ALFANET — Result In Brief

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Building the infrastructure for e-learning

Interoperability specifications have been established to provide the essential means whereby e-learning resources can be exchanged between systems which are largely heterogeneous. Within the ALFANET project, substantial effort focused on developing an open and flexible engine to facilitate the implementation of learning design specifications in educational environments.

The Instructional Management Systems (IMS) learning design is a specification used to describe learning design scenarios for a wide variety of pedagogical models, including group work and collaborative learning. A high level language, or meta-model, illustrates the way activities are being performed using the available resources (contents and services) making an analogy with a theatrical play. Just as a play can be staged by different actors, in different theatres and changing props, learning design scenarios can also be executed by different learners and tutors with alternative learning resources and tools.

The IMS learning design is structured into three levels; level A includes activities, roles and environments, level B adds properties and conditions, and level C provides a mechanism for handling messages between users. The Coppercore system, released from Open Universiteit Nederland (OUNL), is the first open source learning design engine, capable of processing all three levels. It has not been designed to be used as a stand-alone learning environment, but to be integrated in a service-oriented framework consisting of different services combined to create a complete e-learning system.

Coppercore architecture provides three application program interfaces (APIs). The first provides access to validation, the second to services, and the third provides the presentation aspects. All the APIs are exposed by using the extensive mark-up language (XML). They can be called or manipulated externally to provide for the management of students and of the synchronised and personalised workflow through a course. They also allow the intended end-user to work close to the specification at an in-depth and technical level.

The IMS learning design engine has been released as open source under free, copyleft license. For developers interested in including this support into their own applications, Coppercore is available at: http://www.coppercore.org/

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