

# Chapter 23

## AHKME eLearning Information System: A 3.0 Approach

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### **ABSTRACT**

*AHKME (Adaptive Hypermedia Knowledge Management E-Learning Platform) is an eLearning Information System that has evolved to fulfill the web-based learning requirements when they are compliant with a Web 3.0 philosophy. The ideas behind Web 3.0 are related to more semantic and intelligent systems. AHKME allows teachers to access standardized resources and evaluate integration and reuse possibilities in eLearning systems, not only content but also learning strategy. The educational resources adaptation in AHKME is supported by a set of collaborative tools, which also allow the users' feedback provision that is stored in system database. The semantic component in AHKME is based on a set of tools for the instructional designer to create and customize specifications and ontologies to give structure and meaning to resources, manual and automatic search with recommendation of resources and instructional design based on the context, and recommendation of adaptations in learning resources. Finally, AHKME takes into account the mobile learning (mLearning) capabilities, allowing access by teachers and students to learning resources, regardless of time and space.*

DOI: 10.4018/978-1-4666-4157-0.ch023

## **1. INTRODUCTION**

As the world naturally evolves, internet does too. Nowadays we live times of change on the web with web 2.0, social networking and mass collaboration (Downes, 2005), even showing already some signs of what Tim Berners-Lee and guru Nova Spivak predicted as semantic web, intelligent web or in broader terms Web 3.0 (W3C, 2009).

One of the fields that have expanded information technology lies in the implementation of systems for distance learning. Currently, there are many eLearning systems, but the main difficulty lies in structuring the in line content and information with the existing learning models in order to achieve greater integration and comprehensiveness of the learning environment and by this providing better quality education. At the same time, yet there aren't too many tools and eLearning systems for web/eLearning 3.0, enabling the practical point of view or preparing to implement the semantic web, mobility of resources, as well as the universality of learning design, allowing teachers to approach the design process in an intuitive and practical way.

In these kinds of learning environments the access to standardized information is very important where it has to be perceived and processed into knowledge. One of the problems that have emerged from this process was how to represent knowledge. Standardization was indispensable, to provide semantic representation of knowledge through ontologies where concepts are clearly and unambiguously identified, providing a set of semantic relation types to represent meaning by linking concepts (Koper, Olivier, & Anderson, 2003; Berners-Lee, Hendler, & Lassila, 2001).

Trying to address these needs we have been developing AKHME (Rego, Moreira, Morales, & García, 2008) a system that uses the IMS specifications in order to reach goals like: learning object management and quality evaluation; standardization of all resources; and the interaction

of all subsystems through the feedback between them allowing the platform to adapt to students/teachers characteristics and to new contexts.

Regarding Web/eLearning 3.0 we have been developing/adjusting this system to meet some requirements of this great concept, addressing issues like collaboration, machine learning, the need of global database, and integration between systems.

In this paper we will start to present the importance/impact of the called evolution to web/eLearning 3.0, the structure of AHKME and the developments/evolutions made to the system. Finally we'll present some conclusions and future work.

## **2. WEB/ELEARNING 3.0**

While the concepts behind Web 2.0 are about social networking, where systems/platforms like Myspace, Twitter, Facebook and Orkut were introduced, and mass collaboration, where the boundaries between authors and the users are thin, the concept behind Web 3.0 is slightly different, is based on web applications that provide value to the user through the usage of intelligent applications giving them a more accurate and precise information (Cho, 2008). The idea behind this concept is that information should be available anytime, anywhere, anyhow, by this meaning that it should not only be available on common desktops but also in all types of devices that can somehow display web contents. This kind of concept raises the issue of interoperability where different devices and applications must interact with each other, allowing a freer environment for the final user. The main idea is to use technologies like XML, RDF, OWL, SPARQL, to standardize the information so it can be readable by anyone, allowing this way the desired interoperability between systems.

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