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Cordra Web-based Learning Model

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Preview

The Cordra Web-based Learning Model is a protocol competing to become an e-learning standard. Two other protocols are also in development, but at this time, it is unclear which will emerge as the defacto standard for e-learning technology and strategy. One possibility is that each of the three competing protocols will develop into standards that address different aspects of e-learning. No matter how it all ends up, however, it is certain that e-learning standards will need a few more years to develop and mature. This report explains the Cordra Web-based Learning Model, compares it to the competition and projects the future of e-learning standard development.

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Executive Summary

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The CORDRA concept began in 2003 as a US Department of Defense (DoD) effort to create an interoperable classification and search system for the SCORM (Sharable Content Object Reference Model); compliant learning content used by different branches of the DoD.

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Known as the Advanced Distributed Learning Initiative Registry (ADLI-Registry), the project was the first publicly available CORDRA registry. The ADLI Registry provides a registry of content objects for the DoD and encourages their discovery and re-use by the DoD community and, in some cases, the general public.

The Learning Systems Architecture Lab (LSAL), an organization responsible for conducting research focused on the design and creation of Internet-based technologies for education and training, joined the effort to ensure that the design of CORDRA is technically feasible for global participation over the long term

The joint efforts of ADLI, CNRI, and LSAL, led to the development of the framework, which is now called CORDRA.

Description

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CORDRA is an open, standards-based model for how to design and implement software systems for the purposes of discovery, sharing and reuse of learning content through the establishment of interoperable federations of learning content repositories.

Designed to be an enabling model to bridge the worlds of learning content management and delivery, and content repositories and digital libraries, CORDRA aims to identify and specify (not develop) appropriate technologies and existing interoperability standards that can be combined into a reference model used to enable a learning content infrastructure.

CORDRA is:

- A formal model that can be used to design interoperable groups of repositories for learning content.
- A collection of operational systems built from the CORDRA model, including:
 - A prototype implementation of an interoperable repository group.
 - An overall interoperable structure that connects groups of interoperable repositories.
- All activities and projects surrounding the definition of the CORDRA model and creation of the operational systems.
- A searchable index of content metadata that can be resolved to content located in distributed repositories .
- A definition for how to make deposits in a learning content repository.

CORDRA is not a repository of content. It is a searchable index of content metadata that can be resolved to content located in distributed repositories.

CORDRA does not define or dictate how a repository operates, nor does it affect local policies. It only defines how to make deposits in the registry.

The CORDRA infrastructure scheme is based on registering an organization's content in a way that will make cross-organizational reuse of sharable learning content possible. A CORDRA repository is essentially a collection of registry metadata. This means the CORDRA implementation does not provide a home for the actual content. It only catalogs content in the form of a registry built from metadata records that can be accessed across multiple departments or organizations.

A CORDRA registry is built on a predetermined metadata model. A metadata record for each learning object is deposited into the registry, which in turn can be searched by an application server to locate the registered content. No specific metadata binding model is required. A set of core discovery and access requirements are established and any metadata standard that satisfies these requirements can be used to build a CORDRA implementation.

CORDRA is about discovering, locating, and retrieving learning objects. Those learning objects can be a full document or a portion of a document. Discovering that a learning object exists is one thing; knowing where that learning object is located is another matter, entirely. Because CORDRA does not require any single network addressing technology, it allows organizations to use their existing network addressing technologies.

CORDRA also defines how to build repository systems to support the discovery and access to learning content. It is designed to work with existing technologies, and is essentially a profile of interoperability standards. In essence, it attempts to provide a roadmap for joining interoperability standards together as a single, holistic standard.

The Need for CORDRA

As the amount of learning content that conformed to the SCORM guidelines grew, several forward-thinking individuals involved in the ADL Initiative realized that all the sharable content objects in the world would not be of much use to organizations beyond those that initially created them unless the content could be discovered, located and retrieved. An infrastructure to support search and retrieval of content does not currently exist.

CORDRA aims to identify and specify (not develop) appropriate technologies and existing interoperability standards that can be combined into a reference model that will enable several key capabilities.

- Content, once authored, can be made widely available (subject to appropriate rights management).
- Content can persist outside of the realm of a single course.
- Content can be discovered.
- Once discovered, there will be standard mechanisms to access the content (access is not specified, it might include transfer or delivery).
- Content can be managed (e.g., has ownership, rights, persistence) and deploying organizations will be able to tailor management to their needs.
- Implementations of the model will be open and flexible and will coexist and interoperate with existing systems.

Competing Standards and Protocols

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Currently, most e-learning standards can be organized into three general categories:

- **Metadata**--Metadata is information about information and is structured in a manner that facilitates the management, discovery and retrieval of resources on the World Wide Web. Learning content and catalog offerings must be labeled in a consistent way to support the indexing, storage, search, and retrieval of learning objects by multiple tools across multiple repositories.
- **Content Packaging**--The goal of content packaging specifications and standards is to enable organizations to transfer courses and content from one learning system to another. This is crucial because content can potentially be created by one tool, modified by another tool, stored in a repository maintained by one vendor, and used in a delivery environment produced by a different supplier. Content packages include both learning objects and information about how they are to be put together to form larger learning units. They can also specify the rules for delivering content to a learner.
- **Learner Profiles**--These standards allow different system components to share information about learners across multiple system components. Learner profile information can include personal data, learning plans, learning history, accessibility requirements, certifications and degrees, assessments of knowledge (skills/competencies). In addition, systems need to communicate learner data to the content, such as scores or completion status.

The top standards and protocols that compete directly with CORDRA include:

- **MERLOT (Multimedia Educational Resource for Learning and Online Teaching)**--This standard, like others, does not scale well. It is not designed for large quantities of learning content across numerous locations. MERLOT is more accurately the particular model of what goes into a repository and how it is managed.
- **GLOBE (Global Learning Object Brokered Exchange)**--GLOBE also does not scale well and is not designed to classify learning content through the use of content metadata.
- **SCORM (Sharable Content Object Reference Model)**--SCORM was first used by the Department of Defense. It found, however, that the standard was not sufficient for searching learning content across repositories. SCORM is now part of the CORDRA project.

Additional standards and protocols exist, but these are not as competitive, or as widely used, as the above mentioned standards and protocols. The standards and protocols mentioned above compete directly with CORDRA; although each standard or protocol has a slightly different method, target.

If CORDRA proves to be successful, similar protocols are certain to be developed. Each new protocol would offer an additional feature or address a dissimilar aspect of learning content interoperability.

Future Directions

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The CORDRA standard, when completed, has the potential to change the way that all organizations tag, store, search, and reuse their learning content. There is much to be gained from the abilities that CORDRA promises, however, there does not seem to be an exact timeframe for the finalization of the CORDRA standard. Testing on the first case has been started and a new iteration is underway.

CORDRA has implications beyond learning content. When the CORDRA standard is finalized, it will be functional (and even useful) for all types of digital content stored in content repositories. This means that CORDRA may have additional support which could lead to the standard being finalized sooner.

[About the Author](#)

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Advanced Distributed Learning: <http://www.adlnet.gov>

Cordra: <http://cordra.net/>

Corporation for National Research Initiatives: <http://www.cnri.reston.va.us/>

Learning Systems Architecture Laboratory: <http://www.lsal.cmu.edu>

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