The Design of Embedded Collaborative LCMS Broker

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ABSTRACT

This study mainly has two contributions. First, this study proposes a design for Embedded Learning Content Management System Broker （Embedded LCMS Broker） with load-balancing capabilities. Through this Embedded LCMS Broker with load-balancing function, one is able to balance the loading of multiple LCMS by dynamic recording method. The proposed decomposed system platform includes the Learning Management System （LMS） that records online education, LCMS that provides the teaching material, as well as Embedded LCMS Broker that distributes the network loading by dynamic recording the status of LCMS. The proposed distributed SCORM learning system infrastructure with Embedded LCMS Broker does not only provide the learner with SCORM related learning materials online, but the Embedded LCMS Broker also provides services similar to that of a high-end Server. It does effectively balance the loads between LCMS, thereby significantly lowering system related costs. Second, This study also proposes the design of cooperative learning system with 3D virtual instruments in Internet. The proposed system combines 3D VR technology, remote control parameter delivering technology, and the design of Embedded Broker. The proposed system not only offers the theory course material, but also provides learners to operate 3D VR instruments together in Internet. The proposed cooperative learning system also provides the training of positive interdependence characteristic between students and group members by way of instantly discussing and operating virtual instruments.

Keywords : SCORM ; LMS ; LCMS ; Embedded Broker ; Land-Balancing ; Cooperative Learning ; VR ; Embedded System

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