How can the Web Services Paradigm improve the E-learning?

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Abstract

E-learning takes advantage of the new features offered by Web services: integration of heterogeneous applications, publicity of available services, etc. As the adoption of this new technology increases it will become necessary to offer intermediary platforms that make it easier to find and locate services, and composing new services from the existing ones. Additionally, it will also be necessary to provide value-added services like auditing, security or management. This paper presents a proposal for a standard-based intermediary framework for Web services.

1. Introduction

The success of e-learning has promoted the proliferation of different kinds of e-learning-related software applications: from content delivery to student information systems. In this situation, learning objects and services reuse is a key issue. At present, a process for standardizing e-learning technology is taking place in order to overcome interoperability problems both at data and software level. The first results of this process are already available as a set of common data models (metadata, content, etc.). Nowadays, those institutions and organizations involved in the standardization process are moving their efforts towards the identification and definition of interfaces and services that must be offered by educational platforms.

Web Services technology has emerged as a new paradigm of distributed computing. This novel technology comprises a set of specifications and standards that will promote the interoperability of services. In the near future, it will be common for e-learning applications to offer their services using this new supporting technology. We take advantage of the benefits offered by the Web Services technology to propose an intermediary framework for the integration of standard-compliant e-learning platforms.

2. Web Services Intermediary

We propose an intermediary framework (see Figure 1) that benefits from both Web services technology and e-learning standards.

![Diagram of Web Services Intermediary Platform](image)

Figure 1: Proposal for intermediary platform

Benefits of our proposal are twofold: On the one hand, it offers a common front-end for those e-learning applications that need to communicate with others benefiting from the services offered by the intermediary: data model and/or protocol translation, auditing, complex services composition, etc.

On the other hand, this framework offers a suitable platform to help external entities to easily locate, find and use e-learning services offered by different providers. For example, e-learning platform developers can re-use the services offered by this intermediary platform to build new systems avoiding starting from scratch.

It is also important to outstand that our platform also provides benefits to service providers as they are supplied with a centralized point where they can make available their services benefiting from customized notification services, accounting or improved marketing.

3. Conclusions

Interoperability among software applications is one of the key aspects that are being addressed by developers and researchers within the e-learning field. Web services technology offers a new paradigm that allows us to face interoperability problems from a new perspective. E-learning must take advantage from already existing standardized data models to achieve also interoperability at service level.