



# The Current State of e-Learning Standards

Judy Brown  
e-Learning Guild 2007  
April 12, 2007

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## Agenda

- ADL
- SCORM
- CORDRA
- Advanced Initiatives
- LETSI
- adCommunity
- Questions



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## Advanced Distributed Learning

### The ADL Vision:

Provide access to the highest quality education, training and performance aiding, tailored to individual needs, delivered cost effectively, anytime and anywhere.

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## ADL – Technology Base

- Search Defense Technical Info Center database
- 396 DoD reports identified between 1976-2001
- Results: If properly used, technology works for training
- However: Lack of interoperability = lack of payoff
- So: ADL was created (1997), not on a single technology but from a strong research foundation and the Internet

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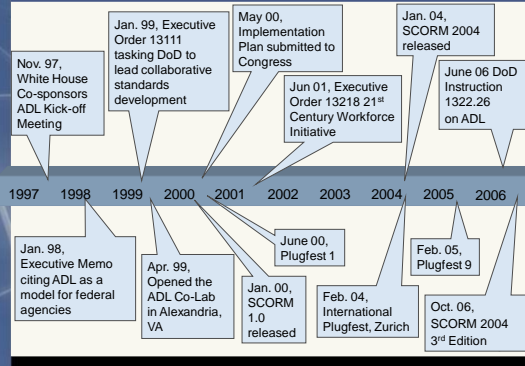
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## ADL Timeline




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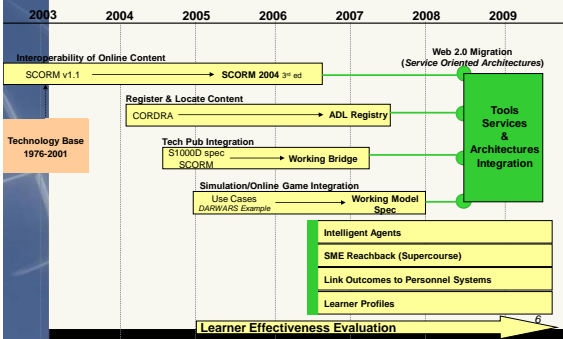
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## ADL - The Big Picture




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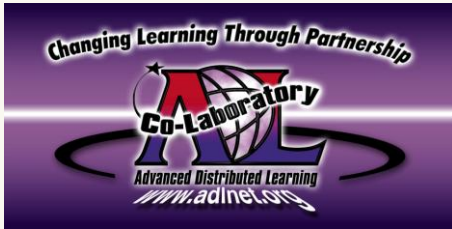
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## Why Partnerships?



ADL is a Story of Partnerships

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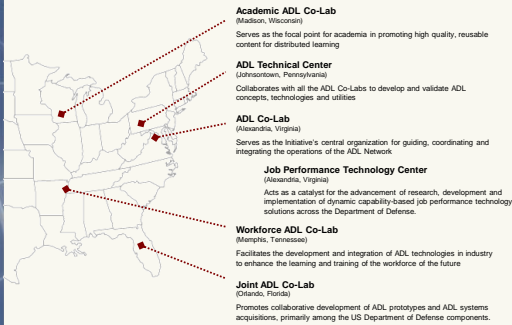
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## ADL Co-Lab Network




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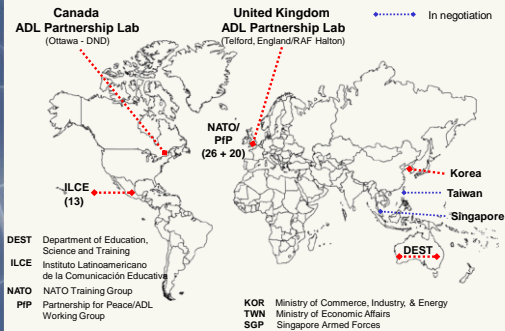
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## ADL Global Partnerships QDR 2006 – 'Build Partner Capacity'




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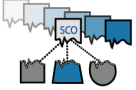


## High-level Requirements



**Interoperability:** the ability to take instructional components developed in one system and use them in another system.

### identified six essential high-level attributes for all distributed environments



**Portability:** the ability to locate and access instructional components from multiple locations and deliver them to other locations.



**Reusability:** the ability to use instructional components in multiple applications, courses and contexts.

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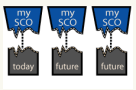
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## High-level Requirements



**Durability:** the ability to withstand technology changes over time without costly redesign, reconfiguration or recoding.



**Maintainability:** the ability to withstand content evolution and changes without costly redesign, reconfiguration or recoding.



**Adaptability:** the ability to change to satisfy differing user needs.

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## ADL Strategy

- Work closely with industry, government, and academia to promote common, open international **specifications and standards** that will enable reuse and interoperability of learning content
- Promote widespread **collaboration** that can satisfy common needs
- Enhance performance with **emerging learning technologies**
- Promote a **coordinated** implementation process with incentives for organizational and cultural change

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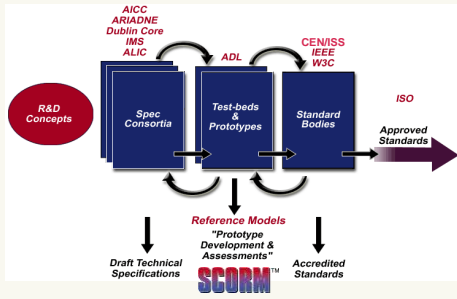
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## ADL Model for Standards Evolution

### Managing Adoption through the Model



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## Sharable Content Object Reference Model (SCORM)

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## Roots of SCORM



- SCORM is built on the proven work of prominent organizations
- Provides a reference model to accelerate standards development
- Is the first step on the path to defining a true learning architecture

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### Conditions before SCORM

- Couldn't move courses from one Learning Management System to another
- Couldn't reuse content pieces across different courses
- Couldn't sequence reusable content for branching, remediation and other tailored learning strategies
- Couldn't search learning content libraries or media repositories across different LMS environments

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### What does SCORM do?

- Fosters creation of reusable learning content as "instructional objects" within a common technical framework
- Describes that technical framework by providing a harmonized set of guidelines, specifications and standards



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### SCORM 2004 Benefits

- An object-based approach for developing and delivering instructional content
- Interoperability across LMSs
- The means to package learning content and instructional materials for import and export
- The means to tag content so it may be found



Provides

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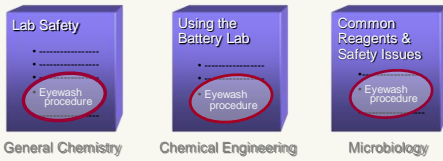
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## Traditional Content



- Each course covers "eyewash procedure"
- The content is **integrated into the course** and can't be reused
- Although the subject matter doesn't really change, the same content must be **redeveloped for each specific use**

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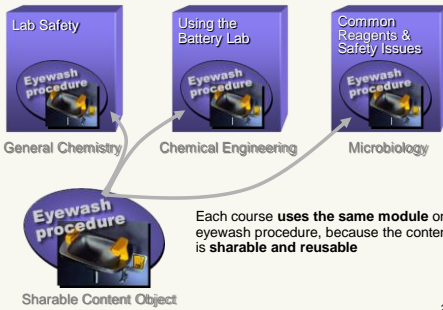
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## Sharable Content



Each course **uses the same module** on eyewash procedure, because the content is **sharable and reusable**

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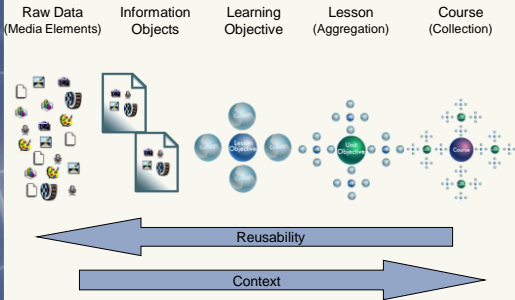
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## Granularity and Reusability



Source: Academic ADL Co-Lab (adapted from Learnativity)

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## Users of SCORM™

- Who else is using SCORM?
  - ▶ Use outside of DoD is truly astounding
  - ▶ OPM – 75% of TMA contracts require SCORM conformance
  - ▶ Korea K-12 is largest single user
- Need for long-term steward outside of DoD, London Mar 07

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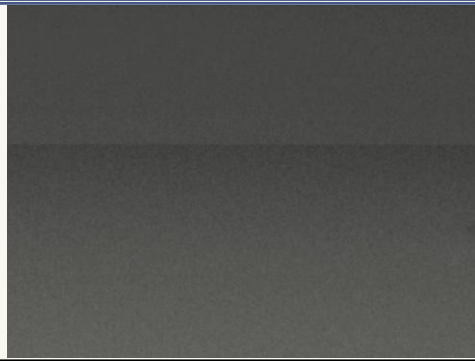
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## KERIS




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## SCORM Certified Product Metrics

### Through independent 3rd party (SCORM Certified)

- Certified Products 199
  - SCORM 2004 3<sup>rd</sup> Edition 6 (5 LMS)
  - SCORM 2004 2<sup>nd</sup> Edition 60 (39 LMS)
  - SCORM v 1.2 133 (74 LMS)

### Through self-test suite (SCORM Adopters)

- Validated Products 248
  - SCORM 2004 75 (43 LMS)
  - SCORM v 1.2 176 (99 LMS)

Figures as of 11 April 2007

Note: ADL is vendor neutral.

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**ADL, CORDRA & SCORM**

Instructional Capability, Modeling & Simulation, Intelligent Tutoring, Economic Models, Policy, R&D, etc.

Technical Specifications

CORDRA Instance

ADL Registry

ADL

SCORM

CORDRA

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**ADL's problem: Finding content**

- SCORM specifies how to develop & deploy content objects that can be shared & contextualized to suit the needs of the learner
- SCORM provides the means to tag content for later discovery & access in a distributed environment
- SCORM is silent about discovery & access

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**CORDRA**

- **Content Object Repository Discovery and Registration Architecture**
- **Addresses a difficult problem**
  - Contextualized search, discovery, identification, resolution, retrieval and delivery
- **Key Players**
  - ADL, Philip Dodds
  - CNRI, Bob Kahn, Larry Lannom
  - DTIC, Jim Erwin
  - LSAL (CMU), Dan Rehak

Discovery

Retrieval

Resolution

Context

Delivery

Identification

Location

The "CORDRA Triangle"

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## Key CORDRA operations

- Register a content object in the *content catalog* for later search & retrieval
- Search the *content catalog*; return content objects (via their IDs) & metadata
- Register a content repository in the *repository registry* by specifying descriptive data & rules
- Query the *repository registry* for the operational, policy & business rules

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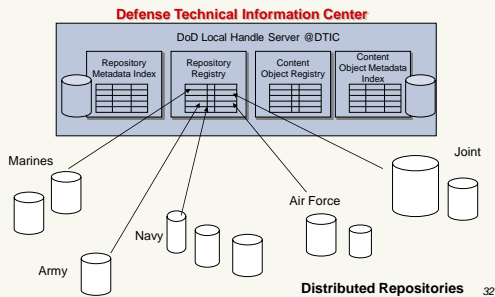
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## CORDRA

**Register every content object; Register every repository;  
Retain local control of repository content**



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## CORDRA Framework vs. Google

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|---|---|
| <ul style="list-style-type: none"> <li>▪ <b>CORDRA</b> federation                     <ul style="list-style-type: none"> <li>▶ simple portal interface</li> <li>▶ metadata harvest or deposit</li> <li>▶ search index from formal metadata</li> <li>▶ content remains in repositories</li> <li>▶ value added services</li> <li>▶ ranking algorithm?</li> <li>▶ trust model &amp; rules</li> <li>▶ open model</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>▪ <b>Google</b> <ul style="list-style-type: none"> <li>▶ simple portal interface</li> <li>▶ harvest web sites for content</li> <li>▶ search index from harvested data</li> <li>▶ content remains at host web site</li> <li>▶ Google API</li> <li>▶ pagerank</li> <li>▶ Google's policies</li> <li>▶ closed system</li> </ul> </li> </ul> |
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## Advanced Initiatives

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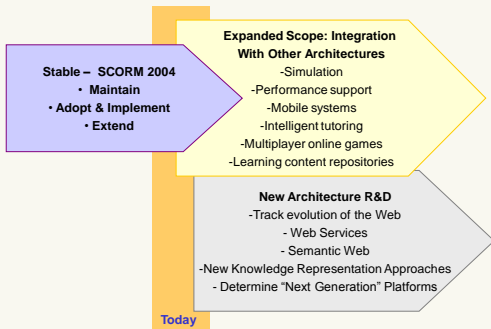
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## Phases Of ADL/SCORM



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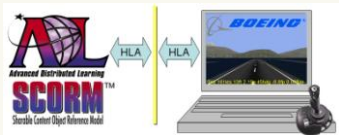
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## ADL & HLA

Advanced Distributed Learning meets High Level Architecture



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### Learner Effectiveness

- Training Evaluation Team created
- Evaluation services rendered to DoD clients
- Surveillance of research findings
  - ▶ Database of 116 reports, 23 variables
  - ▶ Reported in scientific literature
- Ongoing research and evaluation

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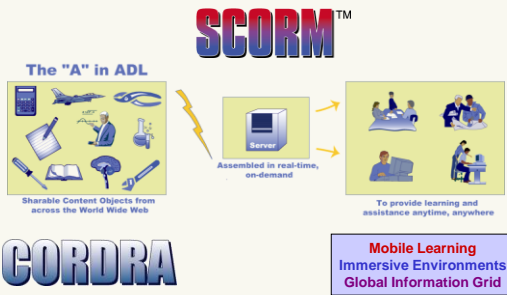
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### Toward the ADL Vision




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### International Federation For Learning, Education & Training Systems Interoperability (LETSI)

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### Motivation

- DoD has built the SCORM through collaboration and partnerships
- Many organizations outside of DoD use SCORM and have a vested equity
- Should DoD continue to be the only one providing resources to sustain SCORM?

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### The Steward's Responsibilities

- **Promote, sustain, update and extend** the SCORM standards, so long as they continue to encourage interoperability and content sharing.
- **Oversee** the Change Control board and the maintenance of the documents, Test Suite, and Sample Runtime environment
- **Extend the reach** of SCORM by participating in efforts to have the standards recognized by national and international standards bodies.
- **Embrace and support** the SCORM community and continue to develop SCORM human resources around the world.

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### The Steward's Responsibilities (2)

- Promote and support **vendor adoption** of SCORM and provide adequate certification services, problem solving support, and avenues for vendor input to decisions
- Certify and coordinate national and regional **SCORM authorities.**
- **Maintain the quality and reputation** of SCORM and protect relevant intellectual property.
- Continue to develop and maintain SCORM **services and infrastructure.**

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## Purpose

- Bring together both resources (papers, examples, tutorials, etc.) and people with similar interests in advanced distributed learning
- To be the site both new and expert implementers frequent
- To establish a vibrant community where all work together to share and improve learning

adlCommunity.net 55

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## adlCommunity

You are not logged in. (Login)

**Community Sections**

- New! (New!)
- Getting Started**
- Wiki Community
- Design and Development
- Research and Evaluation
- Technical Standards
- Marketplace
- Working Groups
- ADL @ Work
- Stewardship (Coming)
- Shortcuts to Forums

**Latest News**

26 Nov, 14:28  
Community Administrator  
Making the Vision of Learning Anytime, Anywhere, a Reality  
more...

Older topics ...

**Welcome**



This community contains various resources linked at the left - under Community Sections. If this is your first visit, be sure to visit the **Getting Started** section for assistance in getting around easily. If you are new to ADL, you may want to consider checking out the ADL Introduction Course.

We hope that you will participate in the discussion forums and share your experiences, examples and best practices. You can view most resources as a guest, but you will need to register so that you can participate in the discussions.

**New Activities**

- Check out the blog entries
- Listen to the tool vendor interviews and participate in the authoring tools discussions in the Marketplace and the Wiki
- If you are implementing sequencing and navigation, you may be interested in the Role-based Sequencing Discussion
- There are 3 new areas: Game-based Learning, S10000-SCORW Integration and 1522.26 Introduction.
- SCORW, CORDA and S10000 discussions and resources have been moved to the

Check all for new Dev

**Login**

Username:

Password:

**Search Forums**

Advanced search

**Online Users**

(last 5 minutes)

Community Administrator

**Upcoming Events**

The International Industry Training, Simulation and Education Conference (IITSEC)

View all 2 November 2006

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## Ready Today

- Discussion forums RSS
- Wikis RSS
- Databases
- News
- Chat
- Resources
- Course
- Glossary
- FAQs
- Polls

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## Community Sections

- Main Community
- Getting Started
- Design and Development
- Marketplace
- Research and Evaluation
- Technical/Standards
- Working Groups
  - ▶ ADL-R Users Group (ADL-RUG)
  - ▶ Stewardship (coming)

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## Getting Started

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## ADL-R Working Group



The screenshot shows the ADL-R Working Group forum page. The main content area is titled 'ADL-R Community Resources' and contains a list of forum posts. The first post is 'Last Month's Featured ADL Registry Users Group Member: SREB' by Daniel Rebuk, dated 25 Aug, 11:48. The second post is 'Background and Introductory Materials on the ADL Registry' by Daniel Rebuk, dated 25 Aug, 11:48. The page also features a search bar, a 'Latest News' sidebar, and a navigation menu on the left.

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Supporting the Global Advancement of Distributed Learning

## Marketplace

- Needs and Leads
- Positions Available
- Positions Wanted
- Services
- Tools
- Training Opportunities
- Vendor Information

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Supporting the Global Advancement of Distributed Learning

## Future Directions

- Webinars
- Tutorials
- "Cheat Sheets"
- Skypecasts
- Blogs
- ???

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Supporting the Global Advancement of Distributed Learning

## How You Can Help

- Sign on and participate
- Share your experiences
- Serve as a facilitator
- Give us your feedback

[feedback@adlCommunity.net](mailto:feedback@adlCommunity.net)

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# Thank You



adiCommunity.net

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# ?????? Questions ??????

judy@judybrown.com

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