HAL open science

HDSL An e-education Hypertext Document Structuring Language

Henri Delebecque

To cite this version:

Henri Delebecque. HDSL An e-education Hypertext Document Structuring Language. EDMEDIA 2002, 2002, Denver, United States. hal-01848844

HAL Id: hal-01848844

https://hal.science/hal-01848844v1

Submitted on 25 Jul 2018

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

HDSL An e-education Hypertext Document Structuring Language

H. Delebecque
Supelec
Plateau de Moulon
91192 Gif sur Yvette Cedex France
Henri.Delebecque@supelec.fr

Abstract

The development of a set of educational web pages is a complex task, because it involves multiple abilities: to be a good content author, a graphist, an ergonomist, following the advice of the webmaster. Moreover, this task has to be redone every time an author (or the academic site in which his pages are included) change the graphical or the navigational appearance. Last, you cannot use the advanced mechanisms of HTML (which can help in managing styles and content), since they are not fully supported by most frequently used web browsers. Our goal is to propose a language to be used by professors, helping them to structure the content of their hypertext pedagogical documents, and to free them from all the other aspects. The definition of a set of web pages is done by describing both a structural model (using our HDSL language), and a graphical model (using completely normal HTML). Using this pair of models, our HDSL engine will build automatically the XSL conversion sheets able to convert any of the documents built using the structural model into (for example) web pages using the most currently accepted HTML. HDSL also offers capabilities of inheritance between structural models, which allows a professor responsible of a whole pedagogical web site to define a look and feel for it, and derive it according to the needs of the various authors writing the hypertext supports of their courses. Moreover, the HDSL engine is able to accept presentation models in specific languages other than HTML, such as PDF, WML,…starting from the content of a single document.

Context

Developing a coherent set of web pages to produce a pedagogical document is a complex task, since the pages can usually be described using multiple approaches. One can, for example, organize them by dividing the main subject into sections (introduction, chapters, bibliography, index,…), or classifying them by kind of information (pictures, sounds, icons,…), by author. This list is not limited, and you have often to use many of these classification criteria simultaneously. This leads you to handle a great number of heavily interdependent documents, like a real software project manager. But the content of web pages has a much more dynamic structure than the source files of a software project: to be pertinent, the content of a pedagogical document has to be frequently updated.

Moreover, one has also to give a coherent look and feel to this complex set of documents. This aspect is of great importance in a pedagogical context, since it allows students not to be bothered by presentation or navigational considerations. Unfortunately, one has also to do with content authors who can either be HTML fluent, and these will take a lot of time to elaborate their own look and feel, or on the contrary they may be completely focused on the content of their document, and they will deliver them in various formats.

Another problem is the ability to describe the page content semantics for search tools, either your own, or commercial ones. The keywords HTML offers with its meta tags are also too simplistic, since they lack the ability to describe the context in which they are used, and are attached to the whole document, when we need a fine grain semantic description. A powerful and semantically-based search tool is a fundamental mechanism for helping students to browse your document, and find the definition or explanation they are looking for.

The cost of managing a huge set of HTML documents could be greatly reduced by the use of advanced tools available in HTML 4 (Ragget 1999). For example, CSS styles sheets can be used to insure a homogenous look, navigation toolbar and menus located in frames to standardize the interface presented to the internet reader. Unfortunately, most of these advanced tools are not universally supported by web browsers, or by other medium specific presentation languages (PDF, WML, restricted HTML).

The HDSL Project

Almost all these problems can be solved by using our Hypertext Document Structuring Language, HDSL, based on XML (Bray, 2000), that allows to describe the structure of families of hypertext documents, independently of their presentation and the medium on which they are displayed. That language allows also to add semantics to the items of the document, either on their content, or on their usage (navigation toolbar, menu,…). Separation of contents and presentation in HDSL give the ability to describe the look and feel of the pedagogical document which is different from mixing them with contents, as done with HTML.

To achieve this goal, we propose a mechanism based on pairs of documents. For every subset of the pedagogical document (course, chapter, section,…), which has its own look and feel, the content author will supply a model using HDSL, which describes its different parts (required or optional, describing the contents or the relations with other documents,…). According to this structural model, the graphist will supply a presentation model, which organizes the look and usage of theses parts. This presentation model can use various presentation languages, standard HTML, reduced HTML (for text-only browsers, low-bandwidth clients,…), WML, PDF, or others, according to the medium used to display the document. Our HDSL engine will take all these models, and generates automatically as many XSL stylesheets as needed to produce «displayable» forms of the concrete HDSL document written by content authors, for every needed medium. It allows to use a unique version of the document that defines the content, which is of a great importance to insure the coherence of the various displayable forms.

The solutions XML currently offers, such as pure XSL sheets (Clark 1999), has multiple drawbacks: you have to fully master XSL, to write a XSL sheet for every presentation medium, for every subset of your pedagogical document. Moreover, this XSL writing task must be redone every time you change the look and feel. And this way of producing web pages doesn't allow re-utilization or genericity which our tool includes, nor any possibility for handling interrelations between documents. It doesn't provide either any may to manage the versioning of the document the HDSL engine supports, and which is of great help in managing the production of many contents author.

Related Work

The WebML language (www.oasis-open.org/cover/webML.html) is a notation for specifying complex Web sites at the conceptual level. It allows the description of navigation and composition abstractions, which are assembled into pages and interconnected by links. WebML is devoted to the construction of web sites based on very dynamic information fetched from multiple databases, and linked by complex relationship, described using E/R model, ODMG object-oriented model in a structural model. The presentation model defines the appearance of pages, independently of the output devices and the rendition language, like HDSL, except for the data described in the structural model. The application domain of WebML is rather e-commerce oriented sites than educational or academic ones.

The Percussion's products (Rhythmyx Content Manager) (www.percussion.com) is a commercial set of tools, devoted to the management of web pages by the content authors, without asking them to mastering HTML, or even site rules and structures. It allows the same information to be presented in multiples pages, as HDLS does, and clearly allows the separation between content and presentation. But it is a relatively cumbersome tool, more dedicated to commercial sites than educational or academics ones. HDSL, on the contrary, is a rather straightforward tool, which pushes the versatility of XML in domains such as the expression of the content semantics. Percussion also develops a XML to HTML tool, Xsplit, but which presents only some of the capabilities of HDSL

References

Bray T., Paoli J., Sperberg-McQueen C.M, Maler E.
XML: Extensible Markup Language
http://www.w3.org/TR/WD-xml-lang 2000

Clark J.
XSL Transformations (XSLT)
http://www.w3.org/TR/xslt 1999

Ragget D., Le Hors A., Jacobs I.
HTML 4.0.1 Specification1999
http://www.w3.org/TR/html4