



UNIVERSITY
OF TRENTO

DEPARTMENT OF INFORMATION AND COMMUNICATION TECHNOLOGY

38050 Povo – Trento (Italy), Via Sommarive 14
<http://www.dit.unitn.it>

WEB-NOTES: A TOOL FOR SUPPORTING
CONTEXTUAL ASYNCHRONOUS DISCUSSION
ON AN E-LEARNING PLATFORM

Marco Ronchetti and Matteo Rizzi

2002

Technical Report # DIT-02-0048

Web-Notes: a tool for supporting contextual asynchronous discussion on an e-learning platform.

Marco Ronchetti and Matteo Rizzi
{marco.ronchetti, matteo.rizzi}@dit.unitn.it

Dipartimento di Informatica e Telecomunicazioni, Università di Trento
38050 Povo (TN) - Italy

Abstract

We present an HTTP-based discussion tool that allows in-context asynchronous interaction. Our prototypal system can be integrated in any HTTP-based e-learning platform. It allows to annotate web pages, and to share the notes with the teacher, with (a selected group) of other students, or to keep them as personal notes.

Introduction

E-learning platforms aim non only at providing content to the student: in order to be effective they must support the learning process. For this reason virtually every e-learning suite provides at least some tool for asynchronous collaboration, like bulletin boards etc. Very often these tool offer a poor degree of integration with the content of the e-courses. In many cases discussion among the “actors” (students and teachers) is carried on a forum: the forum though is a different tool, so it is separated from the presentation material. While sometimes this is perfectly acceptable, in many cases it is rather inconvenient since the discussion happens out of context, and many external references are necessary, making the whole process rather cumbersome.

Our system allows to discuss in a context: the (e.g.) lecture content can be annotated by (e.g.) students for their exclusive use, or they can share the notes with their classmates or with the teacher. Readers can respond to the notes in place, for instance clarifying the original content of the page. The system allows to annotate web pages, since most platforms today use HTML as a *lingua franca* for content delivery.

WebNotes use

In order to use WebNotes, existing HTML pages need to be preprocessed to conform to the standard expected by it. An automatic tool allows to perform the preprocessing of the page. During the conversion process the granularity of the markable context that can be annotated is chosen: it can be each word, each phrase or each paragraph. The process is necessary in order to guarantee that the resulting pages are XHTML compliant, and that the contexts are suitably defined. The resulting page is still normal HTML, although it conforms the more restrictive rules that make it XML compliant.

The pages requested by the user are filtered through a servlet enabled Web server, that maintains a set of notes and their properties (like ownership, visibility etc). Notes are shown in the text as tiny icons embedded in the page. Public notes are visible to everybody. After the user identifies him/herself through a login process, s/he can see all notes allowed by her/his privileges.

The user can toggle between two modes: browsing and editing. While browsing, when s/he moves the mouse pointer over an icon that shows the presence of a note, the note pops up on place. When moving the mouse away the note disappears, unless it was stuck by the reader, in which case it disappears only when explicitly closed.

In order to edit the page (adding or modifying a note) the user enables editing mode and simply clicks on the location where s/he wants to add the note. A popup window appears, and the user can edit/modify the note. In the basic version the note contains only text, without any formatting. In an enhanced version of WebNotes, the window contains an applet that allows writing HTML in a simple “What-You-See-Is-What-You-Get” fashion. We kept the applet separated in order to minimize the requirements we make on the browser, and in order to avoid delays related to its downloading.

The system is currently in the final stages of development, and already underwent some extensive testing with different browsers.

Although WebNotes can be used in various contexts, it was explicitly designed for deployment in an e-learning environment. We envision its use for performing some of the discussions that presently happen on electronic forums. In particular, we target at those (many) cases where the emphasis is on clarifying a point in a lecture. For instance, we had many cases of students discussing programming

code presented in an electronic lecture: in those circumstances, continuous references to “line X of code Y on page Z” make the writing and reading of the notes an exhausting task. Our system allows simplifying these discussions, and by diminishing the needed effort to start or join to a discussion thread it will increase the student participation rate. The increased interaction should give a better learning process that is the final goal of every e-learning environment.

At the moment of writing, we plan to use its preliminary version on the field in some e-courses at the University of Trento during the last bimester. By the time of the conference we expect to have gathered statistics on its use and feedback by the users.

WebNotes requirements

WebNotes is made by a series of Java Servlets, and can therefore be deployed on any Servlet-enhanced Web Server (nowadays virtually every serious Web Server can has a servlet-compliant engine). We do not assume any special requirement on the client side, the only request being the support of (the standard subset of) JavaScript (that is available on all recent browsers). We tested our annotated pages with all the major players (i.e. Opera, Mozilla, Netscape, Internet Explorer) on several platforms without encountering problems. The notes are simple text, so their writing and the editing is performed in a normal web page. Also the administration of the system (e.g. group creation and maintenance) occurs in a web page. An enriched version of our tool also includes a Java Applet that is a HTML composer: this allows formatting the notes in a reach way, using the full power of HTML. Since the Applet adds functionality but is not needed to make the system usable, WebNotes can be configured according to the preference of the deployer. Thanks to these choices WebNotes can be integrated in most e-learning platforms, enriching them with a new functionality.

Related Work

Although much emphasis has been given to the support of collaboration via web since the early WWW years [COL], a convincing technology has not yet emerged. Interesting approaches run from an almost uncontrolled interactive editing of web pages (wiki's [CUN]) to more controlled annotations. In particular, adding notes to a Web page is not a new idea *per se*. Tools comparable to what we present have been proposed in the past, but in most cases their architecture was dissimilar from the one we've chosen. The main architectural choices were either based on browser-specific tools, or on external mediator servers. A comparison of some available tools can be found in [GAR].

Browser specific tools (e.g. [COM]) require the use of a customized browser, which is certainly an inconvenient choice.

In the proxy-based approach, the annotation process is taken care of by an intermediate server, that collects the notes, gets the original page and present to the user a page decorated it with the annotations. This allows taking control of the annotation process, and in some cases is offered by commercial enterprises [ANN] [THI]. A non-commercial instance of this class of tools is CritLink [CRI].

Our tool is rather based on an automatic pre-processing of an HTML page to include the fields that (with the chosen granularity) define the markable locations, and rely then on a basic browser and on a rather standard web-server architecture to deliver the content. This promises to be a winning point, since it allows an easier integration with existing e-learning platforms.

Bibliography

[ANN] <http://www.annotate.net/> Annotate

[COL] “Collaboration, Knowledge Representation and Automatability”

<http://www.w3.org/Collaboration/>

[CUN] Cunnigham, W.: wiki (wiki wiki web) <http://c2.com/cgi/wiki?WikiHistory>

[CRI] CritLink <http://crit.org/http://crit.org/index.html>

[COM] ComMentor <http://hci.stanford.edu/commentor/>, by Martin Röscheisen, Christian Mogensen, and Terry Winograd at the Stanford Digital Library Project

[GAR] Garfunkel J., “Web Annotation Technologies”,

<http://look.boston.ma.us/garf/webdev/annotate/software.html>

[THI] ThirdVoice <http://www.thirdvoice.com/> Following the link, one discovers that: “As of April 2, 2001, we are no longer supporting the consumer version of the our search and annotation tools.”