

## LECTURE BY PODCAST

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Lecture by Podcast is intended to produce podcasts as an aide-memoire for students, allowing them to review lectures, not as a substitute for presence in the lecture; although it could be used to assist distance learning.

Lecture by Podcast requires educators to record their lectures using a simple start/stop control. It can also be used with existing content. Backoffice equipment compresses, encodes and applies tags to video files for searching. Podcasts are posted automatically.

Students subscribe to Lecture by Podcast-generated podcasts using RSS (really simple syndication), replaying lectures on an iPod, or in any browser supporting RSS.

Pedagogy is evolving: traditional 'chalk and talk' is being replaced by a broader range of interactive multimedia teaching methods. Lecture by Podcast is one of the technologies that can assist teachers in making this transformation.

### Enhanced learning

Learning is enhanced when students have ready access to the material from which they are taught – textbooks, lecture notes and so forth – and to their teacher in the form of tutorials and Q&A sessions.

During a lecture, students take notes. Unless they are highly adept at shorthand, those notes will be a summary or approximation of what the teacher said. Sometimes, inevitably, they will miss a vital point. Learning could be further enhanced if students had access to the lecture in recorded form for work outside the classroom, such as for homework, essays, assignments and exam revision.

Recording a lecture, other than a simple audio recording, requires a fairly high level of technical know-how. The camera has to be set up and optimised for the type of lecture and the output synchronised with the slides or other visual aids used by the teacher.

*“The benefit [of podcasting] for the teacher is that he doesn’t have to be a computer scientist to use it”*

Alexandre Bonucci, IT vice  
chancellor, University of Lyon

## PODCASTING: AN EXPLANATION

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Digitised media files (such as audio in MP3 or AAC format) can be made available on a website to be downloaded and played on a computer or iPod. This would create a passive store of files which the recipient would have to search for new files.

When media files made available through Podcasting are posted, the publisher updates an accompanying RSS (really simple syndication) file with the new media file's name, topic description, length and location. Recipients subscribe to the publisher's RSS feed once. Then each time the recipients are online their web browser or iTunes application polls the RSS feed for new entries and automatically downloads new content.

The word podcasting is derived from iPod – Apple's ubiquitous media player – and broadcasting, because most podcasts are audio files similar to broadcast radio segments.

Until now, distributing a recorded lecture to students involved further complexity. Physical media, such as CDs, bring one set of distribution problems. Electronic distribution, for example, by email, requires compression of the video files and audio-visual production skills.

Blogs and podcasts (see the explanations on this page and on page 4) are being adopted by education establishments from primary schools to universities for disseminating messages from teacher to student, encouraging discussion and questioning among students and even for collecting assignments.

While the advantages of using podcasts and blogs in education are many, few teachers have the expertise or time to learn how to make full use of these technologies.

These issues are addressed in Lecture by Podcast, a technology that runs on Apple back-office systems and accommodates any open platforms of the educator's choice. It enables lectures to be recorded and distributed to students without intimate knowledge of the underlying technology.

"The benefit for the teacher is that he doesn't have to be a computer scientist to use it," says Alexandre Bonucci, IT vice chancellor at the University of Lyon. "You can't expect a professor of philosophy to know JavaScript and XML – it's not their job."

Once the back office and classrooms have been set up, teachers can easily record lectures and distribute them as podcasts to all relevant students. Lectures can be recorded for podcasting in three different ways:

- 1 an audio file of the teacher speaking;
- 2 audio and video of the teacher giving the lecture;
- 3 audio of the teacher speaking synchronised with visual aids used in the lecture, such as PowerPoint or Keynote slides or PDFs.

See (1) in diagram on page 3.

Teachers can also create new podcasts using existing material.

"Educators can record lectures or seminars and send them out easily," says Adam Burt, technical tutor at Ravensbourne College. "The back end does all the hard work, gift-wrapping the video and delivering it as an RSS feed. The teacher doesn't have to learn anything new. The lecturers don't have to be technically minded."

### Classroom

Each classroom from which recordings are to be made requires a suitable

digital camcorder and/or microphone optimised for the room and recording position. The camera and mic feed into a Mac mini on which runs software that begins the process of compressing the audio-video files and controls post-recording processes. The Mac mini does not have to be in the room with the camera, but must be physically connected to it. See (2) in diagram below.

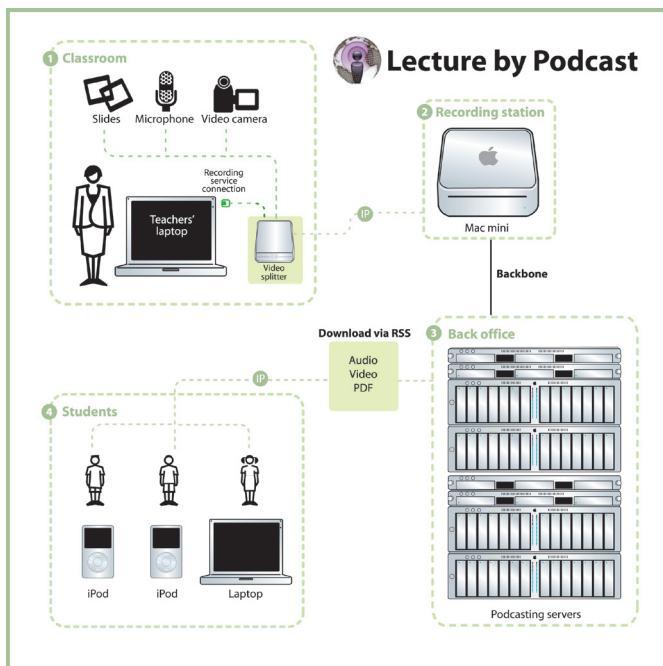
If visual aids from the teacher's computer are to be captured, a splitter device is required that synchronises the output of the teacher's computer with the audio recording.

Once set up, the recording facility is presented to the teacher in the room as a service. The teacher plugs in their computer (Mac-, Windows- or Linux-based) to a connection and selects the recording service. They click on 'start' at the beginning of the lecture and 'stop' at the end. The rest of the process occurs automatically.

If they are speaking without computerised visual aids, the video camera will capture audio and video. If they are using a computerised slide presentation or similar, the mic will capture audio and the video splitter will capture the output of their computer synchronised to the audio.

*"It means content delivered by a guest lecturer to 400 students in the Netherlands can be recorded with a couple of clicks and distributed efficiently and easily via the internet to the other 6,000 students around the world"*

Robert Veenstra, president of business university CHN



## BLOG: AN EXPLANATION

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A blog (weblog) is a regular posting to which comments can be appended and downloads, such as podcasts, can be attached. So a teacher's blog may consist of a summary of lectures given on a particular subject, with podcasts of lectures attached.

Students subscribe to the teacher's blog via RSS (really simple syndication), which pulls content to their browser or iPod whenever they log on. They can post questions to the blog.

Assignments can be filed by the teacher subscribing to student's individual blogs.

## Back office

In the back office, a series of servers receives the video files created in the classroom, and processes them according to the job description sent by the Mac mini. These processes can include: compressing the files so that they can be distributed to and downloaded by the students easily; tagging the files with, for example, the teacher's name, and course, module and content titles; and adding standard graphics such as the education institute's logo and copyright information. See (3) in diagram on page 3.

The job description from the Mac mini also tells the back-office servers as to which blog and RSS feed to post the files. Students subscribe to their teachers' RSS feeds and receive material automatically. See (4) in diagram on page 3.

"For the students it means that instead of recording courses themselves, which will probably be poor quality and won't contain all the materials that the teacher used, now they can download a complete lecture with synchronised presentation," says Bonucci.

Servers in the back office can communicate via high-speed fibre channel connections to handle the large file sizes before full compression. Overall, compression reduces the file sizes from about 15Gb per hour of video to 100Mb per hour, a reduction of 150 times.

## Changing teaching

Bonucci sees Lecture by Podcast supporting the evolving role of teachers.

"Teaching used to be about delivering content to passive students like a herd of sheep. Now with the internet and multimedia, teaching is much more interactive, an act of common construction between teacher and student using the media to build learning," he says.

"The role of teachers is changing from delivering content to a knowledge coach. Not all students have the same grasp of basic learning skills," continues Bonucci. "French universities have a specific style of discourse and if you have traditional learning skills then you will be comfortable with this, but if you don't then you may struggle. The [Lecture by Podcast] technologies help to bridge this learning gap, presenting content in a way which students without traditional learning skills can relate to."

Burt concurs: "[Lecture by Podcast] is a godsend for students who don't have traditional learning skills – for example, dyslexics."

Ravensbourne is a vocationally led college focusing on the creative industries. Developing an asynchronous learning culture is a deliberate

strategy for the college, which is due to move to a new site and will be increasing the number of students and expanding the course portfolio.

"It means not everybody will be in the same place at the same time, but [Lecture by Podcast] will enable students to access the same level of information. Lectures can be recorded and archived and then accessed by students as required for specific projects," says Burt.

"I think this is the way higher education will develop in future, as the number of students increases but budgets get tighter. HE is not sustainable on the current model of having all students onsite all the time," adds Burt.

### **Distribution**

In the Netherlands, business university CHN develops curriculum material for bachelor and masters degree courses, which run across its campuses in Europe, Thailand, South Africa and the Middle East.

"The technology is very interesting for us because of our existing model of distributing curriculum material," says Robert Veenstra, president of CHN. "It means content delivered by a guest lecturer to 400 students in the Netherlands can be recorded with a couple of clicks and distributed efficiently and easily via the internet to the other 6,000 students around the world."

Previously, CHN has posted video of lectures on its website for teachers in its other campuses to download and distribute locally. The Lecture by Podcast technologies will automate this process making downloads of curriculum material easy for students.

CHN's students usually have full-time jobs, so they often use iPods to view content while they are mobile. Lecture by Podcast fits perfectly with using the iPod as a viewing tool for educational content.

### **Application**

Lecture by Podcast is not an Apple product or solution, but an open source project based on Apple technologies and industry standards. The project has been led by the Apple Europe Education department to design and deploy the first systems in Europe. Apple Europe Education has worked with a Mac OSX Laboratory to develop the software. Lecture by Podcast is not supported directly by Apple, but by integrators or the education establishment itself.

The principles and technology behind Lecture by Podcast are clearly beneficial to all education establishments. However, its use requires a

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Adam Burt, technical tutor,  
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## FOR FURTHER INFORMATION

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Please email:  
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### WITH THANKS TO

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high-speed link between the Mac mini and the back office if the podcast lectures are to be made available in a timely manner.

The complexity of the system is dependent on the number of recording theatres, the number of hours of lectures to be recorded and the number of students to whom podcasts are distributed. It is envisaged that schools and colleges without in-house technical expertise and high-speed infrastructure could use Lecture by Podcast as part of a regional collaborative project and/or in collaboration with a suitably equipped university.



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