The Application of an Event-Aware Metadata Model to an Online Oral History Archive

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Abstract. In this paper we test the ABC event-aware metadata model, developed within the Harmony project, by applying it to a complex multimedia oral history archive. Based on a metadata schema, generated using the ABC model, we developed indexing tools, a database and a search and browse Web interface, for an oral history collection consisting of audio tapes and posters generated from a series of interviews and photographs. The objective was to build a testbed to test and refine the ABC model and also to demonstrate that use of the model will ensure consistent, well-structured, unambiguous metadata descriptions for complex multimedia collections. Such descriptions will hopefully lead to improved fine-grained resource discovery, interoperability between different metadata schemes and explicit tracking of intellectual property rights.

1 Introduction

The future will lead to many more compound multimedia documents on the web which combine text, image, audio and video in rich complex structured documents in which temporal, spatial, structural and semantic relationships exist between the components. The problems associated with indexing, archiving, searching, browsing and retrieving these kinds of structured dynamic documents are infinitely more complex than the resource discovery of simple atomic textual documents. In addition, the intellectual property rights associated with the components which make up such documents are frequently enmeshed within a complex and dynamic web which is extremely difficult to manage.

The Dublin Core [1], bibliographic [2], museums [3], archival [4] and MPEG-7 [5] communities are developing international standards for describing textual, physical and audiovisual resources to enable their resource discovery over the Internet. The INDECS organisation [6] is developing metadata standards to support network commerce in intellectual property. Managing the new heterogeneous multimedia resources which are being developed and traded via the Internet is going to require interoperability between these disparate standards [7].

The Harmony International Digital Library project [8] is investigating models and tools, which will facilitate machine-understandable communication between the con-

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tent description domains (Dublin Core, MPEG-7, IFLA, CIDOC) and the e-commerce and rights management domain (INDECS).

The collaborators are developing a common data model and metadata vocabulary, which will hopefully provide a stable underlying infrastructure for the exploitation of digital multimedia content over the Internet.

In this paper we apply an event-aware metadata model [9], which has been developed within the Harmony project, to provide a clear understanding of the individual resources, events, contributions and relationships which constitute a complex collection of digital multimedia resources. By applying the proposed model, we hope to generate consistent, well-structured, unambiguous and modular metadata descriptions which will lead to improved fine-grained resource discovery, easier mapping between different metadata schemes and the explicit tracking of intellectual property rights.

In order to test the model and the quality of the derived metadata, we built an online digital audio (MPEG-2 Layer3 (MP3)[10]) and image archive, together with indexing tools and a search and browse interface, for an oral history project. The *From Lunchroom to Boardroom* project [11] combines oral, written and visual art techniques to highlight the achievements of women in the Labor movement in Queensland from the 1930's to the 1960's. The collection consists of posters and audio tapes generated from a series of interviews and photographs. It provides an ideal multimedia testbed for applying and testing the proposed ABC metadata model. In addition, the development of a digital online version will greatly increase the accessibility and dissemination of this valuable historical collection.

Based on a metadata schema which was derived by applying the proposed model to this collection, we built a multi-level metadata editor/generator application, MEGGIE. This Java application includes a computer-assisted audio file transcriber which enables the input of transcripts and their alignment with the corresponding digital speech files. The structured and validated metadata descriptions can be output as: ID3 tags [12] embedded in the MP3 files; Dublin Core descriptions encoded in RDF [13]; MPEG-7 descriptions [14] encoded in XML [17]; HTML metatags [15]; or tables in an Oracle database with links to the MP3 files. A web-based search interface was also built which enables users to search and browse the archive via speaker name, keywords or transcript content and to retrieve and play the matching segment of the relevant MP3 file. Figure 1 provides an overview of the system architecture.

The rest of the paper is as follows. In Section 2 we describe the ABC model [9] briefly. Section 3 describes the results of applying the ABC model to this project and the metadata schema which was generated. In Section 4 we describe the MEGGIE metadata/editor generator application which was built to enable the computer-assisted generation of metadata descriptions for a number of different domain-specific vocabularies. Section 5 describes the search, browse and retrieval web interface to the collection. The paper concludes in Section 6 with an evaluation of the ABC event-aware metadata model in the context of this digital multimedia collection and the anticipated future work directions.