

A Networked Multimedia System

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This report is a continuation of the previous report dated November 1998 in which the setting up of the project was detailed. Therefore, following the recommendation of the TLQIS panel we present some further evaluation. Some of what follows was originally presented in the November report and is included for the sake of completeness and clarity.

Aims:

To effectively develop the campus ATM network within the areas of Music and Media to enable an interactive and remote learning environment. Additionally, it is envisaged that students will be encouraged to be self-critical regarding their assessed work by being provided with the means to have a better understanding of what is required of them. This will be encouraged by publication of sample tutor assessments, criteria of assessment and a self-assessment checklist that students can apply before submitting work to tutors.

- To provide examples of good practice in a range of Music and Media modules.
- To make the departments' assessment strategies transparent to students.
- To promote the use of computers in education.
- To encourage the development of computer-literate music and media professionals able to work effectively within the new virtual networked communities.
- To further enhance the global profiles of the Music and Media departments and hence the university.
- To explore programmed learning opportunities for people wishing to access higher education.

Developments:

Part of the fundamental (and unwritten) rationale for the purchase of a web server and accompanying software was to provide students and staff in the two departments with an environment that was unavailable through standard AIS access. This environment gives departmental members access not only to large volume digital storage but also to Internet technologies such as CGI techniques, Perl and C++ programming for the Web and a host of web multimedia technologies such as Real Audio and Video, Director and Shockwave movies etc. that at the time were unavailable within the AIS services and, as far as we are aware, are still unavailable. Implicit in this rationale was the thinking that students and staff should have full use of these facilities including the design of web pages, CGI programming and large capacity file storage. Both departments run modules in various degrees that make explicit use of these technologies while other modules have fringe benefits. Early in 1998, the Faculty of Art & Design Technology 'bought' their way into the project in order to make use of the facilities outlined above; in order to do this, the Faculty provided an extra 64 Megabytes of RAM for the computer and their own 9 Gigabyte hard drive.

Currently there is a total of about 32 Gigabytes of hard disk storage which includes the 2 Gigabyte system drive, the existing 2 Gigabyte Music drive, the 9 Gigabyte Media drive purchased under TLQIS, the 9 Gigabyte Art & Design drive (above) and another 9 Gigabyte drive purchased by the Music Department.

Further developments beyond the original plan include Internet radio broadcasts (WebAir – a student-run Internet Radio station), bitcasting of conferences, use of the technology by post-graduates and web exhibitions which are detailed below.

All departments involved contribute both financial and human resources to the project. For example the Media Department has allocated funds to buy in external expertise to redesign its web site to provide easy access to educational materials.

Course/Programme Details and Description of Events etc.:

Currently implemented:

The items below were fully described in the November report and so are simply listed.

- [Music Studio Booking System](#)
- [Multiple-choice Tests](#)
- [Teaching & Learning \(explicit\)](#)
- [Bitcasting](#)
- [Student Guestbook](#)
- [National Rock & Heavy Metal Archive](#)
- [Exhibitions](#)

Additional implementations as detailed in the November report and now on-line:

- [The Music and Media Departments student handbooks](#)
- [A selection of equipment tutorials](#)
- [ComeXos \(Composer's Experimental On-Line Suite\)](#)

In addition, the following have been implemented:

- [Examples of past students audio and written work for the Music Technology & Studio Production Electives](#)

Final level Music Department students taking the elective in Music Technology & Studio Production may now browse a set of past students' work via the web. Included here are Real Audio files, the students' written evaluation of their work, criteria of assessment and assessors comments and marks. All work is presented anonymously and is available only to those accessing the web pages within the University's domain (146.87.*.*) or via the University's authorisation proxy server. It is envisaged that this will expand to other subject areas in the near future.

- [FTP transfer of audio and video files between the various studios and edit suites](#)

Music and Media students each have a shared directory on the web server with which they can upload and download files between any other networked computer either within the University or remotely. There are four advantages to this: students do not have to buy their own (usually expensive) storage media; it overcomes the problem of restricted file size on most media; departmental funds are not required to equip each workstation with suitable storage devices and it ensures that students are not tied to a single workstation ensuring that queues for a specific machine are avoided.

- [Music Technology & Studio Production Assignments](#)

Music students studying Music Technology & Studio Production in whatever level may now browse (and print if they wish) the set assignments. It is envisaged that this will expand to other subject areas in the near future.

- [Miscellaneous Student Utilities](#)

These include subject bibliographies, useful mathematical formulae and acoustical tabular information.

Evaluation:

At the start of April 1999, all students making use of the web server in whatever fashion received a questionnaire for the purposes of evaluation - copy appended. The response was not 100% but those questionnaires returned were considered for this report.

The students were asked to score the various aspects of the project as follows:

Student Information on Music Department Web Pages ~

The average score was 4 - positive. Examples of comments include:

"Yes, it has quite a lot information. One think I am pleased about it the response of MT&SP examples of past years with the Real Audio G2 recordings."

"I have found many parts of the site very useful, particularly the external links page. Also, the audio files containing past students work has been of great help in judging the standard I should be aiming for in my work."

"The site is well structured and possible new students can gain a much better idea of the University through looking at the pages. Quite unique ideas include Audio and Video clips available over the web giving them an excellent representation of what the department does – and what they can achieve."

"I really look forward to the better photos for the Big Band."

Studio Booking ~

The average score was 3.5 - ambiguous to positive. Examples of comments include:

*"Advantages: - You can book studio time wherever you are (university, back home)
- Reduces paper work
- There is a list of the whole equipment available*

*Disadvantages: - People who have Internet access from home are luckier to get the studio time that suits them (i.e. the best time to book studio time is after midnight when a new day comes for browsing. If you try to book studios in the morning hours at the university you won't find too much availability)
- The three hour sessions – Sometimes they are inconvenient."*

"Easy to use and effective."

"Advantages: Book anytime, view availability

Disadvantages: Booking period too large means studios are booked busy for weeks, Too many system failures meaning lost bookings e.t.c."

Music, Audio & Internet Module ~

The average score was 4.5 - positive to very positive. Examples of comments include:

"Setting up personal webpages is a unique opportunity to gain skill in web-design."

"Nowadays, University should provide space for students to put up their own web page. Also very important for the students promoting themselves."

Real Audio Internet Radio ~

The average score was 4 - positive. Examples of comments include:

"Great opportunity for students to put things to practice! Shame that we don't have fast enough network and enough spare PCs for other students to listen to what's on air."

"It is a good experience to learn more about Internet and how the streaming media work."

" I wasn't involved in the production, but listening to the archives while working hard is nice!"

"Absolutely. We broadcast regular Internet Radio slots live and are able to use the server to store our broadcasts, respond to the listeners using Internet Relay Chat and stream live high quality signals directly to the University. Pre-show preparation also uses this server to download the latest news and reviews direct to the Music Departments computers."

FTP access ~

The average score was 4.5 - positive to very positive. Examples of comments include:

"There is no other way of efficiently transporting large files across the network, and with only 2 P.C's with zip drives in adelphi AIS, the FTP has proved invaluable, and saved me a fortune in magnetic media. Also useful for temporary storage of big audio files."

" This is a very good service. But the Mac in Studio Z hasn't got any FTP program. For example when you are in digital edit suite and you are working with cool edit or waveLab, you can upload the file to the server, then go down to studio Z download it and mix it with the trinity midi sounds. I forgot to mention that studio Z hasn't got any plain wave editing program!"

"Upload fast but download very slow in DigiEdit-Suite"

General ~

The average score was 4.5 - positive to very positive. Examples of comments include:

"I think it has meant that the IT/Internet service provided to Music students has been much more tailored to their needs and wishes - infinitely more so - than standard AIS access would ever have allowed. Generally I think the Music Dept.'s web server is being used very well and beneficially and is pushing forward in this area as a result. Despite a lack of financial support it has proved itself to be an invaluable asset to the department. No doubt students' knowledge in this area has also increased as a result."

"For some more than for others."

"The server is extremely useful for me (particularly with reference to the Internet Radio) and is certainly a benefit to many Music Department students. It has provided them with an opportunity to participate in the new and rapidly expanding world of Internet broadcasting and Real Audio transmission. It has allowed them to develop skills in HTML programming and provides invaluable space for work and projects and as more students learn about the FTP facilities, it could become an invaluable tool in overcoming the file transfer problems between studios. I still think that there is still more potential to be squeezed out of the server. If this was coupled with some more basic training (maybe a short instruction manual/email??) on exactly how to use the server software and what it is capable of would benefit students greatly."

" It is an excellent resource for research and a huge learning opportunity. I now have skills in HTML web page design, which will prove very useful, when I graduate. Having a website for my band on the music department server has been a great opportunity to 'distribute' our music across the world."

"Yes, I believe it has given more opportunities for the student of music and media department."

"I think having the students involved will make us feel the greater sense of belonging. With our own web server, we are more autonomous and have more control. University web pages

are too official and do not look appealing. I won't recommend my friends to visit the site. I think our web pages are much better though there's still room to improve."

Reflection and Conclusion:

On specific aspects of the web service and following student evaluation, we would like to add the following:

Student Information on Music Department Web Pages ~

This is obviously successful and will be expanded to other subject areas in due course.

Studio Booking System ~

This previously existed in a paper-based system and involved students queuing outside the studio managers' office at preset times during the week in order to book studios and location recording equipment. This was adjudged for a long time to be inefficient and costly in terms of time both for the students (over 200) and the studio managers. Under the new system, students can now book studios and equipment up to 4 weeks in advance simply by logging into the system at any time and from any computer (both on and off campus) using a standard web browser such as Netscape. This makes a more efficient use of both students' and studio managers' time. The implementation of this system involved detailed discussions with academic staff and studio managers and involved many improvements to the previous system. Transferability was mainly a question of encoding (and improving) the existing practice. Enhancements include student contact details, email lists, tracking of equipment and breakage and the 'Ye Olde Salford Groat System'. This last is an attempt to make the students' experience of booking studios and equipment as equivalent as possible to the 'real world' – previously students booked whatever studio was available and for whatever work they wished, no matter how wasting of other equipment in that studio. All students are allocated a Groat grant according to the degree level they are on, all studios and equipment are costed according to projected usage and inherent cost of the facility and it is up to students to use their Groats wisely over the year. Studio managers have the ability to control 'inflation' by altering the cost of studios according to availability and usage. Making some studios more expensive to hire than others and putting the decision making in the student's hands seems to have led (at this early stage) to a more efficient usage of the equipment contained within studios; no longer, for example, do students book a fully-equipped 48 track recording studio to transfer audio from DAT to cassette as this would be a waste of Groats.

Some students have mentioned possible advantages that access from home might give out of University opening hours. To explain this, the system is set up to increment by day (switching at midnight) and a student accessing from home at, or shortly after that time, could be considered as having an advantage over one who can only access during University hours. The web server access logs show that few log-ins occur at that time compared to the number of students who could. However we will continue to monitor the situation which, if necessary, can be changed to counter this perceived advantage.

There have been some system failures identified by students. Some of these are due to student error, some are due to programming error and some are due to failure of the network at critical points in time. Some of the programming bugs were able to be corrected quickly and when the system is reviewed fully at the end of this academic year, those other errors which can be corrected will be and strategies devised to make the use of the system less susceptible to outside influences.

Music, Audio & Internet Module ~

An obviously successful aspect of the project. Those students who are able to present a good case for web-based publication of their work or use of Real Audio server are able to do so. It should be noted that Salford is one of the few universities to deny students web space and in this respect we are well behind our sister institutions in the UK and Europe.

Real Audio Internet Radio ~

Again a successful aspect of the project. In particular, WebAir has attracted a small band of regular listeners around the world some of whom are actually applicants for the School's courses. Further reaction and on-air communication between DJs and global listeners occurs via IRC (Internet Relay Chat - a real-time text based, multi-user communication tool). Contrary to some perceptions in this university, we believe that IRC is a useful tool and should be more widely available. There are plans to expand the service to include TV broadcasts in the near future.

FTP access ~

Anything which saves the students and departments time and money is bound to be popular and beneficial and this is a case in point. We have investigated the reported slowness of transfer in the Digital Edit suite and have come to the conclusion that the fault is actually within the Adelphi network infrastructure. This has been reported to AIS and we await action.

General ~

The high scoring of this section of the questionnaire leads us to believe that the project has been a success. It should be noted that, due to the nature and number of courses within the departments, not all students have need of access to this sort of facility. For example, not all students study Music Technology & Studio Production and hence will never use the studio booking system. Those who are involved obviously value the service and opportunities provided despite some initial hiccups in the studio booking system.

For our part, we would like to add the following:

The project has developed and diversified into many other projects beyond what was originally envisaged. This is a function of the possibilities offered by web-based technologies and the involvement of other staff members beyond the proposers (for example Art & Design Technology) who have brought to the project their own ideas and experience. On the technical side, maintenance of the web server is almost a full-time job and we have been lucky to have been able to make use of post-graduate students who have had a vested interest in the web server and the necessary knowledge or will to learn. After almost two years of service, the Challenge web server has been used to the extent that it is possibly ready for an upgrade. In addition the usage promises to expand to the point where a more sophisticated machine will be necessary.

Academic staff within the departments have been informed about the projects and the possibilities for their courses (for example, reading lists, assignments, course notes on the web) but most are generally lacking in computer and/or web skills and some previously lacked even computers. The Music Department bought a set of computers for academic staff in October 1998 which includes the software necessary for Internet access and, shortly, we will be undertaking a training schedule designed to guide them through the process of setting up their own web pages for student use. The Media Department, likewise, are in the process of purchasing a similar resource. It is envisaged that the new sub-faculty structure will enable us to more fully integrate the web services offered by the two currently distinct departments.

APPENDIX

Faculty Web Server Questionnaire

Major services offered on the web server:

- Music Department web pages including student information (assignments, past student examples etc.).

- Studio booking system.
- Music, Audio & Internet students' home pages.
- Real Audio - Internet Radio.
- Temporary storage and FTP access for transfer of large files.

Not all of you will have used these services. If this is the case, please leave that section blank.

Where you are asked to rank a service, please rank them from 1-5 where 1 represents the lowest and 5 represents the highest grade. As a guide, the ranking system might be (depending on the question):

1. extremely negative
2. negative
3. ambiguous
4. positive
5. very positive

You are also invited to comment further. These comments might include aspects of the system you particularly like or that have enabled you to do something not previously possible, aspects of the system you do not like or that you would like to see included or improved or reasons for the ranking you have given.

Music Department Web Pages with particular reference to the student information supplied.

The Music Department web pages provide a wealth of invaluable information (Rank): _____

Comments:

Studio Booking System.

This system is an improvement over the old paper-based system (Rank): _____

Comments:

Music, Audio & Internet Module.

Having access to the Faculty's web server means that I have been able to perform tasks that are not possible with standard AIS access (Rank): _____

Comments:

Real Audio Internet Radio.

Involvement in Webair has benefited me (Rank): _____

Comments:

FTP access.

This service has been of benefit (Rank): _____

Comments:

General.

Running a web server has been beneficial to the students within the Music Department
(Rank): _____

Comments: