Listening for Impact: Final Report

A JISC funded study by Oxford University Computing Services into the impact of podcasting at the University of Oxford.

FAWEI GENG
CARL MARSHALL
ROWAN WILSON
@ The Learning Technologies Group, OUCS
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Executive Summary

Between October 2010 and March 2011, with the support of funding from the JISC's Digitisation and eContent programme, the Listening for Impact project studied user engagement and impact of the University of Oxford’s podcasting activities. In summary, its findings were:

- Oxford podcasts are popular globally and that their popularity is still growing
- Oxford podcasts benefit both current students and external learners and teachers
- The University's participation in Apple's iTunes U programme brings large quantities of traffic, and that analysis of that traffic is made significantly harder by its size
- 15% of accesses to Oxford podcasts come directly from mobile devices
- Promotion via Twitter is non-trivial

The project also made some changes to the way that podcasts are presented outside the Apple iTunes U interface:

- Tools within the Virtual Learning Environment were adapted to better integrate podcasts
- The Oxford podcasts web portal was altered to incorporate better search and individual landing pages for each podcast series

Finally the project made recommendations for policy and process changes to better monitor impact in future:

- In future, hosting should be centralised, in part to better monitor access and impact-measuring
- Regular, standardised sampling of student opinion should be undertaken
- Engagement with contributors should include incorporate more activities designed to aid promotion and monitor impact
Project background and context

Audio and video podcasting at the University of Oxford has been taking place at the level of individual departments and academics for many years. Some units, such as the Oxford Internet Institute, have had mature programmes of podcast publication in place since 2005. Due to Oxford’s devolved nature, however, there was initially no centrally coordinated effort to draw together these materials and offer them from a single location.

In 2008 Apple Inc invited Oxford to join the European launch of their already extremely successful iTunes U educational podcasting platform. In response to this request a team based at Oxford University Computing Services (OUCS) formed to draw together the infrastructure required to present the various audio and video via the iTunes U portal. As the deadlines for joining the platform were tight, pre-existent solutions were reused as much as possible. OUCS had already developed an RSS (Really Simple Syndication) publishing platform in-house for use by University departments, societies and individuals, and this was expanded to support the supplying of RSS feeds listing podcasts to Apple's iTunes U portal. Using this system – called OxItems - staff from all around the University could add feeds of audio and video items to a queue, to be assessed by the team within OUCS for publication within Oxford’s iTunes U presence.

The terms under which Oxford could join Apple’s iTunes U platform were examined and eventually approved at the highest committee level within Oxford. As part of this approval, the team within OUCS was – with the help of support staff within the departments themselves – responsible for obtaining signed agreements from contributing academics concerning the provenance and propriety of the material in their contributions. This was seen as a necessary step in managing the risks of publishing such a wide array of material, but added an administrative step to the technical process.

In short, the collection investigated by this project consisted\(^1\) of approximately 2650 media files (podcasts) of mostly academic related content (lectures, interviews, discussions, workshops, etc); comprised of 2/3rds audio (mp3), 1/3\(^{rd}\) video and some electronic books and pdf publications. These are arranged into 323 RSS feeds (groups of related material), and presented via 5 centrally maintained portals and several other external portals. The collection has grown during the project lifetime (Oct ’10 to Mar ’11) with over 400 new items added and 30 new feeds created.

\(^1\) Valid at time of writing, March 2011.
Areas of concern

By the time of the launch of iTunes U in the UK in late 2008, Oxford had built a workable technical and administrative process for podcast publication via iTunes U, but one that had some shortcomings. Of particular relevance to this project were the following:

Remoteness of contributors

Technical support staffs in departments were often responsible for both the recording of podcasts and the inputting of metadata (information about the podcasts) into the Oxitems system. Without this effort from local staff, the iTunes U project would have been impossible, but one negative consequence of this was that the team within OUCS were often not in direct contact with the academic contributors and therefore often unaware of feedback on the podcasts from external users, students and the contributors themselves, as well as lacking advance warning of upcoming materials.

Scattered hosting

Again, to aid initial setup, the decision was taken at the beginning to devolve responsibility for hosting podcasts to the departments and colleges sponsoring them. While some podcasts were hosted within systems managed by OUCS (providing support where departments were...
unable), many were hosted on web servers managed by independent departments. This made the collation of a complete set of access statistics from local web servers for the entire collection of iTunes U impractical, though that situation has improved over time.2

**Split collection interfaces**

From the beginning it was clear that for reasons of interoperability the work being put into the creation of the centralised podcasting listing could not be presented solely through Apple's iTunes U interface. The iTunes client only runs on the Windows and Mac OS platforms, potentially excluding visitors who do not use either and those who choose not to, or do not have access to, iTunes. Therefore a simple web page interface to the RSS feeds was created. This took the form of an exhaustive listing of podcast feeds and their contents generated as a single page. This answered the interoperability need but clearly presented scalability issues in the long term, as well as creating the necessity to maintain two separate means of accessing the collection. However, other portals for distributing Oxford’s podcasts have also arisen - notably the Mobile Oxford portal (http://m.ox.ac.uk/) created by the JISC Erewhon project - thus increasing the complexity of monitoring usage.

**The rise of Open Educational Resources**

In 2009, the podcasting team at OUCS gained funding from the Higher Education Academy and JISC for the OpenSpires project as part of the Open Educational Resources (OER) programme pilot phase. OpenSpires aimed to make a significant number of Oxford podcasts available under an open content licence, specifically the Creative Commons Attribution-Non Commercial-Sharealike licence. The project was successful in revising the technical and administrative processes within the team in order to embed OER release. Work on the OpenSpires project brought with it a new focus on use and reuse of our resources, and as a result a greater interest in user tracking.

Against this background the JISC-funded Listening For Impact project has, over the period October 2010 to March 2011, attempted to

- Address the lack of systematic analysis of the impact of our podcasts offered on our public-access University of Oxford podcasting sites and via Oxford on iTunes U.
- Develop and instigate practical approaches to embedding academic podcast resources within teaching, learning virtual environment at Oxford and the wider subject community.

2 See project blog post 'Fishing with a broken net' - http://bit.ly/gUDKEN – for more details on the current situation
• Collect and evaluate data to demonstrate the impact of the Oxford Podcast collection, which will strengthen the case for continued sustainability for the podcasting service, the Oxford Podcast collection and consequently, the OpenSpires OER collection at Oxford (the OpenSpires OER collection is a subset of the Oxford Podcast collection).

• Research and contribute towards the knowledge of embedding online collections in academic disciplines by a case study of impact and user engagement.
Key Findings

1. Marketing and promotion

_Making high quality materials freely available drew great attention from the media and general public when supported by a well organised professional press release and marketing campaign._

After launching Oxford on iTunes U in October 2008, Oxford podcasts attracted a great deal of attention from the media including newspapers, radio, and TVs.

“450 hours of free podcasts, lectures, films and admissions guides up on the iTunes U academic portal, available to anyone who wants to download them.”

“We hope that this service will make Oxford’s diverse range of audio and video material more widely accessible to applicants, alumni, supporters of the university, and the intellectually curious”

“... for the first time this brings everything together on one, easy to use website, that is really easy for people to navigate. It gives people a real sense of breadth and depth of the activities that are going on at the university.”

_Tools to monitor this impact: Google Alerts; LexisNexis searching._

2. A global audience of learners

_Oxford’s podcasts inspired, engaged and motivated learners and teachers around the world._

_Materials were also reused by teachers in other organisations._

Podcasting on iTunes U by Oxford academics attracted listeners from around the world including Sweden, Norway, Brazil, USA, Canada, China, Korea, and New Zealand. From the feedback sent to a number of academics – including Marianne Talbot (whose global No. 1 podcast reached >5000 downloads per week) – it was clear that listeners come from a wide range of backgrounds: professionals (teachers, writers, lawyers, and orthopaedic surgeons), students, retired lifelong learners. Some listeners were motivated by the podcasts to write to the their creators:

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3 Source: http://www.digitaltrends.com/international/oxford-v-cambridge-on-itunes/
4 Source: http://www.guardian.co.uk/education/2008/oct/07/elearning.students
5 Source: http://www.oxfordmail.co.uk/news/3748048.Get_lectures_on_your_iPod/
Motivating distance learners...

“I have recently enrolled in an Open Universities in Australia with the plan to complete a BA in Philosophy, but the first unit I have had to complete is a Study Skills unit which has been so boring and mundane I have been questioning whether to continue or not. Your enthusiasm for philosophy is infectious and put me back on course to continue my studies. Thanks again.”
- A student

Supporting existing students...

“I have finished watching your 6 episodes about Critical Reasoning for Beginners to gain solid basic idea for preparing my GMAT test and for personal life. The episodes do help me a lot in understanding logical thinking, ...”
- Another student

Helping teachers in their professional development...

“Thank you for offering online your lectures on introductory quantum mechanics, and thank you for providing a PDF copy of your text. The text is a marvelous [sic] resource, and your lectures are exceptionally lucid and compelling. I am learning a great deal and enjoying them very much.

I teach high school science and maths, and I hope I can pass along to my students (at least some of) these ideas with the same excitement and clarity.”
- A high school teacher

Reuse in the classroom...

“I hope you’ll be pleased to hear that your podcasts on approaches to Shakespeare are being very much appreciated. As head of More Able and Talented at a large state school, I am constantly looking for resources to improve our teaching and your podcasts are giving us just that opportunity. Members of the English department are now using Wittgenstein’s Dabbit illustration in the way you did and finding it to be a very effective approach and our more able students are being encouraged to listen to the podcasts both to improve their understanding of the plays and to encourage them to believe that the Oxford is not a rarefied and unattainable target, but operates at a level they will find accessible. Beyond that I and an increasing number to whom I have been recommending the site have really enjoyed the lectures.”
Podcasting can provide learners with opportunities to be in control of their learning.

Listening to podcasts can be seen as a passive form of learning. However feedback to this project indicates that it does offer listeners the chance to be in control of where, when and how they learn.

"I have downloaded and am listening to your series of lectures on philosophy. I play them in the car as I drive to and from work and as a result of your lectures, my journey takes a lot longer as I slow right down to make the journey last a lot longer. I have the audio version, so there are gaps as you demonstrate things, but when I get home I can check the video version on line. Can I just say how utterly engrossing they are - and how completely stimulating. I completed my undergraduate studies a great number of years ago, but listening to you lecture makes me yearn for study."
- Email feedback from a listener to the "Philosophy for Beginners" series

“I have quite a bit of work to do to understand some of the trickier derivations – fortunately, I have a ‘pause’ button and much more time than your students do”
- Email feedback from a listener to the Quantum Mechanics podcast series

3. Internal audiences

Compared to the current Oxford students, prospective and new students have a different focus and interest in podcasting.

In October 2010, 676 students who had just started their studies at Oxford and who would not have received any internal marketing material yet completed a podcasting-related survey. A few interesting points are summaries as follows:

- Around 90% of the respondents had heard of iTunes U.
- Around half of the respondents had downloaded podcasts that were aimed at potential admissions to Oxford.
- Around 70% had downloaded podcasts related to their primary subject of interest.
- Podcasts related to “admissions and university life” were among the most popular.

Two quotes from the survey...
“I found the ones from the admissions offices really helpful. As an international student they were a really good way for me to learn about the admissions procedure as it’s not as easy for international students to come to the open days as it is for UK residents.”

“The social anthropology dept. did a series of interviews of current students about life as a grad student at their dept, which was really helpful. ...I don’t know if I will use it now that I’m here, but a few students have been asking about whether lectures will be on iTunes U so perhaps in a few years it will be expected? I hope not... I still believe in education taking place in the classroom, particularly for students AT the institution...”

This survey showed that the collection was reaching a key external audience - “people new to Oxford” - in a format and manner that appealed to them and met their needs. This survey can be run longitudinally to monitor changes in usage.

Tools to monitor this impact: Electronic Survey, Manned survey point at Freshers’ Faire.

**Current Oxford students are becoming increasingly aware of Oxford podcasts and they value relevant content delivered in a format that aides revision.**

A survey was sent out to three different departmental groups, but at various stages of the project’s life: November 2010, December 2010 and February 2011. This survey was not repeated with each group, nevertheless it does seem that more and more students are aware of the Oxford podcasts.

For example, the percentage of students who listened to podcasts from the Oxford podcasting portal (podcasts.ox.ac.uk) increased from 7% (November 2010 group) to 33% (February 2011 group). The proportion of students who had not listened to any Oxford podcasts reduced from 44% to 16%.

Three students surveys were undertaken by the project covering a broad range of topics and indicators. For example, they indicated that the main reasons current Oxford students listened to Oxford podcasts were:

- It allowed them to 'catch-up' if a lecture was missed
- That it stimulated the student's interest in a subject
- They were an aid to revision

The features that made podcasts more attractive to current Oxford students were:

- Lectures/talks were related to their own course/subject
• That there are resources associated with a podcasts: e.g. transcripts, slides, or brief description.
• That the podcast can be played in-line; i.e. in the location where it is discovered

Surveying students and other audiences not only helps to gather feedback, but also is a way of raising awareness of our service.

“I never knew they exist, but will definitely use them from now on.”

“Although I have not listened to any OU podcast, this is laugh because i wasn’t sure where to look.”

On reflection, it seems that the two main factors that make our podcasts popular are the content itself in a repeatable/reusable format, and how the content is explained and presented. In other words, if a lecturer knows how to explain the topic in a clear, logical and sometimes entertaining matter, this is a more important factor in keeping students engaged and motivated than cosmetic presentation.

4. Tools, Techniques and Technologies

Web log analysis is complex but rewarding.

The methods commonly recommended to analyse and report on content usage (Log analysis and similar, such as promoted by the TIDSR toolkit) are very difficult to apply to situations where there is a high level of demand for the material. The collaboration with Apple drives traffic enormously but also complicates analysis of usage because of the volume of access data that traffic generates (around 1-2 million accesses daily). Commercially or freely available tools to help with this analysis were deemed inadequate after testing with Oxford’s set-up. The necessity to process multiple log files covering the same period and to generate reports on separate feeds and items quickly, led us to determined that a flexible Stats system based on a SQL database was necessary. We describe this in more detail on the ‘Outcomes’ section below. Our initial Rapid Analysis Report suffered from this lack of usable tools combined with a large rich source of data. Unfortunately the quantity of passive tracking data has continued to grow during the project and technical speed limitations have meant that absorbing and analysing this data has been curtailed due to limited time. Therefore, this report looks at information from our new tools, but only for data harvested from our central hosting, and only for the period of 7th November 2010 to 28th February 2011.
Reconciling the various data sources continues to be challenging, though the Listening for Impact work has significantly advanced this activity. Further data importing and development of this Stats system is set to continue after the project concludes as the value of having this data available to be flexibly queried has been firmly established within the Podcasing Service. The ability to generate reports on individual podcasts or series is extremely helpful in answering common questions from contributors and demonstrating the impact the podcasting activity both for individual academics and the University as a whole.

Oxford podcasts are popular globally and that popularity is growing

![Access by Country](http://bit.ly/gUDKEN)

Using the data supplied by Apple and the size of our logfiles over time⁶ we can see that our volume of traffic and downloads has mushroomed during the course of this project, and one of our aims has been to try and understand why.

Unfortunately the conclusive answer to this has eluded us as it lies too far back in our richer data to be queried at time of writing. However, earlier sampling combined with a plot of Accesses by Geography (Figure 3) supports our hypothesis that Apple’s launch of iTunes U into the Chinese educational sector at the start of September 2010 led to a rush of interest in our material similar to the rush we experienced at our European launch two years earlier, albeit, 6 times larger. This is borne out by the rise in, and high levels of, traffic from China and related countries accessing our materials compared to the situation before the launch. We also believe that other engineering changes Apple made to the iTunes U store at the same time also benefited our exposure by making the portal more accessible to general web users and searching.

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⁶ See “Fishing with a broken net”: Fig 3 http://bit.ly/gUDKEN
Figure 3: A chart showing accesses to podcasts from various countries over the timeline of our data-monitoring period. Note that the top dotted line indicates total accesses for that week and is measured against the scale on the right, whereas the remaining solid coloured lines represent individual countries and are measured against the scale on the left.

Apple’s promotional activities continue to be the primary driver for downloads of our content (over 50% of accesses can be shown to have come from iTunes U), with items they have promoted leading to (high) appearances in their global Top 100 download chart, which have then largely been sustained by continued exposure through that channel. Whilst increasing traffic through other promotional means (such as our social media experiment described in finding 12 below) is possible, nothing competes with the scale of interest generated by Apple’s marketing. Indeed, a recent example (‘Love and other things’) shows that gaining a place in their Top 100 listing alone is not enough to sustain success.

The general wisdom of statistical analysis that says analyse trends, not absolutes, does apply here, and the trends show our podcasts are continuing to increase their distribution and the average rate of downloads continues to increase even after 2.5 years of publishing - see Figure 4 showing the rate of new visitors to our podcasts over time to appreciate how we continue to attract new consumers.

One factor we can not account for is “market share” or almost anything that would allow us to compare against other institutions as almost no other publishers share comparable information, and the one or two that do use differing methodologies.
Over 1 in 7 (15%) accesses of our material are initiated directly from mobile devices

Analysis of our web logs shows that 15% of our accesses are initiated from Apple mobile devices (iPod, iPhone and iPad). This is significantly higher than the average share for mobile browsers in general web traffic, which is currently around 4% according to monitoring site Statcounter\(^7\). Also notable is that our mobile traffic is overwhelmingly from Apple devices, with negligible levels of access from other popular devices such as Android smartphones and tablets or Blackberry. Again, Statcounter\(^8\) would suggest that this differs from trends for the web in general over the same period, where the split of traffic between the Android browser, the Blackberry browser, Apple Mobile Safari, Opera Mobile and Mini and others is far more balanced. It seems extremely likely that the project’s close association with Apple and the presence of the iTunes client by default on every Apple mobile device are resulting both in greater numbers of accesses from mobile devices and a skewing of mobile accesses towards Apple platforms.

The following charts show the breakdown of accesses to our content first by “platform” and then specifically from internet enabled mobile devices. We can see that Apple platforms feature more

\(^7\) http://bit.ly/gGge7f
\(^8\) http://bit.ly/gRyS0i
highly than normal compared to regular website browsing – almost 35% of accesses compared to 6% shown by Statcounter for OS comparisons\(^9\). This Apple influence is even higher when you discover that 55% of our podcasts are accessed via Multimedia Player applications (opposed to 40% via a traditional web browser) and that 99% of those Multimedia application accesses are via Apple supplied software. The second chart to the right focuses on mobile device platforms, and as you can see the 15% iOS accesses shown on the left is mirrored on the right, with the combined accesses of all the other mobile platforms equating to less than 1% of the total Apple device accesses.

**Promotion via social media is time consuming and the benefits appear limited.**

As part of our investigation into publishing our content in other channels, the project team composed a series of tweets highlighting selected podcasts. Details of the methodology and outcomes can be found in the project blog post ‘Can you hear me tweeting?’\(^10\). To summarise, the results in terms of traffic driven to the resources highlighted were surprisingly modest. The Twitter identity '@oxfordpodcasts' had in excess of 1,500 followers over the course of the experiment, yet the number of click-throughs to the tracked URLs was below 20 in every case.

We attribute this to two factors. Firstly, our use of Twitter was relatively unsophisticated, essentially treating it as a broadcast channel without social and interactive components. Secondly, the eclectic mix of material that emerges from the Oxford podcasting portal may also work against the formation of a cohesive community of followers; many may be interested in Oxford podcasts as a concept, but each individual podcast is likely to be of interest to only a small subset of the followers.

\(^9\) http://gs.statcounter.com/#os-ww-monthly-201009-201102
\(^10\) http://bit.ly/hf7asW
In an informal comparison with the click-through rates obtained by another project located within OUCS – the JISC-funded advisory service on free and open source software OSS Watch – we found that despite having only one third the number of followers, Twitter notifications of OSS Watch blog posts were receiving 30-50 times the number of click-throughs achieved by oxfordpodcasts. We speculate that the differences could be explained by the two factors mentioned above. It is also worth noting that OSS Watch tweets will tend to be retweeted by followers far more than those of oxfordpodcasts, often with relevant hashtags appended. This is likely to greatly increase the visibility and reach of the individual tweets.
Requirements for change

In undertaking this project, the team were already aware of some issues with both the arrangement of the current podcasting portal and its integration with other services. Feedback from students and academics had highlighted the facts that the Oxford podcasting portal’s search functionality was poor, that we lacked an individual landing page for each podcast series (making linking to podcast series problematic and rendering the indexing of our material by external search engines non-optimal) and that there was no easy way to integrate podcasts into our Sakai-based Virtual Learning Environment WebLearn. Rectifying these issues became a matter of priority, and over the course of this project they have all been addressed.

In gathering opinions on the podcasting service over the last six months, we have also received a lot of feedback about the podcasts themselves. The nature of the podcasting activity within Oxford means that the team within OUCS can only pass on requirements concerning the material itself to academics; we do not commission the material, so there is a limit to how much specification we can undertake. Nevertheless the opinions we have gathered will inform the advice we give to contributing academics in the future. Below we reproduce quotations from this feedback sorted into broad categories:

Students asked for more podcasts in more subjects:

“Please podcast all lectures sometimes we have essay crisis, cannot come to lecture, but we really want to go!”

“I appreciate my lecture being made into a podcast. I hope other lectures will be [sic] into podcasts too!”

Students asked to include associated learning materials with the podcasts:

“More description of their content so can see what it is before downloading/listening”

“Slides must be available online, esp for courses like Quantum Mechanics”

Suggestions were made for the improvement of podcasts:

“Clearer audio, more lectures recorded”

“On occasion, the audio quality is poor, which makes the podcast very difficult to listen to”

Other suggestions were made on how to make the podcasts more appealing:

“Keep it short”
“Make it more interactive”
“videos will be nice”
“not just of the curriculum lecture courses but maybe alongside that you could have a
couple of extra-curricular ones that talk about some of the more interesting (but perhaps
beyond the scope of the course) or more current issues on the subject”
Challenges encountered and lessons learnt

The podcasting activity within the University of Oxford publishes large quantities of material while employing a relatively small team of people. As detailed above, the drawing together of disparate publication mechanisms to create a unified presence happened in a relatively short time and relied on pre-existent systems that were in the main created for other purposes. The throughput of podcasts began high and has remained so, with no opportunity for significant downtime for revision of service architecture. For these reasons making changes to the current system is extremely challenging.

The changes which the Listening for Impact project has enacted reside in two distinct locations: WebLearn, the Sakai-based virtual learning environment for the University and the Podcasting Portal itself (http://podcasts.ox.ac.uk/). WebLearn has stable release cycles and therefore planning and implementing changes has been relatively pain-free. The podcasting portal, on the other hand, does not have a stable release cycle. As noted above, its history as a simple aggregation of all the podcasting feeds makes it difficult to sustain in the long term, and so a full replacement is being developed behind the scenes, and has been for some time. This replacement, based on the open source web portal software Drupal, is now available alongside the original podcasting portal (http://beta.podcasts.ox.ac.uk/). The replacement portal answers many of the criticisms of the original portal, and will allow a more systematic approach to revision in the future. The latter stages of this replacement project coincided with the Listening for Impact requirement for alterations to the podcasting web presence, and so it seemed sensible to make the changes in the new version.

However, the fact that those alterations (as well as many other tweaks) are embodied in a distinct version of the podcasting portal has some consequences. Firstly, the comparison of access data between the old and new portals is made extremely complex by changes in fundamental structure. This means that it will be some time before we can fully assess the benefits of the changes made. Secondly, the 'soft launch' of the new portal and its consequent parallel availability with the old portal further complicates analysis of change and ties the exposure of the Listening for Impact modifications to the timetable for the replacement portal.

The presentation of our podcasts via the Apple iTunes U portal has meant that we experience extremely high levels of interest and access from around the world. While this is gratifying and greatly supports the argument that University of Oxford podcasting is a high impact activity, it has some challenging practical implications. As mentioned in the findings above, the sheer quantity of accesses creates enormous log files, which in turn take time (4-8 hours each) to process for analysis.
and reporting. Even these do not in all likelihood represent the totality of the number of accesses to our material, as Apple employs proxying for highly-requested material, essentially directing some traffic away from Oxford and to a third party storage provider. We see evidence of this activity through requests from the storage provider to our web servers for the material, but we have no direct evidence of how many accesses these intermediary services are handling. Apple does provide high level statistics to us which relate to accesses initiated from the various iTunes clients on home computers, mobile devices and set-top boxes. Reconciling these statistics with our own internal recording mechanisms has been one of the aims of this project, and has been to a large extent successful. However the devolved nature of Oxford's podcast hosting means that a complete reconciliation remains impractical.

Another consequence of the association with Apple is the effect that their promotional choices have on consumption of our podcasts. While Oxford has control over the layout of our own podcast portal and the pages we manage within iTunes, Apple decides which materials it wishes to promote on the iTunes U landing page without direct communication with us. In our experience, podcasts promoted in this way experience a gigantic surge in traffic and remain popular even when the promotion has completed. While this may seem to be 'one of those good problems', it does mean that probably the most widely viewed public interface to our material is only partially under our direct control.

This in turn raises questions about how to manage institutional resources being devoted to promoting the service. As noted in the findings, the results of promotional activities undertaken by the team tend to be dwarfed by the results of Apple promotion and the resulting 'residence' in the Top 100 downloads charts of certain podcast series. In turn, these series become the 'news-worthy successes' of the project and this drives traffic to them even more. This 'feedback' effect is probably unavoidable, but does work against the presentation of the University's podcasts as all being equally valuable.

One key lesson is that tracking methods and feedback channels need to be considered as early as possible and integrated closely with user interfaces (e.g. the websites). As time passes without these processes in place, more and more historical data is lost and typically cannot be recovered, thus perspectives based on trends are hard to come by initially. For most typical websites, the freely available tools (such as Google Analytics) will often be adequate for basic reporting and are easy to incorporate. However, the more diverse and complex your systems are, the more effort and time will need to be expended to monitor effectively.
Outcomes and benefits

As a result of work undertaken by the Listening For Impact project, the University of Oxford now has a better understanding of the impact of the podcasting activity both within education and more generally. The project has generated tools for the analysis of impact that will continue to have use and provide benefit after the end of the project. These include:

Better processes for sampling user and contributor opinion
As a result of the survey instruments and contact workflows generated by this project, it should now be considerably easier to sample and compare reactions to our activity. This in turn should make it easier to present the case for the service being a benefit to the institution as a whole.

Database tools for deep log analysis
The project team examined the set of available solutions for log analysis at the beginning of the project. Google Analytics was assessed and found to be a strong general solution for analysing accesses to page-based web resources. However for our purposes Google Analytics had a severe drawback – its method of registering page accesses depends upon the execution of a javascript attachment to each monitored page. Most of the traffic from the Oxford podcasting site is in the form of direct requests for media items that cannot trigger the relevant Google Analytics javascript, making it at best only a partial solution to our problem. The team also considered log analysis and reporting tool Analog, which is available as open source software under the GNU GPLv2. This answered our requirements better, but is essentially geared to the creation of high level reports on specific aspects of web access activity (although it is fairly configurable). This kind of a solution could be extremely useful for monitoring trends in general aspects of our web traffic were it a single site, but it was not optimal for the rapid formulation and investigation of queries about use of arbitrary sub-sections of our resource. For these purposes a more flexible investigative tool was needed. Therefore we decided to create a database of log lines against which we could run arbitrary queries.

Using a popular open source database application in combination with processing and importation scripts written in Python, the project team created an extremely flexible database tool for querying and analysing web server access logs. Questions about access can be formulated as standard SQL queries and run against the database of log lines combined with some additional derived data such as approximate geographical location of the requesting IP address. This tool can be thought of as an adjunct to, rather than a replacement for summary reporting tools such as Analog, in that it allows rapid formulation and investigation of hypotheses about our access data. This has proved invaluable for the Listening for Impact project, as we needed to dig deeply into our access data to make a
baseline assessment of out impact. However the tool will also have more long-term uses. The wide subject spread of the podcasting resource means that it is difficult to predict what kind of questions we may want to answer about access in the future.

In terms of generalisable lessons for the sector, we would praise both Analog and Google Analytics as low cost and flexible reporting tools, despite the fact that in our case they had significant drawbacks. For lower traffic sites and sites with resources that can have the Google Analytics javascript additions attached directly to the resources whose popularity you wish to examine, those tools are ideal. For other projects with challenges similar to ours, we will be happy to discuss our work and share the scripts we have created to support database importation.

**WebLearn and Podcasting integration**

WebLearn is Oxford's institutional VLE (Virtual Learning Environment). Since the major system upgrade in 2007 when Sakai (an open source platform which powers WebLearn) was introduced, it has seen great uptake by academics, researchers and students across the University. It is now recognised as the main online platform for teaching and learning within Oxford. In the last few years, a number of departments (e.g. Chinese studies, Medical Sciences) have attempted to upload multimedia materials into their WebLearn site. As WebLearn is not considered to be the best place to store large multimedia files and has limited disc space, the process of introducing multimedia into WebLearn resources has been slow.

Since the launch of Oxford podcasting, a large number of media items have been produced, catalogued and made available to the public. The podcasts produced by subject experts particularly have proven to be extremely popular. Considering the central role played by WebLearn at Oxford and the richness and popularity of the podcasting resources, WebLearn and podcasting integration answered a clear and expressed need within the institution.

Drawing on the experience of working with academics who wanted to embed media items in WebLearn, the project team worked with the VLE developers at Oxford to adapt an existing WebLearn tool to become facilitate the embedding of media items within the VLE.

Within a WebLearn site, the “Oxford Podcasts” tool allows a site owner to browse and search the Oxford podcasting portal site for relevant media items, or browse the feeds. Once an item has been identified, it can be embedded into the WebLearn site in the form of an in-line media player and the media item description. A WebLearn user can click on the media item to play directly in WebLearn.
Soon after the tool was released, it was publicised via a number of communication channels (mailing lists, OUCS website) to staff and students at Oxford. At the WebLearn user group meeting, the tool was introduced by a presentation comparing the old way of embedding media items in WebLearn with the new way facilitated by the tool. As we expected, the response was extremely positive.

Code for the adapted versions of the Sakai tools will be offered to the Sakai project for incorporation in future upstream releases.

**Policy change on hosting of centrally-promoted media**

The costs attributable to the complexities of data gathering from multiple distributed sources compared to the cost of hosting content centrally and the value of being able to report on usage has also led to a policy change within the Podcasting Service. In future all material published through University-maintained portals (i.e. Oxford on iTunes U and the Podcast Web Portal) will be hosted centrally, thus offering improved resilience and easier and data gathering and analysis.

**Potential for use in REF impact statements**

Now that we have better monitoring and analysis mechanisms in place, we are better placed to provide objective analyses of the public impact of the research-based podcasts we make available. Using the log analysis tools that this project has assembled we are now able to give individual academics accurate reports on the number and geographical provenance of accesses to their contributions, which in turn should provide important underpinning evidence for REF public impact case studies. We feel that these facilities are of strong utility now, and could be further developed in the future to encompass more detailed reporting, and also reporting on other technological aspects of research outputs such as development of on-line communities around digital resources. We hope that this will be of great use to Oxford in the coming years, and thereby raise awareness of the institutional benefits of maintaining and developing Oxford’s podcasting service.
Recommendations

We would like to see UK institutions adopt a common reporting method on access to podcasts to allow comparison and mutual learning. We would be happy to share the code and database schemas behind our Stats application if other institutions feel they would benefit from them.

We are proposing a continual evaluation process to improve feedback from presenters and support staff to central service. This can be based on a reduced version of our last survey used as a twice yearly “pulse check” and folded into a client relations process.

We propose to continue the development on the Stats tool to allow for aggregation of data from multiple sources to be better linked to data about the podcast, thus enabling automatic searches related to departments, feeds, OER/Creative Commons content and more. We will also seek to improve reporting interface.

We would like to supply a survey template in the WebLearn institutional VLE or perhaps the SurveyMonkey external web-based surveying tool to allow academics to gather feedback from their students on podcasts they have contributed. This should also help to promote the awareness of podcasts amongst students.

Podcast contributors should be asked to also contribute hashtags that they feel to be of relevance to their topic to be used in social media promotion. We should also seek retweets from contributors for our promotional tweets, as a greater proportion of their followers are likely to find the material of interest.