

An investigation of streaming - webcasting and webconferencing technologies in the US and UK

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Abstract:

The VALA Travel Scholarship study trip undertaken in mid 2005 investigated a range of webcasting, streaming and webconferencing solutions that have been implemented in North America and UK. The tour included visits to a range of libraries, museums and galleries using these services. The paper reports on the services and the implications of these technologies for libraries. The technologies present new service delivery opportunities for libraries in Australia and also provide options for professional staff development.

Introduction

This paper is based on research undertaken as part of the VALA 2005 travel scholarship of North America and the UK. The research intention was to investigate streaming of video and audio content webcasting and webconferencing being delivered by libraries, galleries and museums.

Background

Streaming and webcasting

Streaming and webcasting technologies provide a valuable opportunity for libraries to deliver services to off site visitors. Video and audio programs of activities and public events held at the library can be broadcast via the Internet. Programs can be transmitted as live and/or as archived events. Audio and video content from library collections can be digitised and made accessible to a global audience.

The content is streamed to the user, not downloaded or saved on to client computer. This process assists with copyright issues and makes access feasible for slower connections. The requirements for the user include Internet access and the relevant plugin (eg Real, Windows Media Players).

Webcasts either can be a one-way transmission of content or can allow the option of interaction with the participants. They provide an ideal opportunity to engage with members of the community who do not traditionally 'use' the physical library, and ensure that a public program event has a greater lifespan and increased engagement.

Webcasting is also used to provide professional support to library staff through online presentations of events such as conferences. This application extends the reach of training to library staff that cannot attend scheduled events and has potential for use for professional development in Australia. The American Library Association reported that over 550 librarians signed up for a *LJ* webcast "eBooks Take the Ivory Tower". (Fialkoff, 2005)

Webconferencing

Webconferencing provides the opportunity for group meetings over the Internet. Participants use specialised software to communicate and share screens via online chat, audio and/or video. Standard Internet connections can be used to participate in a webconference, enhancing access to a broader community compared to videoconferencing. Webconferencing opportunities include the provision of support and training for library staff, particularly in regional Australia. It is also being used to provide online support through initiatives such as online reference services.

Study objectives

The study tour reviewed a number of organisations that were using webcasting, streaming and webconferencing technologies. Libraries, museums and galleries were selected to enable consideration of the technologies in different institutions. The organisations were selected based on website reviews, contacts provided by colleagues. The selection aimed to include variations in the use of the technologies to ensure a broader investigation.

Discussions with staff included:

- technologies used
- staff knowledge required to maintain the technology
- user acceptance of the technology
- sustainability of the various solutions
- digital preservation strategies
- marketing strategies
- copyright implications
- performance measures developed
- review mechanisms in place.

The study tour involved meetings with staff involved in various activities in each of the organisation. Meetings included project officers, web managers and staff involved with digitisation, metadata and streaming activities. Meetings were also held with commercial suppliers of webcasting and streaming solutions.

This paper provides a summary of the meetings and reviews of the content available on the various websites. Implementations of webcasting, streaming and webconferencing are also reviewed where possible.

Webcasting implementations

Library of Congress (US)

www.loc.gov

The Library of Congress has implemented streaming of audio, video content and webcasting of events. The webcasting content, created by various projects and programs throughout the library, are integrated in a 'subsite' and showcased on the homepage. The subsite provides access to content through themes such as biography, history, performing arts and government. It also includes a search facility limited to webcast content. The library has been webcasting content since 2001 and has over 700 programs available for users on its site. Webcasting is undertaken in a number of programs including:

- recording of public lectures
- National Book Festival 2001+
- *Journeys and Crossings*: webcasts and online conversations with Library of Congress staff
- *Veterans History* project
- *American Folklife Centre*
- professional development for librarians and archivists

Many of the programs involve taping a live event such as a lecture held at the library. The library records, edits and processes content for webcasting in house. Some of the staff have public TV experience and their role involves filming, dubbing, editing and preparing the tapes for broadcasting via the Internet. This is undertaken in a Mac environment. Webcasts are generally delayed, and the broadcast is made available online within one week of the original presentation. It has been the library's experience that live broadcasts are more time consuming and require increased staff resourcing. The webcast site includes '10 most popular webcasts' this provides an indication of the scope of the content. The titles are reviewed by staff and updated based on number of times a webcast has been accessed.

The top ten in January 2006 are:

- Publishing the Declaration of Independence
- A Literary evening with John Prine and Ted Kooser
- Ted Kooser poetry reading: Bookfest 04
- Whitman's Elegy for Lincoln
- Science Safari – hands on day of science experiments
- American Heroines
- Interview with Disney Chairman and CEO Michael Eisner
- First Words in Print
- Suji Kwock Kim: Bookfest 04
- Fourth annual Kissinger Lecture: Global Democratic Governance

The webcasts are presented in QuickTime. The decision to use this software was based on 'market share' of the plugin. Assistance is provided for the user to download the plugin on the help webpages. A database of the original tapes is maintained and the webcasts are not added to the library's catalogue.

The *Journeys and Crossings* program involves online interviews with Library of Congress staff; the staff member and the project coordinator base these interviews on transcripts, written by the staff member. The webcasts may involve an interview setting or a tour of a particular section of the library. It provides an opportunity for the library to highlight its collection strengths and specialist staff. The content, for example, includes the head of the Science Reference Section in the Science, Technology and Business Division describing the evolution in the technology of washing machines, irons and stoves and its effect on the work of women in the home. Or the American History specialist with the Manuscript Division discussing the draft of a letter that Thomas Jefferson sent to Meriwether Lewis to initiate the Lewis and Clark Expedition. A popular webcast is the Women's Studies Specialist exploring the evolution of "Rosie the Riveter" and the lives of real women workers in World War II. A number of external websites link to this webcast. The *Journeys and Crossings* webcasts include a transcript and detailed links to relevant content in the Library of Congress, sites for younger researchers and other materials of interest.

The new National Audio-Visual Conservation Centre (NAVCC) of the Library of Congress currently under construction will address digital preservation of the webcasts. The Centre is designed for the acquisition, cataloguing, storage and preservation of the American heritage collections of moving images and recorded sounds. The library has no plans or process in place to deselect/archive webcast content at the time of the visit. No formal evaluations of the technology were available; website and download statistics are reviewed on a regular basis.

Infopeople (US)

<http://www.infopeople.org/>

Infopeople is managed by the California State Library with federal funding received from the US Institute of Museum and Library Sciences. The website notes "the *Infopeople* Project improves the quality of information access to the people of California by upgrading the skills, resources, and tools available through libraries."

Infopeople training is open to all members of the California library community: academic, public, school, and special. Training is offered onsite in locations throughout California, via online courses, videoconferencing and webcasts. The course content varies based on demand

from library staff. Content includes: online access, Spanish survival, project management and storytelling.

Webcasts are hosted by external provider HorizonWimba. Statistical data of registrations, drops outs and usage is provided to assist with planning of future events. Currently all webcasts have been maintained on the website. If information becomes outdated content is removed. Webcasting began in 2002. A professional studio is used to produce the webcasts.

The project has identified that webcasts need to be entertaining and engaging ‘not just talking heads’. Archived webcast content includes:

- strengthening the library workforce
- reading is fundamental
- State Librarian’s quarterly webcast
- tips for working with your board
- skill-building supervisor
- homeless people in the library legal issues.

Each webcast includes speaker’s biography, notes and handouts that can be downloaded before the presentation. A wizard is also included that allows users to check the audio/plugin settings before the presentation begins.

Webcasts also offer the option for participants to post questions, chat with the presenter and other participants. Live webcasts are only available to residents in California: archives are open to all.

Natural History Museum (UK)

<http://www.nhm.ac.uk/>

The Natural History Museum in London began webcasting in 2001. Over 270 lectures and events held at the Darwin Centre Live have been recorded and made available via the website. The webcasts are made available via Windows Media Player and QuickTime. The museum also provides high and low bandwidth options for download. This was the only organisation visited that provides options for plugins and connectivity speed.

The museum’s annual report notes “The Darwin Centre is our ambitious vision for museums of the future. As well as protecting the collections for future generations, the Darwin Centre is opening up our science in new and imaginative ways. Visitors can hear at first hand from our researchers, view the collections, and find out more about scientific advances. Through the Darwin Centre Live webcasts, we are reaching out to a worldwide audience”

Museum staff are responsible for the webcasts and have calculated that the average cost of a broadcast is £700. The webcast is made available 2 to 3 days after the live event. Usage of live events has been low compared to archived content. Criteria for content selected to be webcast includes topic, quality of the presentation, range of existing online content and supporting documentation.

Webcasts have been integrated into the recently revised website. The *Nature Online* section provides access to webcasts by theme such as volcanoes, fossils, rocks and minerals.

The museum’s future plans include a review of existing content and removal of webcasts that no longer meet their production criteria. Captioning and enhanced searching, including the

ability to keyword search and be directed to the relevant section of the video, are also under development.

Tate Online (UK)

<http://www.tate.org.uk/>

The introduction of webcasting at Tate Online coincided with the opening of Tate Modern Gallery in 2000. The website notes that “The programme looks to expand and develop audiences nationally and internationally, whilst evolving an online community for exchange and debate across a wide range of arts and culture contexts

- celebrating and advocating a live event culture
- distributing and publishing a selection of live events at Tate, making them available to a range of audiences that would otherwise be unable to attend
- evolving a context for the production, interfacing and archiving of events online
- building on an international, online community and bridging the boundary between onsite and online audiences; and environments”

The Gallery webcasts over 40 events a year, and the average duration is 180 minutes. This number of webcasts represents less than 30% of their events. Forums are held before and after live events, this provides opportunities for community engagement with the topic and increases interest in the live event. Links are also provided to relevant content of interest to users; these include websites, PDF and MP3 files. The Events webpage includes an option for users to calculate the local time for live events, this was the only site to provide this option, and reflects the organisations commitment to reach a global audience. Archived webcasts are made accessible within two weeks and statistics reveal greater usage of archived webcasts than live events. The webcasts are made available via QuickTime in high and low bandwidth options and transcripts are not available.

The Gallery has submitted a grant application to improve searching of the webcast content.

Public-i (UK)

<http://www.public-i.info/>

Public-i is a UK company that provides a webcasting solution for local government. One of the priorities for democratic renewal set by the UK government is “To promote greater public involvement in local decision making and to enhance the representative role of councillors in the community through the use of technology. The establishment of multimedia resources on local policy priorities accessible via public website e.g. video & audio files)” (Office of the Deputy Prime Minister 2005) has been set as “good e-Government outcome” with an expected implementation date of April 2006 to ensure continued funding for local governments. The following benefits of webcasting council meetings have been identified by *Public-i*:

- increased trust and transparency
- more engaging democratic content
- effective communication
- improved debate.

In August 2005 over 50 local governments had implemented webcasting of council meetings and events. The *Public-i* solution provides a hardware and software solution for local governments. Local staff are trained to record council events and *Public-i* provide the support and hosting requirements.

Context information is provided as part of the software solution, these include the names of people participating in the webcast and transcriptions. Staff filming the meeting add relevant index information (agenda items) during the meeting. This feature enables easy searching and the ability to quickly skip to agenda items or speakers of interest. Webcasts can also include the option to:

- request feedback from participants in real time via an email facility
- polling and surveying of users
- distribute photos and plans of issues under discussion
- include presentations /slides being viewed by participants at the meeting
- link to speaker database which provides background information on all the speakers.

Minutes and archives of the webcast are available within 3 days of the event. Archives are maintained for six months. Webcasts can be presented in either Windows Media Player or QuickTime.

Statistics are provided to participating councils, including the number of times each webcast is accessed and the length of view. On average webcasts are accessed between 300 – 1100 times a month. Usage increases with archived content.

A mobile unit is available which allows council to webcast events activities outside council chambers.

Devon Council website (www.devon.gov.uk) provides the following webcasts on their site:

- Executive Meeting
- Executive - Target Budget
- Community Services Overview/Scrutiny
- Environment & Economy Overview/Committee
- Full Council
- Development Control

World Book Day Online Festival – Museums, Libraries and Archives (UK)

www.mla.gov.uk

World Book Day designated by UNESCO as a celebration of books and reading was extended in 2003 to the World Book Day Online Festival. It was coordinated by Museums, Libraries and Archives Council in the UK. The festival provided participants the chance to interact online with adult and children's authors, through film, live web chats and webcasts. Terry Pratchett was interviewed in a live webcast from Peckham Library. Groovy Gecko (<http://www.groovygecko.com/>) provided the technical resources including hosting. Events were broadcast in public libraries – through public access computers and large plasma screens.

On World Book Day, there were over three quarters of a million hits to the site from 61 countries.

The evaluation of the festival events identified the following technical challenges:

- mistrust of the technology by some library staff
- barriers caused by local government firewalls and IT policies (barriers to downloading)
- data streaming not possible on some authorities' servers

- video clips too small on the screen
- filters on some computers would not permit connection to interactive sites or videos

The evaluation report has identified longer lead in time to enable these issues to be resolved for future events.

British Library (UK)

<http://www.bl.uk/onlinegallery/features/secret.html>

The British Library “*Secret Lives, Secret Maps*” site includes a webcast. The interview of the Map Librarian was broadcast in 15-minute segments, to enable downloading by users with slow connections. QuickTime plugin is used. Issues to be addressed by the library included the development of criteria regarding webcasting live vs archive content and the need for increased understanding of the public’s expectations.

Streaming implementations

Variations2 (US)

The Indiana University Digital Music Library - US

<http://variations2.indiana.edu/>

The *Variations2* project provides online access to recordings and scores from the Indiana University Cook Music Library for use onsite by University faculty and students. The study tour provided the opportunity for this service to be reviewed onsite.

A three million dollar grant from the National Science Foundation funded the project. Music selected by lecturers is digitised and made available onsite at the library and via user authentication on the campus grounds. The project has created a digital music library, which provides access to audio, video, score images and notation for use by lecturers, classrooms and individual study. It has involved research in metadata, usability, copyright and technical solutions.

It is built on a successful Variations project that provided access to over 7000 recordings and 200 scores. *Variations2* provides more than access to digitised collections. It includes a search facility designed for complex music collections. Cataloguing is similar to FRBR (Functional Requirements for Bibliographic Records) but has been modified to suit music requirements. Descriptive, structural and technical metadata has also been implemented.

A container in *Variations2* may contain a number of media objects (single digital media products, score, sound file). Instantiations represent manifestations of a work as a recorded performance or a score. This provides greater level of searching flexibility and ensures the users can link between works, creators and different versions.

Course reserve html pages can be created by searching the *Variations2* collection and using the bookmark facility. Works are saved as bookmarks and the list is used to create the required webpages. This facility allows for bookmarks to link to specific locations within a digital work.

Users access *Variations2* content via an in-house designed and maintained player. Users have the option to create bookmarks, which are attached to logins and can be saved for future use. Playlists can also be created to enable favourites to be played on demand. The collection is available via the library catalogue with URL links to *Variations2* record. There is also the

option to search *Variations2* database or use html pages created by lecturers. Listening drills or quizzes are also available. This functionality allows students and lecturers to listen to a music clip and identify the sample. Users have the choice to identify track, composers or performer. Options also include fill in the blank and multiple choice. Annotation tools are also available which allow users to annotate scores with text, circles etc. These can be saved and printed.

Searching the collection provides the user with four possible options:

- listen to a recording
- review a digitised score
- listen to a recording and review the score at the same time
- review the score in other programs.

The project has included extensive usability testing with both users and non-users.

***Variations2* technical environment**

Details of the client and server developed in Java

- Windows and Mac OS X client platforms, Unix (AIX/Linux) server
- Audio streaming: QuickTime for Java, Darwin Streaming Server (RTSP/RTP or HTTP)
- Audio encoding: 192 kbps and 28 kbps
- Database: IBM DB2, DB2 Text Information Extender
- Image compression: DjVu from AT&T Labs and Lizardtech
- XML/MARC/Z39.50 tools: Saxon, Xerces, Jafer, James (Notess,2004)

The National Leadership Grant from the Institute of Museum and Library Services in late 2005 announced funding of \$768,747 for Indiana University (IU) to enable *Variations2* to be extended into an open-source tool that will be available for use by libraries. "By offering this "digital music library in a box," IU will respond to the teaching and learning needs of large academic libraries, small colleges and music conservatories, many of which have expressed enthusiastic support for the digital music library that has transformed music instruction at IU's renowned School of Music. At the completion of this three-year project known as *Variations3*, institutions nationwide will be able to introduce, expand or upgrade their current online music offerings in ways that provide new benefits for their students."

Open Video Project

University of North Carolina Chapel Hill (US)

<http://www.open-video.org/>

The *Open Video Project* was developed to collect and make accessible a repository of digitised video content. The content is made available for general community and for researchers. "Researchers can use the video to study a wide range of problems, such as tests of algorithms for automatic segmentation, summarisation, and creation of surrogates that describe video content; the development of face recognition algorithms; or creating and evaluating interfaces that display result sets from multimedia queries."

The project began in 1988 when content was contributed by the Carnegie Mellon University Informedia Project, the Howard Hughes Medical Institute and the Prelinger Archives. A website was created for the video and metadata for each segment of the video. Formats now include MPEG-1, MPEG-2, MPEG-4 and QuickTime. Videos can be played directly from the

website, or downloaded to a client's PC and watched in either Windows Media Player or QuickTime.

The website includes the option to search or browse by genre, duration, sound, colour or collections. The video details screen includes a description of the film, a storyboard (a selection of screen images) and a fast forward option. Software is used to select key frames from a video and these are selected by staff to form the storyboard.

Copyright clearance has not been obtained for the content; researchers are encouraged to use the data under fair use for research purposes.

Webconferencing implementations

OPAL (US)

Online Programming for All Libraries

<http://www.opal-online.org>

OPAL is administered by the Alliance Library System, the Mid-Illinois Talking Book Centre, and the Illinois State Library Talking Book and Braille Service. It is a collaborative project by libraries that provides a web-based programming and training solution for library clients and staff. Live online events are held in an online auditorium, interacting is delivered via voice-over IP, text chatting and synchronised browsing. *OPAL* provides the infrastructure that enables libraries to share program events. Online events include book discussion programs, interviews, training, workshops and virtual tours. Talking Communities software (<http://www.talkingcommunities.com>) is used to provide this service.

Libraries interested in delivering content become *OPAL* members. This membership provides the option to deliver courses in the auditorium (open to all participants) and in meeting rooms (by invitation only). The auditorium schedule for 2006 provides an indication of the scope of content and the participants. It includes the following sessions:

- *Finding Health Information Online: An Introduction*. Co-sponsored by the Illinois State Library Talking Book and Braille Service and the Mid-Illinois Talking Book Center and facilitated by Tom Peters.
- *OPAL and tcConference version 4 Intermediate Session for Moderators*. Facilitated by Tom Peters.
- *The Armchair Traveler*. Get set to travel to far-flung locations and down-home sites at the click of a mouse. Join Library of Congress tour directors who will lead you in surfing the library's online collections and resources from Aruba to Zimbabwe and from Rutland, Vermont to Redding, California. All aboard! Presented by the librarians at the Library of Congress.
- *Wiki World: An Introduction*. Sponsored by the Mid-Illinois Talking Book Center.
- *Book Discussion of the 1880 Russian novel, The Brothers Karamazov, by Fyodor Dostoyevsky*
- *Library of Congress*. Join us for a fascinating tour of some of the digital riches at the Library of Congress. Presented by the librarians at the Library of Congress.
- *Day of the Digital Audio Book*. Presented by OPAL and LibraryU.

Sessions include the option for participants to ask questions via chat or audio. Transcripts of discussion can be saved (text or podcasts). Enhancements under way to the service include options to:

- conducting polls on the fly
- taking control of clients PC for training /support purposes
- co-browsing with confidence to password-protected areas of the web and proprietary databases
- videostreaming via a webcam.

Observations

Streaming content is not limited to libraries and cultural institutions, organisations as diverse as Microsoft to United Nations use the technology to webcasts events to a global audience. Education institutions are taking advantage of both streaming and webconferencing technology to deliver their services. The Indiana University project is an example of how the streaming technology is being used to enhance academic and student access to content. Library organisations such as SirsiDynix, (<http://www.dynix.com/institute/seminars.asp>) OCLC (<http://www.oclc.org/membership/escan/default.htm>) and professional organisations like (American Library Association <http://www.ala.org/ala/acrl/acrlproftools/elearning.htm>) are also using the technology to reach a larger customer base.

Streaming of content provides opportunities for Australian libraries and organisations in a number of key areas, including:

- providing access and interpretations to collections (oral histories, audio visual materials) in libraries to remote users
- providing a new technique to engage with clients, in particular remote clients and those looking for alternatives to ‘written word’
- professional development opportunities for library staff.

It can be used for public events – guest speakers, visiting authors and online debates on topical issues. It also provides an approach to engage with youth audiences and regional or remote users. Webcasting of conferences sessions provides an opportunity to extend library participants who cannot attend sessions, broadening the scope and reach of these events.

There are a number of issues to consider if considering the introduction of this technology. These include content, access and sustainability. Like many new technologies, policy issues that drive both the ongoing production and maintenance of the content require consideration.

- *Will both plugins (Windows Media Player, QuickTime) be provided?* The provision of both options will provide the user with the choice of plugin. For many users it will remove the requirement to download QuickTime if Media Player is generally included in standard PCs. One library noted that their organisation had a policy not to provide QuickTime on staff or public PCs. Many public access PCs used by the community do not allow downloading by clients, if a single plugin option is provided and this plugin is not accessible on a public access PC the content will not be accessible. Reducing content to a single plugin may limit access. However, provision of content in the two formats requires ongoing commitment by libraries to provide dual versions.
- *Will multiple versions (low and high bandwidth) versions be provided?* These options were not provided consistently in the organisations visited. Low bandwidth options

increase the availability of content to users not connected to broadband. Overall, there was a low concern for users not connected to broadband, due to the higher coverage of broadband access in the UK in particular. Some staff felt that the technology required broadband and low speed users would use alternatives such as public libraries for this content.

Download charges are also a consideration in Australia, where many users are on “per megabyte” access rate. This was not considered a major issue in UK in particular where access plans are generally unlimited.

This is a consideration for Australian libraries considering streaming. Intended audience and accessibility to the content should be reviewed as part of the planning process.

- *Will transcripts be provided?* Transcripts provide alternate access to webcast content for users. Costs for transcripts would increase the resourcing requirements and time required to develop the transcript and make it accessible would need to be taken into account. Transcripts available on websites will also enhance searching capabilities.
- *Where will the webcasts be presented on the website?* Will content be integrated into the site regardless of content or origin? Providing access to webcasts within subject or theme areas as well as in a single location ensures users locate content regardless of their approach. Consideration should also be given to providing access to webcast content via library catalogues. This was not given a priority by organisations visited and reflects the “novelty” of the service and a lack of discussion regarding the content and its long-term access. Publications produced by libraries would be catalogued and made accessible via webOPACs, webcast content should be considered under the same approach.
- *What content should be webcast?* Discussions regarding content varied based on the organisation and audience. Criteria regarding which events should be webcasts should be developed by libraries. One organisation noted that library staff feedback was the ‘talking heads’ were not interesting and that twenty minutes was the average time spent online by library staff. Many of the webcasts viewed were lectures with minimal interaction but staff reported that usage was high. The speaker and the topic are a major factor in the determination of content. Webcasts also included active sessions with a number of speakers and audience participation. Consideration of filming expertise and requirements should be taken into account if increased activity is to be broadcast.

Podcasting will provide an alternative or an extra option for lectures. This will give users the alternative of downloading the audio track and increases flexibility for use. The technology is being considered by a number of the institutions visited, (OPAL provided this option in late 2005). The downloading of audio files will provide a cheaper alternative for remote or low speed users.

- *What content should be streamed?* Many libraries have audio and video content that is restricted to onsite use, some of the content that does not have copyright restrictions would be possible to stream. The ability to stream the content and make it accessible

via catalogues and websites greatly enhances access to content. Appropriate digitising of this content will also assist with long term access.

- *How long should content remain accessible?* Only one organisation reported that they were reviewing existing content and removing webcasts that did not meet criteria (content or production values). Live events webcast will lose currency over time. Webcasts, as per all web content, should be reviewed and updated on a regular basis. Provision of the content via an archive page should also be considered to ensure continued access.
- *How will long-term access be provided to users?* Digital preservation was not a high priority with most organisations visited. Consideration should be given regarding a library's approach to the content creation and future access requirements. Will access be provided to content in future years? How will the content be accessed in future versions of plugins? A response from many of the organisations visited was that 'memory was cheap' so there was no perceived urgent need to archive content. Australian libraries may have different priorities regarding storage requirements. Preservation for all digital content is a major area of concern for libraries and its important that content with perceived short term value, such as a book talk or interview is stored and made accessible for future generations.
- *Assistance with access?* Assistance with plugins (downloading) should be provided on websites. This assistance should include links to plugin sites for downloading, frequently asked questions and the opportunity to contact library staff for help.
- *Will webcasts be made available in real time or archive only?* Evidence from organisations was consistent that when real time webcasts were made available usage was low compared to archive. The content of the event would be a major criterion in determining whether real time broadcasting is required. For example, real time broadcasting of council meetings in the UK was a requirement. Technical requirements and costs for filming and streaming in real time would also need to be considered.
- *What will the indicators of success be?* Targets should be set as part of the introduction of streaming. This will be dependent on objective of service. Professional development for library staff may have an indicator that includes a percentage of staff engaged rather than number of downloads.
Who is the expected audience? Is the aim to attract a global audience? Web usage analysis will provide some indication of usage. Data provided will include length of visit, these will assist with determining whether content should remain on "live sites" and with new webcast subject areas.
Is the webcast a tool to market collections of the library? Success indicators would include increased access and knowledge of the collections
Evaluations of users via an online survey will provide valuable information regarding the webcast content and access.

These technologies provide the opportunity for libraries to enhance existing services, broaden appeal to larger audiences, and expand access to collections to a global market. Like all technologies, there are funding, policy and ongoing sustainability issues that need to be resolved as part of implementation.

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