

Safe and Sound: A Framework for the Preservation of Audio-Visual Records to Support Accessibility for the Radio Broadcasting Stations in South Africa

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Abstract

Most radio broadcasting organisations struggle to preserve audio-visual records owing to a lack of skills, poor infrastructure and technological obsolescence. This qualitative study proposes a framework for preserving audio-visual records at South African broadcasting radio stations to ensure that records are safe and sound at all times if they are still needed. The study relied on the literature to investigate a framework for preserving audio-visual records to support accessibility for radio broadcasting stations in South Africa. The study discovered, based on the literature and challenges experienced, that the largest section of the radio broadcasting institution has no framework for preserving audio-visual records. This may be owing to a lack of preservation strategies and suitably qualified archivists to provide vision for implementing strategies. These strategies are implemented to preserve audio-visual records, which may result in records being undocumented and irretrievable. The study provides a framework for the systematic preservation of audio-visual records for radio broadcasting institutions by applying different preservation strategies. It is trusted that this framework will provide a benchmark to remedy the situation.

Keywords: audio-visual records, preservation, preservation strategies, preservation framework, radio broadcasting, South Africa

Introduction and Background

The idiomatic expression “safe and sound” implies having come to no harm, especially after being exposed to danger. This expression inspired the title of this study as to explore the development of a framework for preservation of audio-visual records to ensure that these materials are “safe and sound”. This study sought to investigate a framework for preserving audio-visual records to support accessibility at the radio broadcasting stations in South Africa.

Technological obsolescence is an enigma in the management and preservation of AV archives in Sub Saharan Africa. The media within which AV archives are preserved cannot last for a long time, thus underscoring the need to migrate such collections to new and emerging technologies. (Rakemane and Mosweu 2020)

Broadcasters face challenges of irretrievability of audio-visual records owing to “deteriorating formats and obsolete playback equipment” (Ngoasheng, Ngoepe, and Marutha 2021). This is as a result of the maintenance of radio broadcasting stations that is not done regularly. For instance, the maintenance of equipment for playback is done only once per year (Assmann and Mearns 2015). Recording equipment that is not maintained regularly may at times lead to the equipment for playback deteriorating and making the information inaccessible. It becomes obvious that failure to maintain the recording equipment regularly might lead to negative consequences. To give an example, “the radio broadcasting stations may not be able to re-use the audio-visual records, while most broadcasters, like the Dutch, use past programmes to produce new programmes” (Ngoasheng, Ngoepe, and Marutha 2021); this is also supported by Hagerdoorn and Agterberg (2016). As a result, the archival knowledge, information and heritage may cease to be shared from one generation to another.

Komba, Nawe and Manda (2015) underscore that, similar to many other kinds of record in different formats, audio-visual records keep information considered collaborated memory of the nation that is critical to keep the history of the country as a heritage too. If this memory is not properly preserved, “researchers will fail to obtain the rich oral recordings from the irretrievable audio-visual records that would be used to shape the thinking of the living generation” (Ngoasheng, Ngoepe, and Marutha 2021). For example, Mutsagondo and Ngulube (2017, 17) attest that the current infrastructure and skills in Zimbabwe are a threat to the future of electronic information. This assertion by the authors indicates that infrastructure and skills are often reported as contributing factors to poor preservation of audio-visual records, especially in Africa.

Literature Review

There have been several studies on radio broadcasting stations in South Africa but nothing about archives and preservation. Among these studies are those about power and politics for music archives by Lambrechts (2012), broadcasting archives in southern African countries by Assmann and Mearns (2015), classical music of the South African

Broadcasting Corporation (SABC) by Meyer (2015), social media enhancements to drama audience by Lefowa (2016), integration of social media content into the enterprise management system by Masekwameng (2018), and the editorial policy of the SABC by Muswede (2016).

Following the emergence of digital records, many concerns have been raised regarding the authenticity of the records over the long term. The radio broadcasting stations face a threat of losing audio-visual records owing to obsolescence and degradation. It is therefore important to investigate strategies for digital preservation. Strategies for digital preservation involve the manipulation and interpretation of the computer software, because of its dependence on the computer. The reason for this is that digital records are dependable on technology. Van der Hoeven, Lohman and Verdegem (2007, 124) aver that the long-term preservation of digital objects requires the development of strategies to secure the sustained accessibility of records. The strategies should ensure that audio-visual records are saved and accessible for a long-term period. According to Shimray and Ramaiah (2018, 46), planning for digital preservation strategies should be done carefully because of the heavy costs that might be involved. The digital preservation strategy must outline the workflows within preservation which clarifies business components that are involved and the tasks that are performed (De Jong 2016, 6). Among the strategies for digital preservation are emulation, migration, encapsulation, universal virtual computer, and computer museum (Marutha 2020).

The first strategy is emulation. According to Sigauke and Chabikwa (2012, 12), emulation is a program that translates code and instructions from one computing environment to another and which enables the records to be properly executed. Sigauke and Chabikwa (2012, 12) further elaborate that emulator software becomes obsolete with time and therefore requires strong system documentation to guarantee the reproduction of the authentic and reliable records in future. This means that emulation should ensure that proper involvement of hardware and software environments is required to access a source (Whitt 2017, 150). This should be achieved when emulation mimics obsolete hardware and software, ultimately offering functionality such as that from the original record (Castagne 2013). Emulation is useful to complex digital environments as it can execute the old software without the real hardware component. Emulation is capable of running complete operating systems such as Microsoft Windows, Apple and macOS, and GNU and Linux (Van der Hoeven, Lohman, and Verdegem 2007, 124). A Charon emulator allowed the user to run various digital equipment and corporation platforms as virtual machines on a modern personal computer and to facilitate migration and viewing of data from an old system. Digital documents are stored in their original form along with the original software in which they were created while additional software and hardware are created at the same time to permit a more advanced computer at some time to mimic (Whitt 2017, 157–158).

The other preservation strategy is migration. This strategy involves copying bitstreams from one media to the other and configuring the underlying data changes during the process, but the intellectual content remains (Castagne 2013, 6; Marutha 2020; Sigauke and Chabikwa 2012, 14; Whitt 2017, 156) The main purpose is to preserve the integrity of digital objects and to retain the ability for clients to retrieve and display the objects (Sigauke and Chabikwa 2012, 14). Migration is a key component for preserving and disseminating data because of its stability and resistance to frequent changes in technologies (Green, Niven, and Field 2016, 4). Migration is the transformation of data from an obsolete format to a new format. It is concentrated on the digital object in such a way that even hardware and software improvements will not disturb its ease of access (Shimray and Ramaiah 2018, 51).

Data migration consists of a transfer and update of a discrete set of data, by which an older version is replaced comprehensively by a newer version. When a new version emerges that is suitable for both data service and the new community, it triggers the need for digital migration. Data migration implementation signifies a carefully planned and fundamental change in the way in which a depository ingests, stores and preserves any type of data (Green, Niven, and Field 2016, 5). Data migration also involves a corresponding update which is important for authenticity because updates are the key components of an ongoing data lifecycle and include documentation of what processes have been undertaken and on which date. (Green, Niven, and Field 2016, 6–7). The writers identify stages of migration as follows:

- migration of data to new formats which involves the creation and verification of files in the new preservation format;
- migration of data to new dissemination formats which involves the creation of dissemination versions;
- creation of format files for users who are without access to formats; and
- an update of the corresponding metadata, which takes various sections into account and which include details of the process carried out on the data.

Green, Niven and Field (2016, 12) aver that these steps ensure the long-term preservation of data.

Whitt (2017, 156) postulates that migration allows for the transfer of digital information from a less stable to a more stable medium, from more complex to the simplest possible formats, and from a multiplicity of formats to a smaller number of common formats migration. According to Sigauke and Chabikwa (2012, 14), migration backward compatibility is highly dependent on the interoperability of systems' software; migration therefore has to be carried out recurrently owing to the rapid changes in technology.

Another strategy is encapsulation, which groups together a digital resource and whatever is necessary to maintain access to it (Marutha 2020). It can include metadata software viewers and discrete files which form digital resources (Digital Preservation Coalition 2008, 117). Encapsulation involves enclosing details on the way in which to interpret the digital object part of the encapsulated information. It increases the compatibility of data between computer applications. Encapsulation is the development of new software that is designed to manipulate the preserved digital information. Encapsulation requires the archive package to preserve the digital infrastructure and relevant format specifications. Encapsulation lessens the chance of losing any critical component necessary for decoding and rendering a digital object. It also provides types of metadata that may be encapsulated with a digital object. These types of metadata are reference, representation, provenance, fixity, and context information (Sigauke and Chabikwa 2012, 15).

A universal virtual computer is another preservation strategy. It is about a computer with no actual existence, but which is part of the behaviour of a physical computer which mimics the instruction set and the hardware configuration of a physical machine (Rosenthal 2015, 2). Furthermore, Rosenthal (2015, 2) asserts that virtualisation refers to a technique for implementing a virtual machine in a host computer. According to Shimray and Ramaiah (2018, 49), a universal virtual computer is an intermediary platform which is on an accessible platform and can establish a data type for an object during archiving. On top of that, it decodes a program proficient at reading the item according to the schema. This strategy is implemented for writing, decoding, and decoding a programme for execution (Shimray and Ramaiah 2018, 49). At the time of resting the object, an emulator is used to access the platform. The universal virtual computer performs the decoder program to read the archival contents and output the result into a restored program (Shimray and Ramaiah 2018, 49).

A universal virtual computer is a general-purpose computer that specifies a process to be executed on an unknown machine of the future (Whitt 2017, 160). Whitt (2017, 160) identifies the provision of essential functions for an unlimited variety of data types as the advantage of a universal virtual computer. Shimray and Ramaiah (2018, 50) state that it offers choices for preserving document-type resources and software programmes. It decreases the development words essential to keep diverse software and platform unions and is intended to read the original object data streams (Shimray and Ramaiah 2018, 50).

Another strategy is the computer museum, also called technology preservation. It offers the potential of coping with media obsolescence, if the media has not decayed beyond readability (Sigauke and Chabikwa 2012, 11). It is viewed as a short-term solution because space, maintenance and other costs keep on increasing (Sigauke and Chabikwa 2012, 11). According to Shimray and Ramaiah (2018, 50), a computer museum puts more emphasis on the technological setting than on digital objects and preserve the digital object along with the software and the hardware essentials to access the digital

objects. It is a disaster recovery approach for digital objects where the proper digital preservation approach was not implemented. A computer museum is a short-term strategy (Shimray and Ramaiah 2018, 50). Shimray and Ramaiah (2018, 50) state that a computer museum can cope with media obsolescence if the media has not disintegrated beyond readability by sustaining an old operating system and application software which do not function on the current platform.

Purpose and Objective of the Study

The purpose of the study was to investigate a framework for preserving audio-visual records at the radio broadcasting stations in South Africa. The objective of the study was to propose a framework for preserving audio-visual records for the radio broadcasting stations in South Africa.

Research Methodology

This qualitative study relied on the literature review to investigate a framework that may guide radio broadcasting stations in South Africa on the appropriate preservation of audio-visual records. The literature was searched, using appropriate keywords for the title and purpose of the study to electronically retrieve appropriate sources through the google search engine. The google search engine was able to connect researchers to different sources on different websites, search engines and databases. The appropriate sources were selected based on the titles and abstracts.

Discussion

This section provides a discussion based on the findings of the study from the literature reviewed. Continuous changes to software and hardware and the rapid obsolescence of digital technologies have critical consequences for the archives (IRMT 2016a, 17). This implies the need for dedicated management and archivists for managing the records in archives effectively when faced with constant technological change. Management would be responsible for designing preservation strategies for audio-visual records, whereas the archivists at grassroot level implement the strategies for the long-term preservation of audio-visual records. There are many preservation strategies for audio-visual records to be studied and implemented as the crisis of obsolescence of technologies increase (IRMT 2016b, 17). When an archive fails to implement preservation strategies, it runs the risk of failing to meet the reason for its establishment, because such records will be dealt with haphazardly and clumsily (Chigariro and Khumalo 2018, 161).

Conclusion and Recommendations

Strategies at organisations are enablers that guide the way in which tasks should be performed and that implement a monitoring process. The preservation of audio-visual records is very important for radio broadcasting stations in South Africa and should be

handled properly to ensure their safety. The study established that the radio broadcasting archives are operating without strategies for preserving audio-visual records.

The study recommends setting up management for the archives, the main responsibility of which is to oversee the general functions of the archives. The management should first appoint archivists with the required skills and expertise to work in the archives. Then they should prepare a budget for the archives to operate effectively. The archive management should develop strategies for preserving records. The archivists should be involved in the planning and management because of their skills in archival matters. Furthermore, management should develop policies and procedures to streamline the archival tasks. While developing these strategies, archive management must consider the views and inputs of the stakeholders such as the radio broadcast facility (RBF) for technology and storage requirements, radio stations and news divisions as the creators and providers of records. The archivists should collaborate with the stakeholders to ensure that the implemented strategies are suitable to them.

Proposed Framework

The study proposes a framework for preserving audio-visual records, as indicated in Figure 1. As indicated, the archives of the radio broadcasting stations can adopt this framework and use its guidance to implement online archiving which has been guided by the literature. This is suggested to simplify access to the records which have been very difficult in the past and resulted in irretrievable records and increased backlogs.

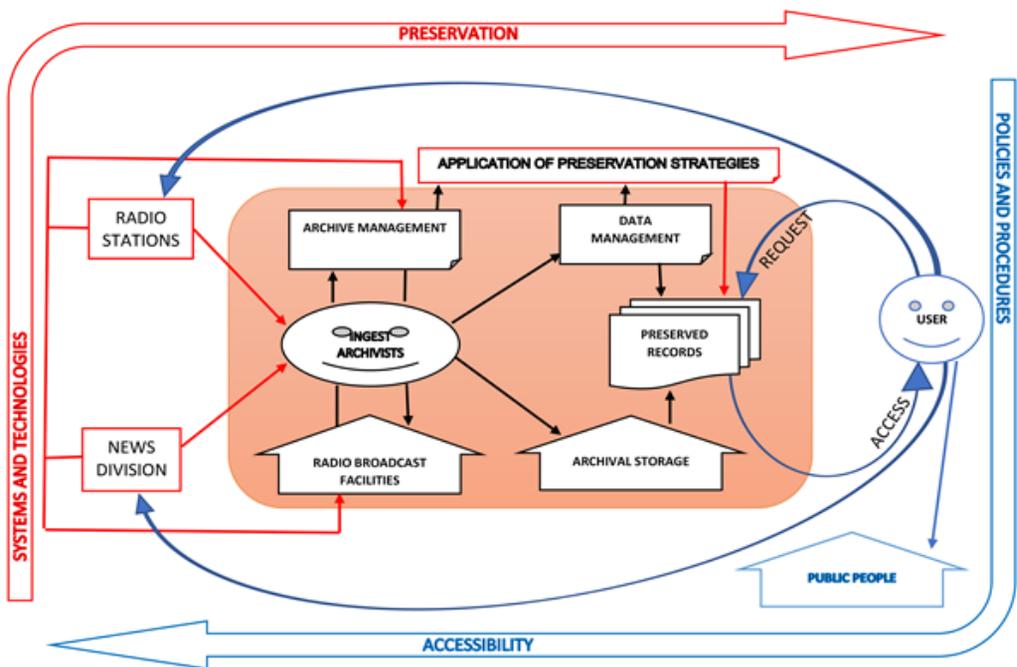


Figure 1: Framework for the preservation of audio-visual records

The framework begins with the creators and owners of the records, radio stations and news divisions. Following the broadcasts, the records will be uploaded or sent to the archives. The records are received by archivists who perform the filing systems, classifying, cataloguing, and indexing. They are then transferred to storage. While the records are in storage, the archivists provide mechanisms to ensure that the records are safe, for example, from unauthorised access, through data management, and that the records are preserved, using the appropriate strategies as required.

The requests for access to the records will be done by the users to the archivists. The users in this regard may be the staff from radio stations and the news divisions and the general public. If the requests meet the requirements, the archivists will download records to the users on the agreed online platform. The framework provides a room for the creators to engage with the archive management. This is a platform for entering into service level agreements where the two parties sign a contract for the delivery of services. This will ensure that the archives perform their functions, unlike the situation where records have been neglected. The framework places the RBF within the function because the department will always be needed for the procurement of digital resources and service maintenance. The archive management will also have to engage the RBF for advice on evolving technologies and the impact of such technologies on records. It is hoped that this framework will help the radio broadcasting stations to improve their preservation of audio-visual records.

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