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
Brusilowskii, 2003) for an extensive re-
view. The main objective of these systems is
to provide adaptive educational hypermedia
thanks to well-structured hyperlinked con-
tent 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 addi-
tional 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 applica-
tions, 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 cre-
ted 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 re-
quires 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-
Fostering Educational Technology Integration in Science Teacher Education: Issues of Teacher Identity Development
Brenda M. Capobianco and James D. Lehman (2010). Technology Implementation and Teacher Education: Reflective Models (pp. 245-257).
www.igi-global.com/chapter/fostering-educational-technology-integration-science/43434?camid=4v1a