

## REPORT FROM THE COLLEGE ACADEMIC DIRECTORS OF ELEARNING

### ELEARNING GOVERNANCE GROUP MEETING, 1 SEPTEMBER 2005

In this report we would like to make one commendation, raise three issues of concern, and make one recommendation.

#### ***Commendation: Discussions with the ELearning Review MRG***

We would like to applaud the way in which the Project Officer is seeking input into the discussions about the LMS review. We have been able to have broad ranging discussions about a variety of issues.

#### ***Issue 1: Use of digital images and the copyright issue***

We would like to express our concern about the lack of clarity about the guidelines associated with the use of digital images. Practicality is also an issue. It is important that the University has agreed guidelines for the use of digital images in learning and teaching. Discussions with Kate Sexton have occurred but the concerns remain unresolved. We have been advised that the Library has requested the appointment of a full-time Copyright Officer to cope with the copyright issues and that this has not yet occurred. This has become urgent. There are many projects in-hand that require images and the only safe advice we can give people is to use their own images.

#### ***Issue 2: Launch of the SORRT project***

The issue of digital repositories and making use of items in the e-learning environment has not advanced as previously expected and this is holding up further forward planning on projects. It has become urgent. We understand the SORRT project will deliver a one-stop interface for accessing images in the University. We also understand that associated with it will be resolution of a central repository for images where a faculty or school repository is not tenable. Whilst we have been encouraging our colleagues to work on image bank projects under the umbrella of the SORRT central project, these college projects are now being held up as SORRT was not launched as anticipated in July.

#### ***Issue 3: Streaming Server***

A widely supported application for a university-wide streaming server and associated application software was submitted to the 2005 Sesqui Teaching Equipment Fund last year. At the meeting of the selection committee (22 November 2004), it was agreed to take this application to the CIO with a request that this issue be addressed in 2005 for implementation in 2006. The application is attached.

Whilst some aspects of this application are currently being investigated (eg. the trial of Breeze as the application layer that will improve the quality of the streaming (at least for the engineering project; upgrades to PCs in lecture theatres for file capture) there is an urgent need to address the whole issue and begin to answer the questions: What are the issues of capture?; of disc space and distribution?; of repositories? How can streaming be provided, and improved?

The University needs an enterprise solution which is a central facility, with central management and maintenance. Potential users need some reassurance that this will be provided and some sense of when that provision will occur.

#### ***Recommendation - central streaming server solution***

- That this issue be referred to MRG
- That the pedagogical trial of breeze currently being conducted through MRG be complemented with an enterprise trial
- That MRG consider that the eLearning initiative be asked to trial an enterprise solution for streaming
- That the eLearning initiative be asked to advise MRG on the costs of conducting such a trial
- That the eLearning initiative provide a written report on the quality assurance and management issues for an enterprise streaming solution to MRG

**Attachment:**



**The University of Sydney**

## **2005 SESQUI TEACHING EQUIPMENT FUND**

### **Context**

This application has arisen out of discussions with representatives of faculties whose deans are signatory to this document (see page 6) and representatives of a working party of TVAC with representatives from ITS, FMO, and the Office of the PVC (Teaching and Learning). Signatures of all these parties are found at the end of this application.

Investment by the University in this application is a significant step towards an enterprise solution for supporting the student experience with streaming technologies. It is not a total solution, as such a solution will require ongoing investigation and support of key stakeholders. Nevertheless, it is of significant strategic importance for a number of faculties, ITS and FMO to warrant their support of this application.

Benefits of a cross-faculty support to streaming technologies supported by university infrastructure and services are that it: removes redundancy, informs the institution of appropriate approaches to the management and evaluation of the service, allows for standards to be developed and provides minimal oversight that can help with quality assurance processes. By piloting key aspects of the system with the main university stakeholders over the next 12 months, a robust, useful service to staff and students is the goal that the stakeholders have.

**1. Proposed location of equipment:** Information Technology Services Building, H08

**2. Name of item of equipment:** Centralised Video/Audio Streaming Server for USyd

Streaming technologies in this application are ...

the ability to convey audio and video materials to students over the internet or the University's intranet. For high band width and a controlled number of users, this can provide access to lectures/seminars missed. For low bandwidth and a high number of users, this solution is a scalable first step. In this case, audio and video would be used to augment the meaning of the materials delivered to students in learning management systems.

A key aspect of the usage of the technologies is the number of concurrent users. A capacity for 200 concurrent users can, with proper management, provide access to over 10 000 students per week. How this usage will work in the university environment will not be clear until we have some experience of the usage of the technologies in the face of faculty demand and management processes through ITS.

**3. Price quoted at date of application:**

A \$ 319,000

Less contributions in 5 brings total TEF grant to \$159,000.

During the TEF application process, the signatories to this application became aware that there were other faculties putting in similar bids for streaming technologies. Satisfying all these applications would have resulted in redundancy, loss of economies of scale and quality assurance

problems that could not be solved without support being embedded in existing structures. Instead of providing the TEF committee with five separate applications for approximately \$50K that would have satisfied only 5 faculties in limited ways, this application pools support into one application that requests funding at (or less than) \$32K per faculty for the faculties involved for the benefit of 17 faculties.

#### **4. Is this equipment to be used collaboratively with staff from another Faculty?**

Yes

#### **5. Contributions from other sources:**

ITS	\$45,000
FMO	\$100,000
ICT in T&L initiative	\$15,000
<i>Total contributions</i>	<i>\$160,000</i>

#### **a) Outline who will use the equipment and for what purpose.**

The following descriptions of uses are in relation to staff across the university who are looking to capture lectures/seminars for students who have missed them, or to augment videoconferencing teaching with interactivity. By locating the management of the streaming technology services in ITS, leverage against existing infrastructure and economies of scale extract more from the usage of the technologies than a series of faculty-owned installations.

- Some staff (especially those already engaged in the growing use of e-learning across the university) will use these technologies to enhance the meaning of online materials with audio and video materials. Used judiciously, this is perhaps one of the most fruitful areas of use of streaming technologies.
- Some staff will use this equipment to capture key lectures/seminars (audio/video). This is a less attractive use of streaming technologies as it can be misused and create passive learning experiences. Solutions to a poor use of streaming are in developing a culture of expertise and evidence-based decision-making about how to best use the technology, rather than not investing in the technology at all.
- Some postgraduate coursework masters courses are trialling streaming technologies as a solution to geographically dispersed students.
- In other universities, streaming technologies are used with desktop cameras for meetings for postgraduate supervision. Small-group meetings using these types of technologies are a fruitful area of use for staff unable to always meet up face-to-face with research students who may have significant work or family commitments.

#### **b) Detail how the purchase is consistent with Faculty and Departmental strategic directions in teaching. In doing so, please indicate any recent Faculty publications on teaching, teaching performance indicators, and any other measures relevant to the discipline.**

Strategic directions for the faculties who are signatory to this application, and to most other faculties across the university, include a sensible and practical use of e-learning to supplement a predominately campus-based, research-led student learning experience. Evidence of activities in the faculties signatory to this application already heading in this direction, and other faculties involved in similar activities, that would be significantly enhanced by the use of streaming technologies include;

- a) Significantly web-dependent flexible Masters coursework programs;
  - a. Pain Management in Faculty of Medicine (approx 60 students)
  - b. Project Management in Faculty of Engineering (approx 196 students)
  - c. Veterinary Epidemiology in Faculty of Veterinary Science (approx 35 students)
  - d. Sexual Health Online in Faculty of Health Sciences (approximately 40 students)
  - e. Study Age in the Faculty of Health Sciences (approx 45 students)

These new forms of coursework masters programs are creating innovative opportunities for teaching and learning as well as new income streams for the University. They are seriously hampered in their ability to provide rich materials that are competitive in relation to other universities competing in the same market.

b) There are approximately 1400 unit of study websites across the university serving some 40 000 students. Unit of study websites are evidence of a strategic commitment to e-learning by faculties. This is a use of e-learning to augment and enhance the quality of a predominately campus-based learning experience. The streaming technologies in this application will add audio and video value to these websites.

Some caution is required with the implementation of this technology into the student learning experience. Poor use of the technology can result in the capturing of gigabytes of audio and video materials that no one ever uses. The wholesale capture of lectures via streaming and then churning it out to students in place of face-to-face lectures is not far removed from similar video-recorded attempts in the 1970s which provided passive learning experiences which left students and staff dissatisfied and would do nothing for the reputation of the University of Sydney. The management model for streaming technologies in section e) of this application can address these sorts of issues.

In terms of the criteria for this section of the application, given this is a university-wide initiative, publications and TPIs are subsumed by a broader concern for whole-of-enterprise solution.

**c) Provide a budget for the equipment and include a copy of the quotation. Provide details as to why the vendor has been selected ahead of any alternative suppliers, in order to satisfy University purchasing policy**

The streaming solution in this application involves more than one provider and its cost is over \$100K. Consequently quotations are not available. The costs of budget items 1-7 have been provided by the University ITS who will oversee the tendering process.

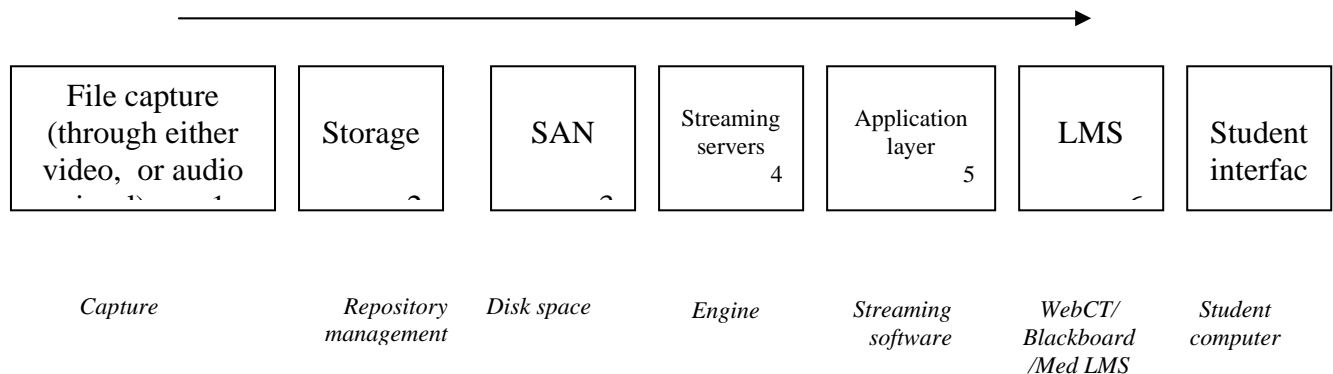
N o.	Description	QT Y	Ex-GST \$AUS	Comments
1	Videoconference to Streaming engine (Capture) – captures up to 5 concurrent recorded streams	1	\$45,000	Estimates provided by Electroboard and Broadreach
2	PC upgrades in Lecture Theatres	35	\$100,000	Approx \$2500 per unit giving a total of \$88K, \$5K to cover installation and recording software setup, \$7K other networking costs
3	Mobile digital audio/video (20:4) recording devices	25	\$10,000	Estimate for USB mobile audio/video recorders for capture in teaching spaces
4	SAN Disk Space	1	\$38,000	Cost of new storage node on SAN.
5	HP Server for audio/video Streaming Distribution	2	\$38,000	Estimates supplied by Craig Hamilton, preferred supplier for the University (Hewlett Packard price list for Syd)
	Streaming transcoding software	1	\$15,000	One off licence fee

6	Application layer – software licence to add value	1	\$63,000 *	Some key competitors in the application layer for streaming services are macromedia breeze <a href="http://www.macromedia.com/software/breeze/">http://www.macromedia.com/software/breeze/</a> and Horizon wimba Open campus <a href="http://www.horizonwimba.com">http://www.horizonwimba.com</a> . Pilot required to determine ongoing costs and management issues. Annual licence fee approx 20% of initial licence costs
7	Installation, configuration and Integration with LMS etc....	1	\$10,000	Estimate of project management, installation services and development required to integrate with LMS
<b>Total Ex-GST</b>			<b>\$319,000</b>	

\* A robust trialling period should occur before the university invests in a licence for streaming software. One of the main software providers, macromedia, have promised to make a trial version available, macromedia breeze, at no cost and hosted on our infrastructure (see appendix 1). The trial should investigate serious user issues (number of concurrent users), scaling issues (the cost it would take to increase numbers of students) ongoing maintenance costs, and management issues (who receives access if the high end of the streaming software is limited for budgetary reasons), not to mention the pedagogical issues involved in a highly innovative learning environment. The trial will be coordinated by ITS and the ICT in teaching and learning initiative.

The structure of the solution is shown in figure 1.

Figure 1 – Streaming Technology Infrastructure



In Figure 1, digital files to be streamed containing unit of study materials go through the following stages;

**1 Capture** - captured files occurs through a number of ways; through capturing face-to-face lectures/seminars using audio-visual equipment, through capturing video-conferencing broadcasts, or through editing materials at desktops. This application provides support for the first two ways. It does not provide capturing support for the third way.

**2 Repository Management** – Wholesale conversion, editing, management, archiving, description, retrieval and usability of digital media is not included in the scope of this proposal. International standards exist, and the University Library is currently a partner in a DEST funded project to create a best practice model for the creation of repositories to support these core activities. The Library is also working on extending the Library Management System to incorporate media management. Key

issues in this area include 'How will the system support quality of files, formats - what standards will be used?

**3 Disk space** in the SAN storage node

**4 Streaming servers** – for max 6000 concurrent users at 56K telephone access (3,000 per server); or 1800 concurrent users at 500K LAN access (900 per server).

**5 Streaming software** – Integrates with LMS and adds significant audio and video functionality to the student learning experience. A common application layer used by CoCo, the research centre in the faculty of Education, and the Post Graduate Project Management degree in Engineering, is Macromedia breeze.

**6 LMS** – This infrastructure can be drawn upon by all faculties using LMSs

**7 Student** – Student use of the streaming technologies.

**d) Detail what other costs (including staff) and facilities are required to install, operate and maintain the equipment and indicate how these costs will be met.**

This application is a significant first step towards a whole-of-institution enterprise solution to the streaming and e-learning needs of students. As such, there are ongoing costs and if there had not already been strategic planning for this level of technological solution amongst the stakeholders, it would not have been possible to put this bid together. Significantly, streaming technologies are part of the ITS strategic planning as it leverages investment in the video-conferencing bridge already and FMO are looking to upgrade their AV facilities in teaching spaces which makes ongoing audio-visual capture costs more sustainable.

Streaming technologies are also part of the University's ICT in teaching and learning planning. The ICT in teaching and learning initiative in the Office of the PVC (Teaching and Learning) is working with colleges to roll out a strategic use of e-learning across of faculties. As such, there are approximately 4000 hours of ICT staff support available for each college annually. When faculties in any of the colleges choose to include streaming technologies as a key part of their strategic goals for ICT in teaching and learning, then there is some support for academics wishing to integrate streamed materials into the design of unit of study curriculum materials.

Responsibility for different dimensions related to the technologies is most appropriately distributed across the university. Maintenance costs of items 1,4,5 and 6 in the budget table will rest with ITS, maintenance costs of item 2 will rest with FMO, staff training of the use of the application layer can be supported by staff from both ITL and the ICT staff in the Office of the PVC (Teaching and Learning), management of the portable audio devices can be facilitated by the ICT in Teaching and Learning initiative. The trialling of the application layer should involve key stakeholders from faculties, ITS and the ICT in T&L initiative.

Other costs, such as file conversion costs would need to be worked into the management model of the streaming technologies.

**e) Other important related issues**

**A management model for streaming technologies**

To make the streaming technology services available in appropriate forms across the University, this application recommends that a working party chaired by a nominee of the DVC (Academic) be established with representatives from stakeholders such as FMO, ITS, the University Librarian, the University QA and ICT Governance Group, TVAC, the Office of the PVC (Teaching and Learning) and faculties with a demonstrated interest in streaming technologies such as Economics and Business, Medicine, Engineering, Education and Social Work, Arts. A

working party with the right sort of mix is necessary to ensure an equitable, sensitive and appropriate management approach to the use of streaming services across the University.

### **Staff control over use of streaming facilities.**

An important consideration in the implementation of streaming technologies in the University is consent of the teachers. At no stage should lectures/seminars etc be captured for streaming without the authority of the teacher who is delivering the lecture/seminar etc. An email to ITS/FMO (whoever ends up managing the streaming service) from the relevant staff member before streaming facilities are used is one example of how the privacy of staff can be maintained.

### **Copyright issues**

Copyright and IP issues are not included in this proposal and would need to be considered in the fully formed system. These should be addressed as part of the ongoing management processes for streaming technologies. Part VA of the Copyright Act allows for the streaming of television and radio broadcasts received in Australia and is covered by an agreement with Screenrights which involves royalty payments based on EFTSU. Any programs recorded off air must be used for educational purposes and access must be restricted to staff and students of the University. There will be a need for adequate authentication procedures to ensure that this restriction is observed as well as mechanisms to ensure that the information required by the Screenrights agreement is collected and maintained. The reproduction and streaming of commercially produced videos, DVDs and recorded music is not permitted under the statutory licence provisions of the Act and can only be carried out with permission of the relevant copyright holders.

### **Pitfalls**

There are some pitfalls that should be avoided in the management of streaming services in the student learning experience. They should be evaluated in terms of how students experience the technologies, what they find helpful and what they find useless. For example, lectures that are streamed should be done so in small 5-8minute chunks, not in whole 60 minute lecture formats. This type of awareness of how streaming technologies may be used reveals some implications for ongoing costs. Preferably, post-editing of captured lectures/seminars should be kept to a minimum. The quest for broadcast quality materials for *all* audio/video learning objects is not sustainable for a university environment.

### **Staff use of streaming facilities through desktop software solutions.**

Staff are already busy with teaching and research. Not all staff members will wish to develop expertise in desktop software to enhance learning materials through streaming. Like other demand for educational software such as the University LMS, WebCT, use of streaming technologies should be determined by individual staff demand and in strategic planning when there is sufficient support available. There should be no expectation for it to become part of all teachers' approach to teaching.

### **Staff usage of streaming technologies through audio-visual solutions**

It is useful to consider two types of AV solutions for staff; augmenting current upgrades of computers in centrally-booked teaching spaces to allow for streaming solutions and the use of portable equipment, such as MP3 units or DVD units, for staff to use in non-networked teaching spaces. Both options are needed for flexibility for staff. Flexibility in the streaming service to staff and students is required so staff can;

- collect a good quality digital portable mike and that location to be easy for them (in time including after hours teaching) and place.

- record WHEN they want it to (and not simply at a pre-determined time and for start and finish). ie. Small and easy to attach to self and simple to turn off and on
- record WHERE they want to (and not just a connected theatre – it could be a field trip or a small tutorial room or a research seminar room with a guest lecturer
- deliver the memory stick to a ITS unit for simple compression and upload ie. Simple to remove and simple to upload so a link is then sent to the lecturer to place on an LMS like the digitised service in the library does for text-based reference material
- have all copyright issues are properly dealt with through the CORS service in the library
- have all archiving issues are properly dealt with through ITS
- have statistics for evaluation easily accessible eg. hit rates and length so we can know how students are using it

This sort of planning should be included into the roll out of streaming technologies.

### **Staff usage of streaming technologies through video-conferencing solutions**

Video-conferencing is used across more than one 100 end-points across the university. Provided staff authorise use of the streaming technology to capture their lecture using item one in the budget, then students will be able to review seminars, lectures etc for the purposes of revision. This solution also supports quality desktop cameras for point to point broadcasts (less than \$1000) which are likely to be increasingly used for research supervision and small tutorial solutions as the technologies become cheaper and better understood.

**f) Signatures of Faculty Deans supporting this bid**

Dean of Pharmacy \_\_\_\_\_ high/medium/low priority

Dean of Economics &  
Business \_\_\_\_\_ high/medium/low  
priority

Dean of Medicine \_\_\_\_\_ high/medium/low priority

Dean of Health Sciences \_\_\_\_\_ high/medium/low  
priority

Dean of Arts \_\_\_\_\_ high/medium/low priority

Dean of Science \_\_\_\_\_ high/medium/low  
priority

*Signatures of stakeholders supporting the Dean's position on streaming technologies*

Assistant Director FMO \_\_\_\_\_

Deputy Director ITS \_\_\_\_\_

University ICT in  
Teaching and Learning Coordinator \_\_\_\_\_

**Appendix 1**

**Evidence of free trial of application layer from Macromedia**

From: David Mellers <dmellers@macromedia.com>  
To: r.ellis@vcc.usyd.edu.au  
Subject: RE: Macromedia Breeze - Sydney University  
Date: Mon, 27 Sep 2004 17:57:46 -0700

Hi Rob,

This link <http://www.macromedia.com/go/breezetrial> will allow you to activate a Breeze trial account on our ASP service. You should receive an email from Macromedia within 24 hours of submitting your details containing your Breeze Trial account information. Please let me know if do not receive this.

Additionally, if you would like to evaluate Breeze within your firewall, I can arrange to have a trial CD sent to you upon request.

Please feel free to book us anytime for a demonstration and do not hesitate to send any questions regarding Breeze to me.

Best regards,

David Mellers  
Major Accounts Manager  
Macromedia ANZ