staff in remote schools Mainly using room systems with some use of Skype
2. What innovations have you made by using rich media technologies? **For example: How you have changed your teaching /work/ research practices by using rich media?**	With videoconferencing as a core communications strategy, SiMERR staff no longer expect to attend face-to-face meetings for the majority of SiMERR activities. There has been a cultural shift away from travelling to face-to-face meetings.
3. Which practices have proved successful? **Please list and describe why they have been successful for you.**	Embedding the technology for meetings and using it regularly.

4. What do you like about using rich media technologies? **Please give a description of what you particularly like about the technology.**	Convenient. There is a sense of speeding progress with more regular meetings enabled by videoconferencing instead of travelling interstate less often.
5. What are your concerns about using rich media technologies? **Please list and describe why you are concerned about some aspects/all of the use of rich media technology.**	Need more support and professional development of staff in creative uses for the technology. Increased resourcing into the future. How can we acquit the benefits in financial terms? We need to think about how users will add value to their work by using rich media technologies.
6. What do you see as the benefits of the use of rich media technologies in higher education? **Please give a comparison to other methods of imparting information to students.**	Cost savings Convenience Improved collaboration because it is easier than travelling Richer thinking because the technology enables deeper discussion Easier management and progress tracking with remote projects.

Case Study: TAFE@ Your PC

Questions	Description
Name:	Anne Dening
Institution/ Centre:	TAFE SA
Faculty/School/Dept/Admin Unit	Regional Institute
Email:	
Phone No:	
What best describes the character of your institution/centre?	TAFE SA has a multiple campus network of metropolitan, regional and remote campuses stretching across South Australia. The Regional Institute comprises non metropolitan campuses spread across the State from the APY indigenous lands in the desert north and west to the vineyards and coastal towns of the south and east: Employs 3,200 full time and 2,200 part time staff Delivers programs to more than 80,000 domestic students each year Has more than 50 campuses across South Australia Has an annual budget of more than $400 million
What technologies are in use at your institution/centre?	Classroom based videoconferencing *Movi* desktop videoconferencing *Centra* desktop videoconferencing *See 'n Share* desktop sharing Elluminate Related applications for capture, streaming and editing video for web based delivery
What technologies are being planned for use at your institution/centre?	Wireless 3G desktop videoconferencing
What is your institution/centre's main purpose for using rich-media technologies?	TAFESA Regional has an extensive successful history of utilising classroom-based videoconferencing to deliver courses to its smaller campuses which are distributed over a huge geographical area. The TAFE@ Your PC project aimed to extend this outreach down to individual desktops and students in isolated communities some distance from the smallest campus or access centre. Rich media technologies extend the existing videoconferencing classes so they can be accessed from homes or businesses using a range of options such as PC-based videoconferencing, streaming via a web browser or 3G videophone

Who, at your institution/centre holds the rich media management responsibility for:	The Tele Learning Connections team includes educational technology support staff with primary roles for:
Maintenance	Scheduling
Bookings	Support and Training
Policy	Facilities
Facilities	Policy is determined at the Institute level Maintenance is funded centrally but operationalised through the TLC
Do you have policies governing use of rich media technologies at your institution/centre?	Not supplied URL
How does the implementation and use of rich media technologies align to your institution/centre's Strategic Plan?	The impetus for the TAFE@ Your PC project came from the formation of the Regional Institute and the re-organisation of campuses so that regional and remote campuses formed this Institute. The implementation of rich media technologies aligns to the TAFE SA The common issues and problems related to distance, waste of time travelling and the need to form viable classes by scaling rich media technologies out to remote students' motivated managers and staff to seek funding to implement a vision to: *deliver synchronous and asynchronous Web enabled PC-based videoconference to regional and remote students at their homes.*
What are the drivers to the adoption of rich media technologies at your institution/centre?	The drivers have been viability, scalability and sustainability associated with the need to maintain the provision of a wide range of relevant courses to communities across the entire state. Workgroups are widely scattered around the state, and most rely on the technology to operate and collaborate together. Expertise can be accessed anywhere: e.g. state experts can be effective, operating from the smallest campus/town.
What are the sources of funding for rich media technologies at your institution/centre?	Funding grants from Commonwealth Government for Project / initiative specific funding,
Initial purchase	State government Departmental funding
Upgrade / replacement	Capital pool development funding for upgrades
Operational costs	Maintenance from same source.
Maintenance	Institute funding for replacement of specific items or expansion to other sites.
For example:	Institute funds network costs and ICT related expenses
Capital pool development funding,	Third Party access is 'user pays'
Project / initiative specific funding,	Limited commercial charges at this stage.
Centrally funded,	
User pays for all use,	
User pays for non-teaching use,	
Supplemented by commercial charges	

How does your institution/centre plan to support staff in experimenting with rich media technology.	Tele Learning Connections has an educational technology support team which supports staff and also conducts its own analysis of products and emerging technologies.
What are the barriers to the adoption of rich media technology?	Very few for the Regional Institute where the convenience and ease of use of the technology makes it attractive to staff tired of travelling huge distances at great expense to attend meetings and training which could be delivered via the technology. There is more resistance amongst metropolitan-based managers and staff who prefer to meet face-to-face and to teach the same way.
Will any pre-conditions to the implementation of rich media technology be required?	A common motivation to use the technology where use is cost effective and fits the purpose for communication. In this way its benefits will be apparent and it will become embedded into normal practice. Simple, reliable, rich connections between staff make the technology attractive for effective collaboration and team building within distributed teams. A positive experience with staff-staff connections encourages use with students.
What are your institution/centre's plans for on-going funding of rich media technology?	Funding grants from Commonwealth Government for Project / initiative specific funding, State government Departmental funding/Capital pool development funding for upgrades Maintenance from same source. Institute funding for replacement of specific items or expansion to other sites. Institute funds network costs and ICT related expenses Third Party access is 'user pays' Limited commercial charges at this stage.
How has your institution/centre planned implementation of rich media technologies previously or currently?	The TAFE@ Your PC project and previous projects that introduced videoconference have been Project Managed to incorporate all aspects of the Project. This has included: Analysis of the drivers for change Analysis of how these drivers affect student ability to take up training options Staff training and professional development in both the use of the technology and the pedagogy that was most effective Promotion of the technology to staff Staff use of the technology for their own experimentation Trials supported by Tele Learning Connections Promotion of the technology to students

How are you using rich media technologies? **with your students?** **in your day-to-day work?** **in research?** **for specific projects?** **Give details of:** **The types of rich media you are using;** **The types of uses you put them to;** **The types of classes/activities/research/ projects run using rich media.**	Links with students include: *See and Share* PC desktop collaboration Video-streaming and recording of classes and other content Individual links with students for general support Links via desktop videoconferencing to include students into classes The range of classes includes almost all types of sessions, other than those requiring large equipment e.g. car repairs Day to day work: Almost all meetings are videoconferenced, as they will include staff members from multiple campuses Staff members may use dedicated videoconferencing suites, or connect from their own PC, (or even from a phone, if they are off-campus) Most meetings are recorded, and able to be viewed after the event in a web page. Many training sessions are recorded and made available via streaming, either for staff who missed the event, or for further revision *See and Share* is used extensively to allow a group of staff to collaboratively develop documents, no matter which campuses they happen to be on
2. What innovations have you made by using rich media technologies? **For example: How you have changed your teaching/work/research practices by using rich media?**	Aggregating students into viable classes, no matter how few enrol at any campus has had a dramatic increase on the number of graduations. Even with the spread of non-metropolitan campuses with TAFE SA, many students still have to travel long distances to attend classes: desktop videoconferencing is beginning to alleviate this and make training more practical for many students. Recording and video streaming of many classes allows effective catch up and revision for students, especially students for whom English is not their first language. Collaboration and contact with colleagues is simple, reliable and effective, with a combination of traditional videoconferencing suites, *Movi* desktop videoconferencing and *See and Share* (PC screen sharing) Decision making has been expedited by being able to collaborate with colleagues at any campus, and personal quality of life has been improved by less travelling and time away from home. This has allowed travel budgets to be drastically cut, without affecting the operation of the organisation.

3. Which practices have proved successful? **Please list and describe why they have been successful for you.**	Linking to students (see above) Simple and reliable personal connections with colleagues Connecting staff groups together, including as many sites as required. Recording and video streaming classes and other content Collaborating with PC desktop sharing for developing and sharing PC documents
4. What do you like about using rich media technologies? **Please give a description of what you particularly like about the technology.**	Rich media enables connections with other staff and students that provide more realism and sense of quality of connection: staff and students report dealing with *real people*, n matter where they are located. Staff particularly report that students feel more connected, and thus are more willing to seek help where necessary.
5. What are your concerns about using rich media technologies? **Please list and describe why you are concerned about some aspects/all of the use of rich media technology.**	Cost and access to bandwidth are critical: the people most requiring access to training and other staff are those located in smaller communities, and current experience shows that most of these are totally underserved by reliable broadband: many do not currently have access to ADSL 2 quality services, either because their community has no access, or because they live too far from the nearest source. Wireless technologies are unreliable: when contacted, one supplier just smiled and said: “well you understand there is no SLA for 3G” Costs of access and more particularly data in rural areas are often far higher than in metropolitan areas: it is not unheard of for data access charges to be of the order of $2,000 per month.
6. What do you see as the benefits of the use of rich media technologies in higher education? **Please give a comparison to other methods of imparting information to students.**	Access to expertise, no matter where the expert lives (i.e. which country, city or rural Ability to deliver training anywhere Ability to aggregate larger class groups to make viable more training modules and to provide training to areas which would otherwise miss out Economic benefits of up skilling small communities

Case Study: University of Southern Queensland

Questions	Description
Name:	Dr Michael Sankey
Institution/ Centre:	University of Southern Queensland
Faculty/School/Dept/Admin Unit	Learning and Teaching Support Unit (LTSU)
Email:	sankey@usq.edu.au
Phone No:	07 46312293
What best describes the character of your institution/centre?	The LTSU provides assistance to students, staff and faculties to enhance the quality of learning, teaching, assessment and programs of study at USQ. LTSU services for students include orientation, face-to-face and online support to enhance academic learning skills. Services for staff include the production of web-based resources, professional development programs, teaching summits, communities of practice, induction to tertiary teaching, and ongoing support for curriculum development. Excellence in teaching is promoted through a visiting scholar program and mentoring programs associated with teaching awards, fellowships and grants.
What technologies are in use at your institution/centre?	Core systems: Moodle 1.9 LMS Mahara ePortfolio Video conferencing Wimba Classroom, Podcaster, Voice Board and Voice recorder Camtasia Relay and Studio for lecture recording Adobe Presenter for pre-recorded audio enhanced PowerPoint presentation TurnItIn and our own electronic assignment submission system Computer Marked assessment (home grown system) ICE (integrated content environment) Allowed systems Skype MSN Second Life
What technologies are being planned for use at your institution/centre?	Move to Moodle 2 in 2011 Extending ePortfolio project Publishing for eBook readers and mobile devices

What is your institution/centre's main purpose for using rich-media technologies?	Support existing tools and extend the use of technology enhanced learning initiatives across all programs offered by the university, through the technology enhanced learning project. This project is one of ten projects aligned with the USQ learning and teaching plan. Provide multimodal support for students through appropriate instruction design
Who, at your institution/centre holds the rich media management responsibility for: **Maintenance** **Bookings** **Policy** **Facilities**	The Learning and Teaching System User Reference Group (chaired by myself) is the governing body that oversees what systems are used at USQ to support L&T and is responsible for policy (this is a subcommittee of the ICT strategy Committee that is the ultimate decision maker as they hold the dollars). Maintenance for all Core Systems, form the technical side, is done by the ICT department. From the functional side, it depends on the system, but generally by either LTSU of DAIS (Division of Academic and Information Support). Bookings for Video conferencing are maintained by ICT
Do you have policies governing use of rich media technologies at your institution/ centre?	URLs ICT Policy and Standards are found at www.usq.edu.au/istandards LTSU Flexible learning page at www.usq.edu.au/leanteach/topics/flex LTSU Technology enhanced learning and teaching page www.usq.edu.au/learnteach/topics/tel ICT Online Training Resources support site for www.usq.edu.au/ict/training/online
How does the implementation and use of rich media technologies align to your institution/centre's Strategic Plan?	Technology enhanced learning is one of the 10 projects aligned in the USQ learning and teaching plan, found at: www.usq.edu.au/learnteach/qualpolplan/plans The goal of this project is to provide a cost-effective framework for technology-enhanced, flexible learning options in all USQ courses and programs, with particular reference to the top 16 programs. 2008 - 2012 this project will address the implementation of: • a newly developed Fleximode Policy; • ICE roll-out; • Moodle Development; • Virtual Classrooms (Wimba); • Program Teams Plan; • ACODE Benchmarking; and • emergent technologies as approved by ICT Strategy and Budget Management Committee.

What are the drivers to the adoption of rich media technologies at your institution/ centre?	The main driver is how we can better support our students through their learning journey. We use a student learning journey framework www.usq.edu.au/learnteach/topics/slj.htm that mediates our approach.
What are the sources of funding for rich media technologies at your institution/ centre? **Initial purchase** **Upgrade / replacement** **Operational costs** **Maintenance** **For example:** **Capital pool development funding,** **Project / initiative specific funding,** **Centrally funded,** **User pays for all use,** **User pays for non-teaching use,** **Supplemented by commercial charges**	There are three levels of technology funding: All **ICT Core Systems** used for L&T are supported by a triennium (3 year rolling) capital budget model. This model is aligned with the ICT strategic roadmap for ICT systems. The model allocates projected funding for all existing systems and for new systems, where identified. Support for these systems also extends to ICT Help Desk and Training. The next level is supported systems. These are systems that are not centrally funded by ICT but they will maintain them on their systems. These are funded by the individual departments wishing to use these systems. An example of this would be the LTSU's use of Tutor Track. Tutor track used by LTSU to track and maintain records about student consultations in our learning centre. There is no other department that currently needs to use this system so LTSU is required to fund it. ICT is funded to support these at a systems level only. The last level is allowed systems, such as Skype of Second Life. Again there is no central funding for these systems (as most of them are free anyway) but ICT allows access to them, so there is some minimal funding for ICT to support this activity.
How does your institution/centre plan to support staff in experimenting with rich media technology?	USQ have a four pronged approach to this: ICT does the initial training for Core systems LTSU has appointed a Technology Advocate position this year (2010) to support staff in using the range of technologies Faculties have appointed technology mentors (super users) for local at the elbow support Every core and supported system have online resources associated with it housed within Moodle
What are the barriers to the adoption of rich media technology?	The main hurdle is ensuring sufficient support/training given increased workloads. In other words staff have limited time to attend training even if they wanted to. Most are keen but it just takes time to learn new things.
Will any pre-conditions to the implementation of rich media technology be required?	Just training for the more complex systems; Video conferencing, Moodle, Wimba and ICE
What are your institution/centre's plans for on-going funding of rich media technology?	The university has a three year planning cycle for major technology expenses. Clearly exceptions to this are allowed but there has to be a reasonable case established for this to be so. For example the model allows for $x to support Virtual Classrooms, but does not stipulate which virtual classroom needs to be used.
How has your institution/centre planned implementation of rich media technologies previously or currently?	Each technology aligned with the technology Matrix is supported a Moodle site established by the USQ Technology Advocate. Training is also scheduled on a regular basis.

How are you using rich media technologies? **with your students?** **in your day-to-day work?** **in research?** **for specific projects?** **Give details of:** **The types of rich media you are using;** **The types of uses you put them to;** **The types of classes/activities/research/ projects run using rich media.**	We are using rich media technologies in the following ways: 1. Embedded and linked into course environments in Moodle 2. Some meetings use VC, Wimba or Skype 3. Inter institutional research sometimes uses VC, Wimba or Skype 4. ? Give details of: • VC, Wimba or Skype • Voice and video and application sharing; • Many classes across all disciplines/student support activities/research meetings and CoPs.
2. What innovations have you made by using rich media technologies? **For example: How you have changed your teaching/work/research practices by using rich media?**	The support offered to students using of Wimba and Skype. Not only staff to student support but student to student support.
3. Which practices have proved successful? **Please list and describe why they have been successful for you.**	The support offered to students, particularly, has been a major benefit. Not only staff to student support but student to student support has seen a major increase in activity. This is more so for our large distance cohort.
4. What do you like about using rich media technologies? **Please give a description of what you particularly like about the technology.**	The best feature of these technologies is that you can eyeball who you are talking to. Albeit a bit pixillated, you can interact reasonable freely
5. What are your concerns about using rich media technologies? **Please list and describe why you are concerned about some aspects/all of the use of rich media technology.**	Ubiquitous access for students
6. What do you see as the benefits of the use of rich media technologies in higher education? **Please give a comparison to other methods of imparting information to students.**	It replicates the classroom experience, to some degree, for students who cannot attend face to face.

Case Study: Ownership of Videoconference: AV or IT?

Introduction

Universities use videoconference in different ways. Some use it mainly for meetings of staff. Others use it mainly for teaching and learning. This article is concerned with the second group and ownership here describes responsibility for the acquisition, design, installation and operation of videoconference endpoints and bridging technology (MCU). Videoconference equipment is generally owned by either Audiovisual (AV) departments or Information Technology (IT) departments.

Background

In the past few years videoconference has moved from using ISDN to Internet due to cost reduction and increases in bandwidth. This has allowed greater flexibility in location of videoconference endpoints which in turn has led to greater levels of usage and in many institutions videoconference usage accounts for a significant proportion of network use.

Rationale for Ownership

IT departments prefer to control the devices that use, and are connected to, the institution's network. In this way they can ensure adequate levels of security and performance.

Historically, in many institutions where videoconference has been predominantly used for teaching and learning it has been acquired, maintained and operated by AV departments. At the time, this was appropriate as the technology was a mainly a teaching and learning one and as it used ISDN had little to do with the IT department.

Now that most videoconference equipment uses the internet does it make sense to change who owns it?

Impact of Future Technologies

Many universities are considering or installing Unified Communications (UC) suites that include visual communications technologies. UC suites are network technologies and naturally they are/will be owned by IT departments. This will increase the pressure on the transfer of ownership of videoconference from AV to IT departments.

Concerns about Ownership

The concerns about which university department has responsibility for videoconference equipment generally stem from the different corporate cultures of IT and AV departments.

AV departments have gone from providing overhead, slide and movie projectors to providing high technology such as data projectors, videoconference and (in some cases) podcasting services. They have a culture based on enhancing teaching and learning.

Generally IT departments have developed from Administrative Information Services. Since the age of the personal computer they have grown from supporting the functions of administration to supporting the computing needs of the entire institution. They have a culture based on supporting all computing needs.

Many AV departments have cultures based on enhancing on teaching and learning.

Many IT departments have cultures based on supporting all computing needs.

Anecdotal evidence suggests that in the USA the ownership of videoconference has shifted from AV to IT departments in many institutions.

In Australia many AV departments retain ownership of videoconference. If ownership is to move to IT departments, efforts must be made to maintain an approach to videoconference ownership that is predicated on enhancing teaching and learning.

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University of Wollongong
April 9, 2009

PART FIVE: CONCLUSIONS AND RECOMMENDATIONS

Conclusions from the investigation

The most surprising realisation which emerged in the project, was that there is very little scholarly literature against which to benchmark. Lengthy and detailed searches of academic literature and corporate literature reveal little other than vendor initiated information for comparison of current practice against best practice. The analyses presented by consultants as a result of national and international scanning and research added some insight but, again, little other than manufacturer data concerning usage was available in published form.

From our own investigation through sector surveys (Vale, 2009, Appended), a second significant realisation emerged. The data revealed that most institutions have no strategy or policy framework underpinning purchase, implementation or support for rich media technologies as an institutional focus. Further investigation of corporate, government and broad education sector usage of rich media technologies used a case study approach based on snowball sampling and this revealed isolated examples of successful implementations in education and corporate sectors. However, no firm data could be found of sustained best practice in other Australian entities despite much anecdotal information. Nevertheless, the case studies documented within the study reveal some well executed implementations within organisations such as The National Centre of Science, Information and Communications Technology and mathematics Education for Rural and Remote Australia (SiMERR), The University of Southern Queensland and the Regional Institute of TAFE South Australia (Smyth, 2009).

That some corporate entities such as the Lend Lease Corporation set out to transform their business internationally over a decade ago and now have rich media technologies so embedded in their business plans that they no longer gather data on the cost and efficiency savings it provides (Berriman, 2010a) shows how far behind the technology's potential current implementations lag.

From the consultants' reports (Berriman, 2010b; Greenberg, 2009) it appears that the best way to effectively utilise rich media technologies within the higher education sector, is to **embed them as part of the organisations' DNA**. This supports reliability, viability and sustainability which are all required to maintain successful implementations that realise predicted cost savings and efficiency/productivity gains needed to support the development of the organisation into the future where these technologies will become more common practice, especially for administrative and research work and increasingly for learning and teaching.

Our conclusion is that rich media technologies are generally not well enough defined within organisational plans, tend to be seen as interesting add-ons rather than core systems within the organisation and are not exploited for their potential to provide significant reductions in travel budgets. They have potential to contribute to virtual learning environments and are not adequately utilised for administration and research where **efficiency gains and cost savings could have significant impact on organisational viability and staff sustainability** which is being eroded by travel burnout.

Recommendations to the Higher Education Sector in Australia

If rich media technologies are to become viable and sustainable technologies contributing to institutional and sector growth and development in an increasingly visual digital world where reduction of environmental consequences of travel is seen as desirable, the project team recommends the following for individual institutions and the sector:

- Rich media technologies need to become **embedded into the DNA of the sector** if they are to have a positive impact on teaching and learning outcomes. This requires negotiation of standards for seamless inter-institution connectivity via existing AARNet networks which institutions already pay to access.

- User support should be embedded in policy, costed into purchase and maintenance planning and be provided by appropriately experienced educational technologists and videoconference technicians rather than generic IT staff. Rich media technologies are support tools with great potential for teaching and learning in synchronous spaces but this core characteristic (synchronicity) differentiates them from other e-learning tools which can survive technical failure without the need for immediate support.

- **Desktop applications should become the norm for person-to-person linkages** using H323 or similar standards which enable multipoint linkages regardless of vendor standards using software products readily available.

- **Room systems should be maintained** for group meetings and some learning situations.

- **Behavioural change strategies** aimed at encouraging the use of rich media technologies as a **low cost alternative for regular intra- interstate, national and international** travel are required as part of comprehensive institutional planning and strategy.

- **Institutional tracking of cost savings and efficiencies** should become embedded into financial management across the sector as part of reporting against environmental damage reduction targets and development of funding approaches for sustainable use of rich media technologies.

- **Organisational champions** demonstrate leadership because they provide exemplars for others to follow and should be **supported by sector partnerships and institutional management**.

- The scholarly research void is a risk factor for the future and so **further research should become a focus for sector and institutional support as a priority** so that the sector is not reliant on vendor information to inform practice.

Given our research which indicates that rich media technologies are sinking into the wash of the e-learning tide in Australian higher education, rather than being on the crest of the wave breaking into the social communication software swell, we hope that these recommendations carry rich media technologies some way towards their place as lighthouse technologies for administration and research while innovations in pedagogy for learning and teaching emerge. We similarly hope that others will follow our direction and build on this work.

PART SIX: DISSEMINATION

It became apparent early in this project that it was going to be very difficult for the researchers to reach the audience who hold the key to the responsible acquisition and management of rich media technologies. That is, the financial controllers and policy makers in higher education institutions. Therefore, the project members have endeavoured to disseminate as much information about rich media technologies in as many places as possible during the project. Along with the list of publications below, project members have also participated in AARNet Workshops and Roadshows (2008 and 2009), the Learning and Teaching week at the University of Southern Queensland, and have participated in a radio broadcast.

Andrews, T., Caladine, R., Smyth, R., Tynan, B., & Vale, D. (2008). *Rich media technologies and uncertain futures – developing sustainable, scalable models*. Paper presented at the Hello! Where are You in the Landscape of Educational Technology?, Conference, Melbourne, 30th November -3rd December, ASCILITE.

Andrews, T., Smyth, R., Tynan, B., Berriman, A., Vale, D., & Caladine, R. (2010). Mobile Technologies and Rich Media: Expanding Tertiary Education Opportunities in Developing Countries In A. G. Abdel-Wahab & A. El-Masry (Eds.), *Mobile Information Communication Technologies Adoption in Developing Countries: Effects and Implications*: IGI-Global.

Andrews, T., Caladine, R., & Smyth, R. (2010). *Utilizing Students' Own Mobile Devices and Rich Media: Two Case Studies from the Health Sciences.* Paper presented at the eL&mL 2010: The Second International Conference on Mobile, Hybrid, and On-line Learning Conference, St. Maarten, Netherlands Antilles, February 10-15, International Academy, Research and Industry Association.

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