

A Practical Approach to Authoring Hypermedia Composites Used for Web Applications

Seid Maglajlic

Institute for Information Processing and Computer Supported New Media (IICM),
Graz University of Technology, Schiessstattgasse 4a, A-8010 Austria
Tel: +43-316-873-5633, Fax: +43-316-824394, E-mail: smagla@iicm.edu

Denis Helic

Institute for Information Processing and Computer Supported New Media (IICM),
Graz University of Technology, Schiessstattgasse 4a, A-8010 Austria
Tel: +43-316-873-5633, Fax: +43-316-824394, E-mail: dhelic@iicm.edu

Nick Scerbackov

Institute for Information Processing and Computer Supported New Media (IICM),
Graz University of Technology, Schiessstattgasse 4a, A-8010 Austria
Tel: +43-316-873-5618, Fax: +43-316-824394, E-mail: nsherbak@iicm.edu

Abstract: This paper gives an introduction to modeling of hypermedia composites used for structuring of web-materials. In the introductory part we explain the need for a data structure such as hypermedia composite in order to provide better characterization and construction of hypermedia-materials. In the second chapter we bring a description of hypermedia composite model. Third chapter tells how to create such a composite and how can it be used. The conclusion chapter brings a short comparison of our approach to authoring web applications and other tools used for the same purpose.

1. Introduction

The requests on web applications today are growing fast: the idea is to give the end user a possibility to understand a presentation easily and quickly, prevent the user from "getting lost in hyperspace", and at the same time the application should allow the author to easily reuse presented (created) material, create new web-materials and produce a new application [Maglajlic et al. 1998].

In order to create a hypermedia application running on the web the author of a such application has to define and compose some building blocks which can contain a lot of actual multimedia documents (units containing hypertext and multimedia materials together). For that purpose we propose here a usage of hypermedia composites.

2. Hypermedia Composites

Hypermedia composite can be seen as a basic building block of a hypermedia application. An author has a number of primitive multimedia/hypermedia documents which he/she combines into a hypermedia composite. The created composite can be further combined with other documents and/or other hypermedia composites to produce a more complex hypermedia composites. Each hypermedia composite has its own internal structuring mechanism, which defines, for example, the number of documents that can be members of this composite, can other composites be added as elements, how the elements of this composite are interrelated in means of computer-navigable links, which operations can be applied to this composite and its elements (open, save, delete, etc.) and a number of other attributes which can be used to describe the composite. Moreover, we should understand hypermedia composite as an instance of a well-defined data type. The data type

definition indicates types of the elements of a hypermedia composite and operations that may be performed on the composite and/or its elements. Thus, we can say that we have different types of hypermedia composites which characteristics and the behavior are predefined in some way and that we have instances of these types that actually hold the data, as much similar as we can speak about classes and objects (instances of these classes) in object-oriented programming languages.

After a creation of some number of such composites it is not hard to combine them into a structure recognized by a hypermedia system (e.g. an information server based on a hypermedia technology).

3. Creation Procedure

A creation procedure of a hypermedia application using hypermedia composites can be seen as a three stage process. First we define a single composite using a particular application for data definition, an application which allows specifying the attributes of the composite and operations that can be applied to its units. For example, we can say that our composite has an attribute which tells it is a teaching course, corresponding units which actually make this composite are title, short introduction, chapters overview and chapters repository.

Let us say that a unit characterized through a particular attribute as a chapter repository has as its contents chapters - which are again hypermedia composites with particular units, e.g. a title, an abstract and contents. Because chapter repository unit can have several objects as its content, the particular operation applied to this unit should than an "add" operation -it means, we allow adding more documents to this repository.

After the composite definition process, as a second phase, the author can supply the composites with an actual contents using an application which recognizes the composite as its template and has an access to a multimedia documents resource directory which can be a local hard-drive or an information server.

The third step in this approach is specifying a visualization procedure for defined hypermedia/web materials. The author can use again the special application which makes it possible to design a final outlook of a hypermedia application and specify the linking structure between different composites. A produced structure can be mapped e.g. to HTML or XML, and special created Java-applets, JavaScript or XML can be used for navigation through and between the composites.

4. Conclusion

Using this approach we can achieve the aim of giving an user a web application which is strictly context-oriented. With predefined visualization structure of composites it is hard to "get lost in the hyperspace". On the other hand, the author can use once defined composites to combine them into a new one and create a new hypermedia application. Usage of specially defined application for composite creation and visualization gives the author freedom to functionally define a hypermedia/web material (using operations on the composite units) and to characterize it through the usage of composite attributes.

5. References

[Maglajlic et al. 1998] S. Maglajlic, H. Maurer and N. Scherbakov: Separating structure & content: Authoring of educational Web applications. - World conference "Educational Multimedia and Hypermedia" ED-MEDIA'98, Freiburg, Germany, June 1998, pp. 880 -884.