

An adaptative framework for tracking Web-based Learning Environments

Valentin Butoianu, Philippe Vidal, Julien Broisin

Institut de Recherche en Informatique de Toulouse
Université Paul Sabatier
118 route de Narbonne
31062 Toulouse, France
{butoianu,vidal,broisin}@irit.fr

A lot of researchers aim at exploiting attention information produced during a learning session to enhance recommender systems and process. Therefore, there is a need for collecting attention information related to all activities handled by TEL actors through heterogeneous systems. Some initiatives focus on data generated by a specific application, while others are able to represent disparate attention information. However, these approaches do not well integrate with existing and standardized frameworks running on most of today's computers, and requires setting up a specific attention management system that may prevent sharing and reusing of attention information.

We propose here a framework able to gather attention data produced by any web-based tools, and standing on the Web-Based Enterprise Management (WBEM) standard dedicated to system, network and application management. Attention information specific to heterogeneous learning tools are represented as a unified structure, and stored into a central repository compliant with the above-mentioned standard. To facilitate access to this attention repository, we introduce two dynamic services: one allows users to define attention data they want to collect, while the other is dedicated to receive and retrieve traces produced by learning systems. An implementation demonstrates how this approach can be exploited to store and share attention information related to learning objects manipulated within two different learning systems.

Since an implementation of the WBEM standard is natively integrated in most common operating systems (i.e. Microsoft™ Windows, Linux), our approach facilitates the process of collecting, storing and reusing attention data, and may also benefit from other information related to the physical and logical contexts of a user. Indeed, our representation of generic and specific attention information can be introduced in any WBEM compliant tool and then correlated with the computational context of a user natively supervised. Moreover the WBEM architecture suggests a manager-to-manager communication, so that data stored into distributed tracking repositories can be easily exchanged. Finally, the whole set of tracking information can be used to personalize learning environments, to generate graphical representations of traces that are easily visualized by instructors, or to create intelligent tutoring systems.