

Audiovisual cultural heritage: Bridging the gap between digital archives and its users

Guido Ongena, Ph.D. student
Department of Media, Communication & Organisation
University of Twente, P.O. Box 217, 7500AE, Enschede
g.ongena@utwente.nl

ABSTRACT

This document describes a PhD research track on the disclosure of audiovisual digital archives. The domain of audiovisual material is introduced as well as a problem description is formulated. The main research objective is to investigate the gap between the different users and the digital archives. Next, design research is proposed as a methodology for this research. Lastly, the social and scientific relevance is briefly discussed.

Keywords

audiovisual heritage, user requirements, business model, design research

1. INTRODUCTION

Not long ago printed documents were seen as the most important historical assets of a country or nation. However, with the development of radio and television for more than 50 years, audiovisual (AV) content is becoming more and more part of the cultural heritage of a nation [1]. Hence, the awareness of the importance of this part of the nation's heritage is increased and is becoming more professional.

Once awareness is created, the next step is to preserve content to prevent it from damaging in the course of time and to safeguard it for future generations. The most common way to preserve such historical artifacts is to digitalize the content. The total amount of hours audiovisual recordings in Europe is estimated at 50 million of audio, video and film [2]. Most of it is in an analogue format. Main reason, next to preservation, to convert analogue material into a digital format is to fluent the exchange of material by adding additional information to this content [3]. In the process of digitization metatags are added to the content, which increases the searchability and retrieval of particular content. Moreover, digitalization of content can also operate as a driver to establish new services. The process of digitization is complex and gains new insights into properties like distribution, interoperability, integration with other collections, and metatagging (e.g. taxonomies) [4]. These are just few of the domains that are affected by the digitization.

For preservation reasons The Netherlands Institute for Sound and Vision was established in 1996. Main goal of this institute was to create an infrastructure for managing and the preservation of the audiovisual heritage of the Netherlands. This resulted, in 2006, in a large archive that contains 70% of the Dutch audiovisual heritage [5]. In 2009 the budget for the institute is estimated for around € 19 million [6], which increases yearly with a small amount. Now infrastructure is created, six organizations started a consortium called 'Images for the future'. Activities of this

consortium are to restore and preserve audiovisual material, digitization, copyrights management and disclosure of the content.

2. PROBLEM DESCRIPTION

Although countries differ among stages of digitalization of their audiovisual material, it is an important condition for disclosing the content. However, questions arise about the method to make the archive available for its user's potential. Governments and cultural organizations are discovering various opportunities for new ways to bring their material to the public. At the same time, new techniques are available to distribute audiovisual content to its users.

For the transmission of audiovisual content, a high capacity connection is another important condition. In The Netherlands 78% of the population has a broadband connection in 2008 [7]. Moreover, the internet has more opportunities for personalization of content and an increase of web based applications with an uplifting ease of use.

When both conditions are sufficient, pilots can be started around intelligent services or applications for users. In the domain of audiovisual material five actors or users are important to stipulate. It is important to distinguish various users, because of different kind of needs and demands of these applications. The five actors with respect to audiovisual cultural heritage are [4]:

- Broadcasters (Public/Commercial, native/foreign)
- Profit organizations (DVDs, CDs, internet, commercial screenings)
- Non-Profit organizations (museums, film festivals)
- Education (primary, secondary, higher)
- General Public

Although these user groups are clearly defined several questions arise when investigating these groups and their relationship with audiovisual content. What kind of content do they need? Hence what are the user requirements per group? What is the influence of context in this retrospect; what is the demand of different users in different contexts? Moreover, what is their behavior to the digital archives? Next to the user requirements, what addresses the demand; it is important to study the possibilities of technologies and the match with the user requirements. In addition, which business model can be made upon both perspectives (demand and possibilities).

3. RESEARCH OBJECTIVE

This PhD research will be conducted in The Netherlands and there will be an intensive collaboration with Belgium. The

proposal is funded by ICTRegie¹ and IBBT². A Belgium PhD candidate will conduct the same research, differing in that he will describe the situation in Flanders. Section 3.1 describes the granted proposal where the content has been specified by the two PhD candidates. Additionally, a more fundamental objective or perspective is addressed in section 3.2.

3.1 Information science research

The aim of this research is to give answers to the questions, which are described at the end of section 2. Thus, this PhD project investigates the user requirements with respect to audiovisual content. Moreover it tries to identify technological possibilities and their contribution to the (better) use of audiovisual material. From both approaches a business model will be created, which contains critical success factors specifically when disclosing audiovisual material. Figure 1 depicts the research project and the related actors and applications. The left side of this image represents the digital archive as such. This large database of audiovisual content can be used by services, which resembles second skin for delivering content to the user. This user is stated at the right side. As stated above different users are formulated. These users have needs, which are important to develop a service or application. Thus, the service has to match with the needs of the different users.

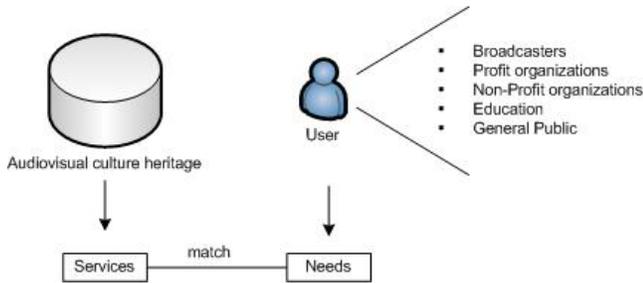


Figure 1. Positioning of the PhD research project

Much current research is done on the technical side of the digital archives of audiovisual material (e.g. digitization, indexing, video formats, automated tagging). The distinguishing part of this research lies in the fact that the next step has to be taken, to disclose the archives for its users. What will be accomplished with this research is to uncover the potential of the audiovisual heritage and to extend the discussion from a technological point of view to a more user perspective point of view with respect to audiovisual content. Moreover, different theories will be used from other domains. This expands the validation or discussion of these widespread theories (e.g. technology acceptance model [8]).

Although this research mainly studies the user perspective of audiovisual content, technological issues will be addressed. For instance, it can be interesting to investigate the integration of a folksonomy (metatagging by users) with a taxonomy (metatagging by professionals). Hence, technological issues will

¹ The goal of the *Netherlands ICT Research and Innovation Authority* is to develop a national ICT research and innovation strategy that is aimed at strengthening the ICT knowledge infrastructure of the Netherlands and maximising the benefits for society and the economy.

² IBBT (Interdisciplinary Institute for Broadband Technology) is an independent research institute founded by the Flemish government to stimulate ICT innovation.

be addressed when necessary. An important issue in this perspective is the use of AV material on different platforms. The use of mobile devices is emerging and inherent the use of internet applications on these devices. Therefore we distinguish the following platforms:

- Television (linear, video on demand)
- Internet (websites, portals)
- Mobile device (smartphone, netbook)
- Hardcopy (CD, DVD, Blu-ray)

3.2 Research paradigm

In the above described research a fundamental framework comes up, which lies underneath and has more a meta research character. The research revolves around the utility of a service. This idea of research through utility can be found in the information systems research framework. Behavioral science investigates theories for explaining or predicting human behavior. Design science on the other hand investigates the capabilities and boundaries of humans and organizations and tries to expand these by creating new and innovative applications or services. Hence, design research revolves around creating [9]. Figure 2 presents the design science framework as documented by Hevner et. al.

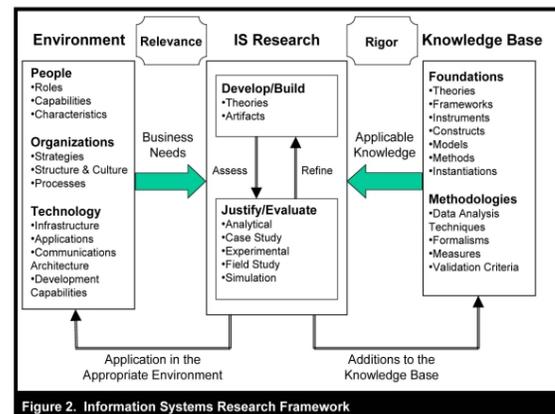


Figure 2. Information Systems Research Framework [9]

The main concept is that data is collected from the environment, which can be used for the development. As are also theories and frameworks from the knowledge base which in this case can be seen as the scientific world. Questions arise such as how the research objective is related to the above framework. As can be seen in Figure 1 this research revolves around the users of audiovisual material. The basic idea of design research will be used in all steps of the conducted research. Thus, when investigating the user needs theories and instruments of the knowledge base will be used as data from the environment where we live in.

However a more fundamental issue is created upon this framework. The doctorate will include one or more chapters about the assessment or evaluation of this framework. Thus, when executing the research as is proposed in section 3.1, remarks will be noted about this framework. This is done in order to improve or extend the theoretical framework.

Now the research objective and positioning is set, the methodology will be discussed in further detail below.

4. METHODOLOGY

This PhD research is currently at the very beginning, thus this part is still in an early stage. However, the method for collecting data is important, because it determines for a large part the internal and external validation of the research that is conducted. The overall method or research framework can be characterized as design research [9], which is explained in previous section. Below, the methods per stage will be briefly discussed.

4.1 User needs and technical possibilities

To gain full insight in the behavior of consumers with respect to the use of audiovisual content a survey method is proposed. The main reason for this method is for extrapolating the results to a broader society. In addition to the survey, datamining can be a suitable additional method. Much data is stored in log files. These log files contain the queries of users who searched for audiovisual content.

For acquiring knowledge about the state of the art techniques or applications that are available for bringing the AV-content to its users, an in depth literature study will primarily be conducted.

When both segments (user behavior and state-of-art techniques) are completed it is necessary to combine both perspectives to ensure one fits to the other. In order to match these perspectives we propose a vignette method. Respondents receive a short scenario, upon which they answer a couple of questions.

4.2 Services and viable business model

As the design research stipulates, the basic idea of the framework involves utility. Therefore, an application or service will be developed during this research project. Important factors in this are the user needs and the technological possibilities, which are formulated in section 4.1. Hence, these factors serve as input for a user based service.

Next to the development of a service, a business model is constructed from theory and data is gathered from user research. Users are asked in the scenario's about their thresholds and motives for using audiovisual content. This data will function as an input factor for a business model which cultural organizations can support for maintaining their businesses. For the development of a business model, the STOF model will be used as a framework [10]. This framework is validated in different sectors and gives a model for identifying critical success factors specifically for audiovisual content.

4.3 Justify and evaluate

After developing a service or application to one of the groups, an assessment is needed for refining the service. This will be done by means of experiments. These experiments involve the user experience and usability issues that are related to this service or application. The output of these experiments is used for the recommendation of the application.

5. SCIENTIFIC & SOCIAL RELEVANCE

Discussing the main contribution of this research to iTV and the justification why this contribution will lead to a PhD degree touches upon the scientific and social relevance (also in relation to iTV) of this research.

Although the scientific relevance is perceivable throughout the sections of the research objective and the methodology part (hopefully), it is hard to formulate a single abstract research question. This is caused by the methodology of design research, where environment and knowledge base touches upon each other within different stages of research. Nevertheless, this research can bring major knowledge to the academic society about the interaction between the audiovisual archives and its users.

In general, the social relevance of this research lies in the fact that culture organizations gain insights in the user needs, but also acquire knowledge about a viable business model. This is important because more and more organizations are shorted on government support and are reliable on commercial funds and customers. Hence, these organizations seek for better and viable business models.

The relation with iTV is unambiguous. This PhD research track is involved with numerous topics which are stated on the EuroITV website. To name a few topics that are relevant in relation to the research objective above: digital content production, web2.0, user-generated content, usability and user experience, business models, personalization, and user modelling.

6. REFERENCES

- [1] Bachimont, B., and Auffret, G. 1999. Audiovisual Cultural Heritage: From TV and Radio Archiving to Hypermedia Publishing. In Third European Conference and Research and Advanced Technology for Digital Libraries. BNF, Paris, 58-75.
- [2] Wright, R. 2008. Preservation of Digital Audiovisual Content. Consulted February 18, 2009: http://www.digitalpreservationeurope.eu/publications/briefs/audiovisual_v3.pdf
- [3] Caldera-Serrano, J. 2008. Changes in the management of information in audio-visual archives following digitization: Current and future outlook. *Journal of Librarianship and Information Science*. 40, 1 (March 2008), 13-20. DOI=<http://dx.doi.org/10.1177/0961000607086617>.
- [4] Oomen, J., Verwayen, H., Timmermans, N., Heijmans, L. 2008. Images for the Future: Unlocking Value of audiovisual heritage.
- [5] The Netherland Institute of Sound and Vision. Consulted February 19, 2009: <http://instituut.beeldengeluid.nl/index.aspx?ChapterID=8532>
- [6] Ministry of Education, culture and science. 2009. Rijksbegroting 2008. [dutch]
- [7] Statistics Netherlands. 2008. ICT gebruik van personen naar persoonskenmerken. [dutch]
- [8] Davis, F. D. 1989. Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13, 3, 319-339
- [9] Hevner, A.R., Salvatore, T.M., Park, J., Ram, S. 2004. Design Science in Information Systems Research. *MIS Quarterly*. 28, 1 (March 2004), 75-105
- [10] Bouwman, H., DeVos, H., Haaker, T. 2008. *Mobile Service Innovation and Business Models*. Springer-Verlag, Berlin