

# Learning Object Repositories

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## Abstract

In order to reuse learning objects created by others, they must be made available to potential users on the Web, and services must be provided to allow users to discover, obtain rights to, and use these learning objects in their own instructional scenarios. In the learning object economy, these services are typically provided by learning object repositories, which are collections of learning objects that are accessible to users via a network without prior knowledge of the structure of the collections. This chapter discusses the important role played by learning object repositories in the learning object economy.

The success of the learning objects' approach depends on users worldwide (such as instructors, learners, and software agents) being able to access and search for learning objects in different repositories in a uniform manner. The first part of the chapter explains how this can be achieved using a standardized approach for accessing and describing learning objects in a repository. Standardized access and retrieval is facilitated by implementing a specification from the IMS known as the Digital Repositories Interoperability (DRI) specification, while standardized search and discovery is facilitated by implementing a metadata standard such as the IEEE Learning Object Metadata (LOM) standard, described earlier in the book.

There are different architectural approaches and business models that can be employed when designing a learning object repository and these are discussed next in the chapter. Typical architectural choices include using a centralized repository based on the client/server approach versus using several local repositories connected in a peer-to-peer fashion. Typical choices for business models include using an online broker for advertising and receiving payment for learning objects versus making the learning objects freely available. The advantages and disadvantages of the different approaches and models are carefully examined, and concrete examples of research prototypes and real-world deployments are provided wherever appropriate.

The chapter goes on to provide practical guidelines for designing and implementing a learning object repository. In particular, it focuses on preparing the learning objects for storage in the repository using a specification known as the Content Packaging specification. The digital resources that comprise a learning object are assembled into a content package in a standardized manner, allowing the learning object to be unpackaged and reused consistently in different learning platforms. The processes of entering metadata for the learning objects and associating the

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metadata with the learning objects are then described. This is followed by a discussion of the technologies that can be used to give users access to the learning objects in the repository. These include using Web-based portals and other more advanced tech-

niques based on the DRI specification (e.g., Web services).

There are numerous issues to be addressed with learning object repositories before the benefits of the learning objects' approach can be reaped. One such issue is dealing with Intellectual Property Rights (IPR) and copyright in a global environment. Another issue is the limitation of current metadata standards for specifying pedagogically rich information about learning objects such as learning objectives and intended learning outcomes. Related to this is the time consuming nature of entering copious metadata for every learning object. Yet another issue is the quality assurance of the learning objects in a repository. These issues are examined in the last part of the chapter and potential solutions are put forward. For example, the problems with metadata can be tackled by using ideas from Semantic Web research. Also, the quality assurance of learning objects can be improved by employing a peer-review system.