



InterPARES 3 Project

International Research on Permanent Authentic Records in Electronic Systems

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Report of a case study

A. Outline

This case study approaches the audiovisual records / TV programs produced at the State University of Campinas (UNICAMP)'s Radio and Television – RTV, in order to carry out records management and preservation procedures. Its main outcome was the making of an action plan aimed at the preservation of the digital audiovisual records created during the production of the so-called “TV shows,” so as they remain reliable, authentic and accessible over time, given their cultural, scientific and informative relevance to the university.

B. Methodology

The case study followed the methodology proposed by the InterPARES Project. UNICAMP researchers collected data based on specific guidelines defined by the project, aiming to gather information about the context of creation and characteristics of the digital entity. This data collection was carried out through interviews that the researchers and research assistants held with the personnel in charge of the inventory of the audiovisual records that constituted holdings from the TV programs.

After data collection, the researchers conducted the diplomatic analysis of the record, according to the template for diplomatic analysis proposed by the InterPARES Project. From that analysis, it was possible to identify some procedural problems and to propose changes and a plan for the preservation of digital records.

C. Description of context

Provenancial context

UNICAMP is a public institution of autarchic nature under special rule of São Paulo state's government administration. RTV is subject to the Dean of Outreach and Community Affairs, a unit at the Rector's Office, and its mission is to disseminate UNICAMP's activities (teaching/learning, research and outreach), as well as the academic knowledge

resulting from them, by using the media and producing programs of educational, journalistic, cultural and scientific content.

RTV's Archives and Documentation dept. is responsible for the accession, organization, custody and preservation of RTV's products, including television programs and audiovisual recordings of official meetings held at the university and other events, as well as for the access to those materials.

Juridical-administrative context

The RTV is regulated by a set of normative acts that support its operations, for example the act determining its creation¹ and the national legislation on cable TV service² and copyright³. The organization and maintenance of the records' integrity follow an act of UNICAMP's Council providing guidelines for the management of its records⁴.

Procedural context

The production process of the TV programs follows these steps:

- *Start*: design of TV programs by the Project Coordinator, according to institutional requests and issues of interest to the university community.
- *Investigation*: study of the project's viability considering the availability of technical and financial resources and the target group's demands.
- *Consultation*: decision-making process regarding the implementation of the project or otherwise.
- *Determination*: final decision given by RTV's Director, after submission to the administrative board.
- *Control*: scriptwriting, image capture, editing and conclusion.
- *Execution*: After the whole process of editing and conclusion, the TV show is included in RTV's schedule and aired on the "Canal Universitário" (the University Channel, in English).

² UNICAMP, CONSU A-04/2004.

³ Federal law no. 8.977/1995.

⁴ Federal law no. 9.610/1998.

⁵ UNICAMP, CONSU A-8/1995.

Documentary context

The management of the records created by RTV integrates the university's archival classification and disposal program⁵, according to the following arrangement:

- Archival institution: State University of Campinas.
- Fonds: Dean of Outreach and Community Affairs.
- Group: Radio and Television.
- Subgroup: Television.
- Series: TV program.

Technological context

Since July 2010, the TV programs have been produced in the AVI (Audio Video Interleave) digital format and stored in the archival repository of the post-production area. Then, an RT alarm (electronic work order implemented at RTV in March 2011) is issued to indicate that some material has been sent for registration. The dept. of Archives and Documentation transfers the AVI file to an appropriate deposit, generates a reference copy on DVD and converts the file from AVI to Flash format, so as to make it available on the Internet. After that, LTO tapes are recorded as back-up, according to the archives' security policy.

In order to preserve the holdings, RTV carried out the conversion of recordings on magnetic tapes from U-matic format to Digital-S, and more recently to AVI format, for keeping at the deposit.

The database system used for indexing and making the TV programs' metadata available on the Internet was developed in Microsoft Office Access 97 software, using the Windows NT Server operating system and IIS server. Currently, this database is in the process of replacement by a MySQL database.

⁵ UNICAMP, Resolution GR no. 118/2000.

D. Narrative answers to the applicable set of questions for researchers

The TV programs that aim to provide public access to the university's academic, scientific and cultural production are designed, on demand, by RTV's Department of Projects and approved by its management board.

The producer in charge prepares the draft of the program, developed with the participation of RTV's production and post production teams. After editing, the program is broadcast by the University Channel, through the cable TV system and periodically via Web. After the exhibition, the material is sent through a network to the department of Archives and Documentation for storage.

The TV programs sent for custody and preservation at the Archives and Documentation dept. are stored in AVI, in the digital repository. Moreover, they are copied on LTO4 magnetic tapes for preservation, and on DVDs for access. Copies are also generated in the Real Media format and sometimes in the MPEG format, both for access on the Internet.

Descriptive metadata is manually entered into the database "Acervo" ("Holdings"), and it registers the following information: identifier, tape number, whether it is a donation or an RTV production, date of entry, tape format, title, area, synopsis, color system, language, year, duration, data sheet, recording location, director, producer, editor, filmmaker, edited/unedited material, availability, notes, title of the TV program's series, theme of the episode/chapter, and images.

The technical metadata is automatically produced while editing the TV show, and it includes: identification of each audiovisual record, size, pattern, format, date, time and other properties of the AVI file (producers do not manually fill in any metadata available in the AVI format).

The identification of these documents is made by a unique identifier for each TV program, which is given automatically by the database management system. In addition, copies on spare media are identified by the type of medium and their respective numbers, which are indicated in spine labels placed on the cases. Example: LTO1, DVD2, U1, etc.

The AVI files received by the dept. of Archives and Documentation can no longer be changed after their filing in the repository, in order to ensure the authenticity and reliability

of the records. Copies on DVD-R cannot be changed due to the medium's own nature, and their reproduction only takes place with formal authorization.

The TV programs are related to the following documents, which are usually made on paper: project, program framework, screenplay, script used in the editing process and task assignment. However, there are no formal mechanisms to register the archival bond between those documents and their respective TV programs.

As the Central Archives at UNICAMP's Archives System (SIARQ) does not yet have custody of the TV programs, it currently holds studies on standards and a project aimed to design a corporate repository for the transfer of digital records. In 2007, the Committee for Digital Records' Management and Preservation was established at UNICAMP.

E. Narrative answers to the project's applicable research questions

Which are the regulatory, auditing and policy making bodies that need to be sensitized to the importance of digital preservation, and what are the best ways of influencing them?

The organisms to be sensitized to it are those related to the strategic planning and the making of policies concerning archives, information and ICT, which are, in the context of a university, the higher deliberative bodies, such as the university council and colleges and institutes' boards. One way to influence them is to create, within the archival field, committees or groups composed of teachers, researchers, students and managers, in order to develop studies and proposals for digital preservation. Then awareness may reach the organization's areas horizontally and vertically, depending on their participation in these committees, which should include members of academic and administrative bodies (including maintenance and supervision). Those groups may jointly propose, therefore, actions and procedures to the higher and decision-making bodies for the resolution of the management and preservation of records.

How and when should these archives or programs prepare themselves for digital preservation?

The institutional archives should prepare guidelines and best practices for preservation, enabling record creators to carry out, in their local archives, measures to

ensure the reliability, authenticity and access of records, from the time of their creation and for as long as necessary.

What differentiates the preservation of digital records from that of any other digital entity for which the archives might be responsible?

The preservation of digital records, unlike the preservation of other digital entities, must be able to guarantee the basic characteristics of the archival document, particularly what comes to its fixed form, stable content and archival bond with the other documents that register the action.

What are the nature and the characteristics of the relationship that each of these archives or programs should establish with the creators of the records for which it is responsible?

There should be partnership between creators and archives in building solutions for digital preservation. Archives and creators must know each other and the former should provide guidance on the management and preservation of archival documents; the latter, in turn, should provide information about their operations and documents, allowing the identification of those which are archival, and be willing to incorporate archival knowledge in their work processes. That interaction is required for the joint development of solutions that enhance the creation and filing of records, in order to maintain their reliability, authenticity and access.

What action plans may be devised for the long-term preservation of these bodies of records?

In the Case Study 03, it was found that the TV programs had been produced in various analog and digital formats, over time. Currently, the digital AVI format is used, which was considered as their standard. ShockWave Flash (SWF) format is also used in the transmission system of the University Channel, which is stored too.

Throughout the case study, RTV's holdings also underwent an inventory, since several formats (U-matic, Betacam, and others) and different storage devices (DVDs and tapes) could be found. At different times, the conversion of the holdings to digital formats was carried out, as well as the replacement of digital storage devices (removable media), to allow access and use.

It was also verified that records that registered the various stages of production and dissemination of television programs were not created and/or filed at RTV, such as the design of the TV program, feasibility studies, scripts, etc. When those documents were created and stored, their relationship with the respective TV programs was not registered. On the database with descriptive metadata, data was recorded only with the description of the TV show, without any reference to other related documents. Thus, it was understood it would take an action plan to solve that.

Given that framework, the following was proposed:

1. Creation of a dossier, gathering the documents that record the different production stages of the TV show.

2. Implementation of a new computer system to control the production of TV programs, through which the actions and activities related to production, use and archiving of programs will be registered, and a unique number will be assigned for each TV show. That system should make use, as much as possible, of the information already entered in the database currently used, which stores the descriptive information of the holdings. That database should be preserved, along with the TV programs. The archival bond of the dossiers with their respective programs will be outlined through the metadata recorded in the database, which will include the classification code and the identifier of the program.

3. Definition of archiving format, aimed at long-term preservation: the AVI format was chosen for archiving TV programs, accompanied by a set of context metadata.

4. Definition of format for access on the Internet: Flash.

5. Enhancement of the storage solution currently used for the TV programs, in order to increase its safety. The definition of the solution should include:

- identifying agents (authorized users);
- definition of security policy and access;
- implementation of audit trail to allow tracking of cases;
- definition of equipment and storage devices needed; and
- definition of procedures for back-up, using LTO4 tapes.

6. Preparation of a manual with procedures for the creation, storage and preservation of the TV programs, to be named “Digital Preservation Procedures Guide for the RTV.” The manual should include:

- definition of access to digital formats;
- monitoring of technological obsolescence of media and formats; and
- forms of access.

7. Submission of the General Management and Preservation Strategy to the higher management boards, asking for:

- qualification of people to perform the management and preservation procedures, and
- financial resources for the implementation and maintenance of the technological infrastructure set for the reliable archiving of TV shows.

Can the action plan chosen for a given body of records be valid for another body of records of the same type, produced and preserved by the same kind of organization, person, or community in the same country?

Yes, it is possible, if the conditions are the same as the ones raised in this case study.

Can the action plan chosen for a certain type of record or system be valid independently of the creating or preserving organization and its context?

It is possible that other institutions that have the same characteristics may adapt it to their realities.

How can records professionals keep their knowledge of digital preservation up-to-date in the face of ongoing and increasingly fast technological change?

Records professionals can keep up by participating in open study groups (including networks), courses, conferences and meetings on the issues, or even by establishing programs and forming study groups in their own organizations, in partnership with national and international projects.

F. Diplomatic analysis

The TV show was considered a potential archival document, because it registers an action, it has fixed form and stable content, as well as identifiable context and people

involved. However their archival bond with the other documents taking part in the action is not explicit. It was detected that, even in some cases, those documents are not archived, losing the memory of the production activity of the TV show.

The action plan should include recommendations to:

- establish the archival bond of the TV programs with other documents that participate in the action, by means of metadata that allow identification and bonding;
- establish procedures for the long-term preservation, including the definition of file formats, monitoring routines and preservation strategies (e.g. migration);
- appraise equipment, supplies and materials used for the capture, organization and access to documents, in order to improve infrastructure;
- define responsibilities, and expand and train the team, aiming to improve human resources; and
- set a back-up policy, formats and the storage of material in physically distant locations, as well as the creation of copies on LTO4 tapes in order to ensure the safety of the TV programs.

Those actions in detail should involve participants from the production process and maintenance of TV programs.

G. Conclusion

The case study proved to be possible to apply the concepts, principles and methods of the InterPARES Project at a university. RTV is responsible for the production and storage of audiovisual recordings. It has an archival section and structured documentation, and manages the custody and access to its records, including those in digital format.

The study highlighted the need to implement improvements in the production of TV programs in order to: clarify the entity's archival bond with other digital documents through metadata; monitor preservation and access formats to implement migration procedures; and carry out an audit trail for tracking purposes.

In the action plan, some solutions have been detailed and the need for further studies to develop others was pointed out. Those responsible for RTV's holdings at the university have already started the implementation and development of some of them:

- making of the "Digital Preservation Procedures Guide for the RTV;"

- implementation of a computerized system to manage the production of TV programs and explain the archival bond between them and other documents; and
- purchasing of equipment in order to adapt their infrastructure to save files in AVI, for preservation, and in Flash format, for viewing on the Internet, which includes a storage for storing documents and the back-up LTO4 tapes.

Another important aspect highlighted in the case study was the need to hold a partnership with the university's Archives System for the development of joint institutional actions.