ABSTRACT

One way of providing technological support for communities of teachers is to help participants to produce, structure and share information. As this information becomes more and more multimedia in nature, the challenge is to build multimedia authoring and publishing tools that meet requirements of the community. In this paper, we analyze these requirements and propose a multimedia authoring model and a generic platform on which specific community-oriented authoring tools can be realized. The main idea is to provide template-based authoring tools while keeping rich composition capabilities and smooth adaptability. It is based on a component-oriented approach integrating homogeneously logical, time and spatial structures. Templates are defined as constraints on these structures.

Keywords: data modeling; educational multimedia; multimedia application; multimedia; XML

INTRODUCTION

We are involved in a multidisciplinary project, the aim of which is to support the activities of communities of practice (CoP) in pedagogical environment. This project will provide tools for document production and for document reuse in heterogeneous applications. The objective is to reduce the current limitations caused by the proliferation of data sources deploying a variety of modalities, information models, and encoding syntaxes. This will enhance applicability and performances of document technologies within pedagogically consistent scenarios. In this paper, we will focus on the authoring needs of teacher communities and propose a new authoring model, LimSee3.

In the educational context, there exists a large variety of authoring tools, see
(Brusilowski, 2003) for an extensive review. The main objective of these systems is to provide adaptive educational hypermedia thanks to well-structured hyperlinked content elements that are mostly static content. In Hoffman and Herczeg (2006), the created documents are video centric, providing a way to add timed hot-spot embedding additional media and interaction facilities in the resulting hypervideo. The time structure is, therefore, straightforwardly given by the video media, while the time model of our approach (given by the SMIL time model) is much more general. In our project, we want to provide educators with a way to take advantage of multimedia synchronization to offer more lively pedagogical material. But it is worth noting that multimedia brings a higher order of complexity for authors. In order to reduce this complexity, we propose a multimedia authoring model that will provide similar authoring services than formed-based hypermedia systems (Grigoriadou & Papanikolaou, 2006).

The LimSee3 project aims at defining a document model dedicated to adaptive and evolutive multimedia authoring tools, for different categories of authors and applications, to easily generate documents in standard formats. Our approach is to focus on the logical structure of the document while keeping some semantics of proven technologies such as SMIL (SMIL). This provides better modularity, facilitates the definition of document templates, and improves manipulation and reusability of content. The LimSee3 authoring process is given on Figure 1: a document is created from a template by adding content in an application-guided way. The obtained LimSee3 document can be exported into one or several presentation documents suitable for rendering.

This paper is organized as follows: next section presents a scenario example that will be developed throughout the paper and thereby analyzes CoPs requirements for authoring multimedia documents. We then define the main concepts on which multimedia authoring tools are based, and we classify existing approaches in the light of these concepts. After that, we introduce the LimSee3 document model and show how it can be used for the development of authoring tools tuned for specific CoPs. The last section presents the current state of our development and our perspectives.

A LEARNING-ORIENTED EXAMPLE OF AUTHORING

Multimedia Storytelling for Enhanced Learning

Educators have integrated practice into their curriculum to different degrees; Figure 2 shows this continuum and how LimSee3 can be naturally used to enhance authoring multimedia documents.

Edward Bilodeau (2003) illustrated that moving towards full immersion requires substantial changes to course design. Careful consideration must be given to the optimal location for student learning to occur on this continuum. Using templates in LimSee3 authoring tool for pedagogical approach allows production process during this continuum. It gives a way of making things simpler and faster to teachers and writers. It focuses on pedagogical issues. It produces practical units of learning (UoL).

Researchers such as Dolores Durkin (1961), Margaret Clark (1976), Regie Routman (1988; 1991), and Kathy Short (1995) have found evidence that children who are immersed in rich, authentic liter-
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