

PrestoSpace: Audiovisual Preservation

Summary

EC Sixth Framework funding in the cultural sector is concentrated in large projects. This concentration of effort has produced many disappointed applicants – and also places a high burden of responsibility on those few successful projects. PrestoSpace is the only Integrated Project (within Access to Cultural Heritage) in the preservation area funded by the first FP6 Call. Accordingly, the project is making a sincere effort to determine actual user needs, so that this one project can be as representative of true need as possible.

The first public action of PrestoSpace, which formally started on 1 February 2004, was a 1.5 day User Requirements meeting in Amsterdam on 18-19 March.

A full house of 70 delegates attended the meeting, held in an appropriate venue: the historic Felix Meritis building. The building is the home of a 250-yr old movement fostering international culture and cooperation. The delegates represented large and small audiovisual archives, and the technical sector associated with these archives.

The Programme

The programme was a day of presentations and discussion at Felix Meritis, followed by a half-day of film presentations at the Netherlands Filmmuseum.

The programme for the first day covered:

- The purpose of the PrestoSpace project, by Daniel Teruggi and Jean-Hugues Chenot of the Institute National de l'Audiovisuel in France.
- The European perspective from Maurizio Lunghi of project Minerva
- The broadcast perspective, from Richard Wright of the BBC archives.
- The special needs of film, discussed in more detail below.
- The specific work areas of Prestospace: digitisation, restoration, storage and metadata. The afternoon was devoted to detailed discussion of these areas, with emphasis on determining the real need, not just the academic interests of the researchers.

The Problems

PrestoSpace is about preservation of European audiovisual (AV) material. While considerable attention has been spent on conventional archive contents, audiovisual materials are the single highest 'at risk' category and have urgent problems.

This risk is owing to:

- **Fragility:** film, vinyl and shellac (for gramophone recordings) and tape are easily damaged, and in the case of nitrate film also flammable or even explosive.
- **Decay:** chemical deterioration of the media. All AV material is subject to slow (and not-so-slow) chemical change, with magnetic layers coming off polymer bindings, clogging players and in the worst cases destroying the media. Acetate-based material (used in film, video and audio recordings) turns to acetic acid, which not only can destroy the acetate media, but can attack non-acetate material in the same storage area.
- **Obsolescence:** players for AV formats (such as 6mm open-reel audio tape recorders, gramophone turntables, U-matic video tape) become obsolete in as little as ten years – a problem that is accelerating with new digital media.
- **Expense:** the problem of chemical decay can only be retarded by conserving materials at low temperature and humidity, which adds the final problem (a problem shared by all archives and all archive contents): money. Proper storage of AV materials is expensive. Proper equipment, staff, and preparation of access copies are also expensive in comparison with non-AV media.

The Solutions

European Action

The EC has recognised the scale and severity of AV preservation problems, as have the professional societies representing AV collections. There is now a basis for concerted European action on preservation of these materials. An example of this recognition and cooperation has been the various FP5 projects in the area: BRAVA, AURORA, DIAMANT, SEPIA, PRESTO, ARCHIMEDIA, DELOS, ERPANET, MINERVA, DIGICULT and FIRST all contributed to understanding and action.

Broadcast Sector Successes

The other major positive development has been the funding of large-scale preservation projects in the broadcast sector. Broadcast archives are privileged – their contents have high value and high levels of use, and they exist within an enterprise – broadcasting – that is converting all operations from analogue to digital. This situation provides the business case for large broadcasters to invest up to 10 million Euros per year in digitisation / preservation projects.

For example, the BBC (UK) has committed 80 million Euros of its own funding, over a 10-year period. RAI (Italy) committed even more resources over a shorter period, when all its radio holdings were digitised in the last three years. RAI and INA (France) have also invested heavily in mass storage systems, and the associated digitisation/preservation of video material. There are a dozen or more similar projects across Europe.

These internal projects have developed cost-effective assembly-line approaches to AV preservation. EC project PRESTO documented this work, extended the technology, and generally promoted the 'preservation factory' approach. It is the task of PrestoSpace to extend this knowledge and approach, to make cost-effective "preservation transfers" available to all AV media collections, not just broadcast archives.

Specific problems identified at the User Requirements meeting – the three F's

Format

Eddie Goray of RTBF in Brussels reported on the analysis made by EC Project FIRST (www.first.org) – a concerted action on **the impact of digital technologies on film**. Assuming film can be digitised at an acceptable technical standard how is the digital data to be stored? Eddie showed that high-quality digitisation of a single feature film could require 10 Terabytes (10^{12} bytes) of storage, equivalent to 2000 DVDs or 100 very-high-capacity datatapes. Also there is no agreed data format for high-resolution film digitisation. So storage format and file format are substantial obstacles to the use of digital technology in film preservation.

Mass storage also has problems for television programmes. Until now, the permanent record of a TV programme could be held on a single film or tape. Mass storage distributes data across an array of servers or tapes. Archives don't, in general, want to abandon all sense of a single physical entity corresponding to an archive 'holding'.

Finding

There is also a problem knowing about the content of AV archives. Even for those with comprehensive catalogues, there is a problem about knowing what other archives have. It is vital to have a comprehensive European approach to standards and to data sharing, to prevent waste on duplication of preservation activity – and to ensure archives can find, across Europe, the best original material. This problem is most important for commercial material: cinema films and commercial music recordings. But there are also many examples of finding TV and radio material in archives other than those of the producing company – and of course many radio and TV companies have gone out of business or been disrupted by war. So there was a recognised need for data standards and data sharing.

The host archive, Beeld & Geluid (Netherlands Institute of Sound and Vision) has been leading work on AV metadata standards. They are currently re-formatting their entire catalogue, to conform to the IFLA representation. They have also produced a comprehensive review and guide to metadata. This work shows what progress can be achieved, and will inform the PrestoSpace metadata activity.

Film

Two presentations were made specifically about the needs of film, by Thomas Christensen of the Danish Film Institute and Giovanna Fossati of the Netherlands Filmmuseum. Thomas explained how a film archive without film loses all sense of meaning, and showed the steps they had taken in Denmark to ensure a future, for at least the next few hundred years, of film preserved on film. The main action was providing low-temperature and humidity storage – below freezing for the material which has already shown signs of chemical change. Film conservation falls outside the scope of PrestoSpace activity, which was assumed to concentrate on digital processes.

Nevertheless, Giovanna showed that there were three areas where she hoped Prestospace would provide help to their film collection:

- Cost-effective preparation of access copies: DVD provides new forms of film archive access – for both public showings and for commercial sales. However film needs digitisation in order to produce a DVD. PrestoSpace work in cost-effective digitisation is immediately relevant to DVD production by film archives.
- Storage for the digital data (digital intermediate format) that film archives make when performing digital restoration. Digital processing has been accepted as a main technology for film restoration, and involves making huge digital files as a first step. Archives would like to keep these files, but face the problems mentioned above under Format: nothing simple and cheap on which to store the data.
- General information on storage, covering DVD, mass storage for digital intermediates, and covering the evolution of technology and cost. Storage is in the midst of a revolution, where “spinning discs” are becoming not only the high-performance method of storage, but also the cheapest – and with novel methods for achieving security (such as arrays of storage modules) that are unavailable with past AV media. All archives, from paper-based to film-based, will have growing needs for digital storage as a parallel activity to conservation of their originals – and PrestoSpace can provide useful information on the evolution of digital storage.

Immediate Actions

PrestoSpace has prepared a detailed questionnaire in order to determine the preservation status of European AV material, and to find out what collection holders are doing and plan to do. Some archive got ‘preview’ copies before the meeting, and some preliminary results were available to guide discussion at the meeting. Participants were encouraged to complete their questionnaires, and to circulate them as widely as possible. PrestoSpace will collect results in May, and these results will determine the future course of the project.

A simplified form of the questionnaire is online at: <http://prestospace.org/questionnaire/index.php?sid=3>. All parties with an interest in AV material are encouraged to send in a response. In addition to getting the requirements of archives, there is a specific section for companies which provide digitisation and restoration services to archives. These are the companies that can work with the PrestoSpace project to launch *Preservation Factory* services.

Here’s Our Plan:

Better Faster Cheaper:

The basic idea of PrestoSpace is that the technical processes involved in AV preservation need to be improved, or precious cultural heritage will be unnecessarily lost. The improvement is to make the services higher in quality, faster – and still cheaper. The method is the factory approach: mass production, involving significant investment in automation. This investment is beyond the reach of a small AV collection – hence the need for PrestoSpace to work with the commercial ‘facility house’ sector. It was very gratifying that several such companies attended the Amsterdam meeting, including specialists in audio, video and film.

Structure of PrestoSpace

Even ‘better faster cheaper’ preservation is expensive. It would be a fantastic success if PrestoSpace could reduce digital preservation cost to, on average, 50 Euros per hour of material. But where is a small archive – of say 10,000 hours – going to get the half-million Euros?

PrestoSpace has a plan: the increase in funding comes from an increase in access. It is the prospect of new services, new audiences, new products – that leads to an increase in grants, donations, sales – or any other new or enlarged funding.

In order to provide new access, PrestoSpace has taken a comprehensive view of 'the digital archive': all the ingredients necessary to exchange deteriorating media on shelves, for accessible and refreshable media on digital storage.

PRE RES SAM MAD

The project intends to provide deliverables (devices, software, reports, and recommendations) for preservation processes and management.

Preservation: a fast and affordable datacine, a contact-less playback tool for audio disks, an automated audio preservation tool, an automated video preservation tool, a manual tape condition assessment tool and an information system for preservation management.

Restoration: a restoration management tool, a defect analysis and description infrastructure, a set of high-level restoration algorithms, a disk-to-disk real-time restoration tool, a film restoration software tool.

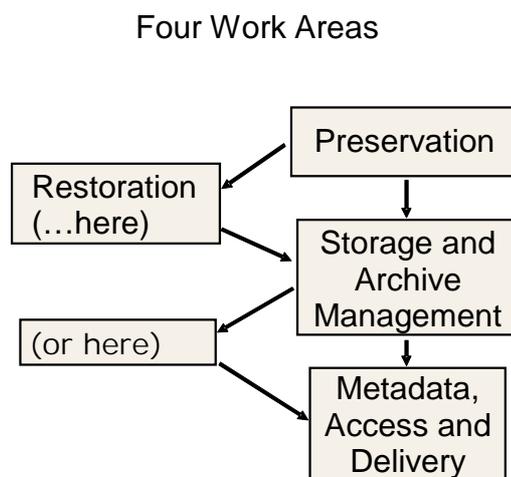
Storage and Archive Management: a web-guide and software tool for storage planning for audiovisual preservation, a guide and software tool for business-case planning for audiovisual preservation and organisation, a logistics and quality assurance system for audiovisual preservation.

Metadata, Delivery and Access: a semi-automatic description tool, an export system for delivering preservation results to medium and large archives, a turnkey system for delivering preservation results to small archives.

For all this work, the first stage is clarification and ratification against genuine user requirements. The workshop and the questionnaire are the method for determining those requirements.

Structure again

The work of PrestoSpace is shown in the following diagram:



The Films

The following morning we had a programme of films, including an early silent animation about the processes involved (80 years ago) in making and distributing film. One of the machines showed the name of a current PrestoSpace partner: Debrie, from Paris. There were also examples of film restored using digital and analogue processes, at projects in France, the Netherlands and Denmark.

Conclusion

It was a very packed day, representing a wide range of interests and views. There was agreement that:

- We all had preservation problems;
- Digital processing had an important role;
- Film was here to stay (providing the manufacture and processing of film can also be maintained);
- PrestoSpace can provide a significant, even vital, service -- if it listens properly, and if it provides a structure for comprehensive European cooperation.

Finally, we all agreed the problems were larger than any one sector, viewpoint or institution. It was very encouraging to have such a breadth of experience and interests gathered under one roof, especially such a distinguished roof. The strong cooperation between archives, research and the commercial services sector is the hope of PrestoSpace, and the hope for a brighter future for audiovisual preservation.

This reviewer would like to make special thanks to Brigit Hoomans and Karin Westerink of the Netherlands Institute of Sound and Vision (B&G), who was the principal organiser not only of the conference but also of the questionnaire – and who put enormous effort into making this a productive meeting.