SCMP:
An E-Learning Content Migration and Standardization Approach
(A Singaporean Perspective)

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ABSTRACT

E-learning standards ensure interoperability and reusability of learning contents. Learning objects that are standard conformant allow a learning management system (LMS) to import learning objects and track user learning progress more easily. This article provides a comprehensive approach complete with both a procedure and a software tool for generating standard conformant learning objects based on the Sharable Content Object Reference Model (SCORM). The tool is meant to enhance the productivity and effectiveness of e-learning developers.

Keywords: content migration; e-learning standard; learning objects; SCORM; sharable content

INTRODUCTION

The two major challenges faced during e-learning standards implementation are interoperability and reusability of learning content. Reusability refers to the sharing and reusing of learning content. Interoperability allows contents to operate across a wide variety of hardware, operating systems, and Web browsers — particularly essential for contents that communicate (sending learner’s data, scores, session duration, etc.) to the underlying LMS. To eradicate the confusion with e-learning standards and cumbersome procedures to produce standard conformant learning content, there is need for a method learning contents that are interoperable and reusable.

E-LEARNING IN SINGAPORE: E-LEARNING COMPETENCY CENTRE (ECC)

Despite the existence of established international e-learning standards (IMS Global Learning Consortium, 2001a, 2001b; IEEE Learning Technology Standard Committee, 2001; Advanced Distributed Learning Initiative, 2001, 2002; AICC, n.d.), Singapore tried to adopt and to adapt some of these standards to suit the local e-learning scenarios and needs. The E-
Learning Competency Centre (ECC) of Singapore (E-Learning Competency Centre, n.d.) is an independent body representing a joint collaboration between Singapore’s e-learning industry, government, and educational institutions. ECC was set up in December 2001, at the National Institute of Education (NIE) with funding and assistance from the Infocomm Development Authority of Singapore (IDA), the Ministry of Education (MOE), and the e-Learning Chapter of the Singapore Information Technology Federation (SITF). The role of ECC is as follows: (1) to define, refine, and promote international e-learning standards for Singapore’s use; (2) to establish the certification mechanism in order to ensure technical standards conformance and quality of e-learning products and services; and (3) to develop an e-learning competency framework for raising the competency level of e-learning professionals in Singapore.

ECC adopted some of the international e-learning standards (LMS, SCORM, AICC, etc.) and customized them to suit Singapore’s local needs. Other than the formation of ECC, there are other local initiatives to promote e-learning standards. They are SPRING Singapore (Standards, Productivity and Innovation Board) and the Information Technology Standards Committee (ITSC), which is under the purview of the Standards Council, appointed by the SPRING Singapore. The Learning Standards Technical Committee (LSTC) was formed under ITSC in view of the national needs and interest for standardization in the e-learning industry. The Singapore e-Learning Framework (SeLF) (as shown in Figure 1), which was developed by LSTC, provides a comprehensive approach to developing coursewares that are reusable and interoperable in different LMSs, and provide adequate measures to safeguard the intellectual properties of the content providers.

The first two parts of SeLF evolved to become the Singapore Standards, released by SPRING in February 2002:


Part 2 of SeLF defines the meta-data elements for describing learning resources. This schema is named as SingCORE, which is a streamlined subset of the IMS Learning Resource Meta-Data Specifications Version 1.2.2 and customized for the Singapore context. The