e-Learning: No Standards; No Coalitions - No Boom

Ed Walker
7 December 2000

e-Learning Technology is Promising but Delivery is Complex

- Multi-media content
- Internet connectivity
- Local delivery
- Individualized capabilities
- Multiple metrics of value

Everything is Connected … Everything is Changing … Together

Delivery Depends on Interoperability

Standards Eventually Will Enable More …

- Open Access/Distribution of Content, Interoperable Components, and Tools
- Spontaneous, Dynamic Webs of Suppliers and Users
- Extensive Exploitation/Evolution of Technology
- Economies of scale

Standard Benefits

- Better Infrastructure
- Bigger Learning Markets
- Higher Quality Education and Training
Executive Summary of SOA

- Agreed (more or less)
  - Collective will and resources to cooperate exist
  - Cooperation depends on practical division of effort and coordination of activities
- Who can/will do what when? (and with whom?)
  - IMS
  - IEEE
  - AICL Co-Lab
  - AICC, Dublin Core, W3C, OpenGIS, …
  - CNI

Standards Will Evolve in Phases

```
<table>
<thead>
<tr>
<th>Official Sanction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accredit Standards</td>
</tr>
<tr>
<td>Define Specs</td>
</tr>
<tr>
<td>Maintain</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Technologies/</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Solutions/</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Processes</td>
</tr>
<tr>
<td>Practical Consensus</td>
</tr>
<tr>
<td>Test/Evaluate</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Labs</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Testbeds</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Markets</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Standards Bodies</td>
</tr>
</tbody>
</table>
```

Specifications are not Standards

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Capture rough consensus</td>
<td>• Capture general acceptance</td>
</tr>
<tr>
<td>• Evolve rapidly</td>
<td>• Evolve slowly</td>
</tr>
<tr>
<td>• Are enabling</td>
<td>• Are regulatory</td>
</tr>
<tr>
<td>• Manage short term risks</td>
<td>• Manage long term risks</td>
</tr>
<tr>
<td>• Are experimental</td>
<td>• Are conclusive</td>
</tr>
</tbody>
</table>

Specifications Provide …

- Shared vocabulary and constructs
- Knowledge capture
- Targets for R & D agendas
- Context for evaluation
- Program objectives, product definition, and dissemination plans
- Community learning

Cooperation Requires Coordinated Activities

- Gathering and consolidating functional and deployment requirements from users, vendors, purchasers, and managers of learning resources
- Promoting open conversation about definition, implementation and adoption
- Conducting producer and adopter trials and experiments to evaluate effectiveness and usability
- Executing disciplined, open cycles of specification, test, and revision
- Sustaining cooperation to integrate and consolidate results, encourage adoption, and manage compliance

What Does IMS Do?

1. Develop and manage specifications
2. Deliver them to early implementers and users
3. Collaborate to promote their evaluation and accrediting
How IMS Operates

- Directed by member representatives
- Focused on specific technical problems
- Uses a standard development process
- Schedules releases
- Cooperates to scope and deliver specs to developers, evaluators, and users

Directed by Members

- Standards Bodies
- Content Providers
- Researchers
- Test-beds
- Government Agencies
- Distributed Learning Organizations
- Commercial Developers
- Domain Specific Consortia
- Researchers

Interface Specs Free Resources to Evolve

- Harmonization, Consistency
- Meta-data
- Multimedia Content
- Packaging
- Enterprise Systems
- Management
- Information Exchange
- Evaluation
- Assessment
- Learner/Group Information

IMS Development Process

- User Needs, Technical Means, Practical Constraints
- Products, Services, Practices
- Tests and Trials
- IMS Members
- Review Board
- Working Group
- IMS Developers, Adopters
- Specification Development:
  - Scope
  - Base
  - Public Draft
  - Final Release

Releases

- Meta-data v1.0 (8/99)
- Enterprise v1.0 (10/99)
- Content Packaging v1.0 (5/00)
- Question and Test Interoperability v1.0 (5/00)
- Metadata v1.1 (5/00)
- Learner Information Public Draft (11/00)
- Content Management Base (11/00)
- Competency Scope (11/00)
- Question and Test Update Scope (11/00)
- Content Packaging Update Public Draft (12/00?)
- Instructional Design (TBD)
- Accessibility (TBD)

Collaboration Activities

- IEEE LOM
- DoD SCORM
- JISC Evaluation projects
- UK Further Education MLE Program
- Commercial offers: Microsoft, Blackboard, MindLever, Eduprise, SmartForce, NETg, …
Delivery Activities

- Regional Bodies and Centres
- Tutorial Workshops
- Application Consulting
- DoEd LAAP: Indiana University project
- NCAM/IMS Accessibility project
- Content Repository Prototype

How Can IMS Cooperate with CNI?

- Connectivity
  - Web forums
  - Presentations, Up-date sessions
  - Publications
  - Tutorial workshops
  - Trials, projects
  - On-line Learning(!)
- Communication
  - Design consensus
  - Division of labor
  - Pooled resources
  - Joint trials, projects
  - Migration plan
  - Metrics/Compliance
  - Critical mass
  - Web culture

But: Standards Are Evolving

Stop

Benefit 1: Better Infrastructure

- Efficient access and exchange of content, networked resources, and learning services.
- Readily integrated content, services, and delivery mechanisms and procedures.
- Reduced overhead for assembly, maintenance, and operation overhead for system components, data resources, and business processes.
- Extended life time for investments in organization, resources and business processes.
- Easier re-purposing and re-use of content and programs for new applications.

Benefit 2: Expanded Learning Markets

- Internet Content Distribution
- Interoperable Learning Plug-Ins
- Just In Time Access and Delivery
- Anywhere, Anytime Interaction
Benefit 3: Innovation

- Personalized learning episodes
- Flexible pedagogical scenarios
- New contexts for learning
- Dynamic content, configurable services
- Novel use and payment policies