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Graduating live and on line: the multimedia webcast of the Open Universitys worldwide virtual degree ceremony

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Graduating live and on-line: the multimedia webcast of the Open University's worldwide virtual degree ceremony.

Peter Scott
Knowledge Media Institute

Robin Mason
Institute for Educational Technology

The Open University
United Kingdom
Peter.Scott@open.ac.uk

Abstract: As the foremost international open learning institution, the UK Open University has now webcast two live and on-line degree ceremonies. Most higher education establishments routinely videotape degree presentations and many now broadcast these videos as ways of including remote family and friends who could not attend the physical event. In contrast, the UKOU has presented live ceremonies at which the graduands themselves, plus guests, family and friends were all remote and online! The first worldwide virtual degree ceremony took place at 15:00 GMT/UT on March 31st 2000. This ceremony was the first in the Open University's calendar for 2000, and therefore the first formal ceremony of this leading open learning institution in the new millennium. The second online ceremony took place on 18th April 2001, and further ceremonies are planned as part of the routine of open learning.

Online Graduation

Many higher education institutions now offer students online events associated with different aspects of their learning experience with most focused on giving physically present students access to replays of lectures and seminars. Some of these events are also made available live to enfranchise remote and distance learning students. For such institutions the webcasting of degree ceremonies is merely the logical extension of the videotaping of these events. The webcast gives an electronic broadcast of the video copy of the event which is particularly useful for capturing "headline" events such as the installation of a new Chancellor (eg. Leeds University, 2000) or the award of an honorary degree to a prominent celebrity (eg. University of Washington, 2000). Some institutions are even webcasting routine ceremonies to reach out to the remote community of family and friends of graduands who are unable to attend (see eg. Florida State University, 2001).

The Open University of the United Kingdom is one of the best-known international mega-universities (Daniel, 1995). It has significantly over 200,000 students currently studying with it, and has seen over 2 million students through its virtual doors since it opened in 1969. All its students are remote, learners at a distance, and an increasing proportion are also now online. Whilst most of its student body are located in the United Kingdom or Northern Europe, and therefore able to attend one of the dozen or so physical ceremonies to shake hands with their fellow learners and staff, an increasing proportion are international. Indeed for distance students there may be many reasons why they cannot get to a physical venue to celebrate the award of a degree! The Virtual Degree Ceremony project (VDC) is exploring the use of telepresence to reach out to online students who have completed their studies and wish to take part in a ceremonial event to mark this completion. Traditionally, students and their guests are invited to a physical degree ceremony at which they don robes and receive certificates. We are exploring how online technologies and the events themselves can change to suit a new type of remote learner.

So, in 2000 we selected one course with a small cohort of students to act as an experiment in the use of the web as a presentational venue for a virtual degree ceremony. The first event was the first of the new millennium for the Open University, and aimed at an international body of students who were graduating from our Masters Programme in Open and Distance Education (henceforth MA in ODE).

Whilst this ceremony was targeted at a relatively small body of students from a single cohort of students (the 2000 graduating cohort was only 26) because they were from as far afield as Taiwan, the US, Iceland and Hong Kong, this was felt to be a most appropriate vehicle for their graduation. A web based ceremony was also clearly a most suitable venue for the presentation of an honorary degree to Tim Berners-Lee (of W3C.org). The Vice Chancellor, Sir John Daniel, presided in the Berrill lecture theatre of the Open University campus in Milton Keynes, but Dr Berners-Lee spoke from his workplace in Boston and the students themselves were out somewhere in the world. The second online ceremony took place on 18th April 2001 to the next year of the same cohort (this time with a slightly larger cohort of 36). We expect that the third and future ceremonies scheduled for 2002 will be thrown open to all OU graduands who wishes to attend virtually.

As with the first, the second worldwide virtual degree ceremony (webcast live April 2001) included chat, slides and animations as well as audio and video from the Open University Berrill Lecture Theatre in Milton Keynes in the United Kingdom. However, this time, apart from staff on stage, the auditorium itself was **entirely empty** during the presentation - as all the audience were remote! In addition to the UK based participants, students attended from as far away as New Zealand, Brazil, Denmark and the USA. Our ideas to support the 2001 ceremony included using a student-generated yearbook, and phone-in audio notes to add a personalized flavour to the proceedings. One audio note was selected to be used for each contributing student during the appropriate part of the event. A limited number of virtual tickets were issued to faculty and invited guests in both ceremonies. All students received a multimedia CD containing the ceremony and yearbook along with the appropriate certification.

How did we do it?

In the discussion that follows we will be considering the 2001 ceremony, except where explicitly noted. The first experimental webcast in 2000 was very similar in design and execution save that the systems were maintained and supported by hand. The main goal of the 2001 event was to automate these systems, (see Open University, VDC 2001)

The yearbook

The VDC support website was executed using Allaire ColdFusion™ running under Microsoft Windows NT™. The student database was uploaded to the server and accounts are generated for all users. Student accounts were based on their unique student ID and all security and authentication was handled automatically via email. Eg. A student could change their password via the website form, but if they forgot it, they could ask for it to be reissued and have the new password sent to their mail address.
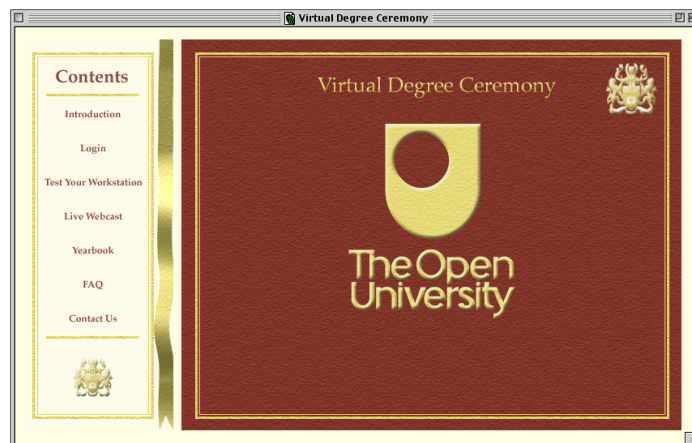

Figure 1. The VDC on-line Yearbook front page.

Some 29 students graduating from the MA ODE cohort supplied thoughtful and extensive yearbook entries, and reported that they found the form interface easy and intuitive to use. Some of the students clearly came back to their entry over a large number of sessions to refine and present it. Most of those students who added yearbook entries also uploaded a photograph of themselves and made use of the voicemail server, below. (see Open University, Yearbook, 2001).
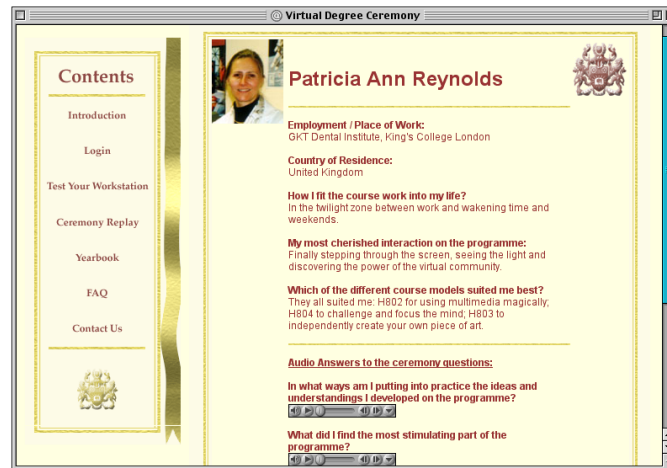

Figure 2. A 2001 VDC student yearbook page

The audio note server

The voicemail service was based on a server originally designed to support the KMi Planet news server (Scott and Domingue, 1997). The audio note server was designed and prototyped using Cypress PhonePro™ running on an Apple Macintosh™ which supports the arbitary scripting of support applications via AppleScript™. This system, whilst far from 100% robust, proved to be very flexible for the prototyping of this innovative application.

Essentially the audio server allows the user to phone in to a computer based account and save/review a number of audio messages, which are then converted into a suitable web-streaming format and uploaded to the web-server. In the VDC case students were invited to answer up to six different questions regarding their degree programme – the sorts of questions, in fact, that they might be asked as they were receiving their award during the ceremony itself. Eg. "Was your study relevant to your work?" and "What was the highlight of your study programme?" etc.

In the ceremony itself, one of these questions was asked live, and answered by replaying one of the pre-recorded segments from the website. In the 2001 ceremony the script itself for this careful choreography of question and answer was generated automatically by the server tools. The server program selected at random from the questions, which the student had chosen to answer in their yearbook – although the ceremony editor reserved the right to review these replies before replay in the live event!

The webcast

Both webcasts (2000 and 2001) were presented as streaming multimedia events supported by KMi Stadium technologies, (Scott et al, 1998). The KMi Stadium technologies have been used for many live events since 1995 and allow us to flexibly integrate multimedia into live presentations and explore the use of different elements of telepresence in different social contexts (see Open University, KMi Stadium, 2001).

The VDC events were presented in a webpage, using a Macromedia Shockwave™ shell to organize the multimedia elements. The backend systems relied upon the Macromedia Multiuser Server™ technologies to bring all the remote users in synch with the presenter clients. In 2000 we allowed users to select the AV streaming technologies they wished to use from Real™, Apple QuickTime™ or Microsoft

MediaPlayer™. In 2001 we settled upon Apple QuickTime™ as the single choice streaming media solution integrated into the plugin client. Users had a choice of video data rates suited to their network from audio only (at 33Kbps) to a high bandwidth stream at about (80Kbps). Most users were dial up through an ISP supporting 56Kbps modems and so connected to a 40Kbps stream, (with a safety margin and 8 second buffer).

A number of users reported significant technical problems related to access to the AV and Shockwave™ elements via their ISP or firewall. Most users who came sufficiently early to the event to test against our test application reported a satisfactory experience.

In figure 3 we see a view of the webcast page with the student certificate animating in the right hand side. The certificates were rendered as Macromedia Flash™ replayed in the Macromedia Director™ webcast plug-in to zoom in when the student's name was read out and the appropriate signatures animated "writing" onto the certificate. In this case the image and student answer to the question have been drawn from the yearbook page shown in figure 2.

Figure 3. A view of the webcast page.

The video segment is shown in the top left of this screenshot and the student chat room is shown minimised at the bottom of the screen. The chat room was draggable and could be made transparent to reveal the animation below, or as in this case, dragged below, to be out of the way.

Feedback on the 2001 event

Student (and staff) feedback on both events in both years was very positive despite inevitable technical hitches and setbacks. In the 2000 event one student noted that she was joined in the virtual ceremony by both her son and husband, and that all three of them were on different continents at the time. In the 2001 ceremony, students reported that they graduated at home whilst baby-sitting, in the office with colleagues and a glass of champagne, and even with a cappuccino in a local cyber-cafe. A student in New Zealand joked that it was so early/late that he was graduating in his pyjamas! One graduate, a lecturer at the King's College London Dental Institute, even invited her students to join her in the physical celebration of the virtual ceremony during an impromptu lecture!

As with all such events, the users were carefully tracked. Figure 4 shows the basic "ping" data from the Shockwave™ webcasting client. At peak there were some 33 total clients connected, of which 5 were "crew" (ie presenter and facilitator clients); 4 were on the OU intranet (ie. outside of crew clients and the Knowledge Media Institute); 24 were external to the Open University. Whilst these are small numbers compared to many of the live events supported by our technologies they nevertheless represent an interesting client base. The load was carefully managed by server side tools to ensure that it did not exceed the bandwidth limitations of various critical network segments. Guest ticket allocation was handled dynamically so that guest accesses did not threaten the critical graduand services and yet were maximized.

Although amusingly, one student from Bogota in Columbia found a critical bug in our software and was able to invite a very large number of family and friends – who, (fortunately for our network) were unable to attend. Further protection was added to the graduand / guest divide by ensuring that critical graduand services were separated on the servers from less critical guest ones!
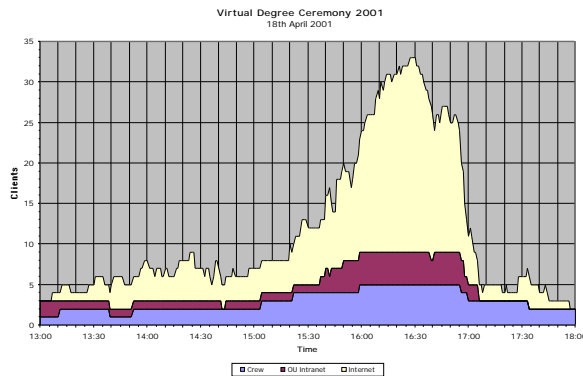

Figure 4. Tracking user load for VDC-2001

In their feedback some users felt that we had adhered too closely to the "traditional" hall and gowns model of the ceremony instead of taking the opportunity to define a new format.

> "The event was fine, I think you might just rethink the use of the hall - is it really necessary to ape the traditional or could they have a more direct tele address in the formal gowns without it being on a stage? I realize that this is partly related to due ceremony but ...." (Male, UK, took part in Office)

Others felt that we were insufficiently innovative with our use of chat facilities.

> "Thought it was a really good ceremony - and it was nice to be able to finish off our virtual course in a virtual way It was also good to *see* old friends again - although like I said earlier it would have been nice to have had a bit longer to chat both before and after the event - which would have allowed for less rush and catch up time when systems failed etc" (Female, UK, took part in Office)

Most students reported attending the ceremony with more than 2 other people physically present with them. And many respondents took the opportunity to make use of good connections in their workplace (plus the indulgence of interested co-workers and superiors) to attend the ceremony from their office.

> "We had a small group celebration with the webcast projected onto a screen". (Female, UK, took part in Office)

And all students, who used the voice server, reported that this was a very useful technology that added significantly to the event.

> "A bit surreal at first, but then I enjoyed listening to other peoples responses. It was great to put a voice to a name at last". (Female, UK, took part in Office)

> You can't believe but I could feel strong emotions! … I think is important maintain this service to students. Althought it is difficult for me, I liked to record my messages. (Female, Brazil, took part at Home)

Conclusions

Whilst the format of the ceremony and the support technologies that make it effective raise many technical issues, none of these are seriously challenging. The technologies are relatively robust and flexible and progress in networking standards and quality of student equipment and access makes this easier with each passing day. Plus, students seem to find services based upon them to be very compelling. As with all innovative technologies, what is more challenging is finding the new social context that makes the event make real sense to the new audience and getting the management of the systems to work effectively!

On the management side, the full transfer of these tools and technologies from the research and development laboratory into the University administration services is clearly the next challenge. Whilst much of the 2000 ceremony was supported by hand coding and expert assistance, the 2001 ceremony was largely web-form driven and automatic. The next step will be to fully automate the procedure and make all of the critical steps a manageable (and cost effective) clerical exercise.

However, as noted by our own students, we have inevitably started with this project by aping the forms and conventions of the "traditional" format. The absurdity of a huge auditorium, completely empty of audience but with a traditional gowned procession moving in a stately fashion up onto a large stage certainly raised many smiles! But it also raises the serious issue of finding new formats for more conventional eLearning events.

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