The Next Generation of SCORM: Innovation for the Global Force

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Advanced Distributed Learning
The Sharable Content Object Reference Model (SCORM) is the de-facto global learning standard.

SCORM is widely used in academia, industry, and government to create reusable, interoperable content.

More than 330 certified SCORM products.

Focuses on a single learner in a web-based training system.

Reports to a traditional Learning Management System (LMS).
• We began gathering requirements for a new API to
  – Cover gaps in SCORM and
  – Enable new technological use cases
• “Project Tin Can” Broad Agency Announcement (BAA)
  – Interviewed eLearning community members
  – Reviewed of LETSI whitepapers (100+)
  – Crowdsourced feature requests (uservoice.com)
  – Prioritized and compiled use cases
• Defense ADL Working Group (DADL WG) feedback
Top Requirements

- Support out-of-browser learning activities with non-proprietary solutions (different content types)
- Enable offline, disconnected or intermittent connections
- Support distributed content and systems
- Connect value-added services for learning analytics to storage systems
- Define how stored data is retrieved in a consistent manner
- Update the communication mechanism
- Support social learning scenarios
- Make it simple!
Do we need a learning specification that expands on the capabilities of SCORM?
The Next Generation of SCORM

- The “Training and Learning Architecture” (TLA)
- Leverages cloud computing and service-oriented architecture
- Modern software communication with learning systems via web services
- Tracks formal and informal learning scenarios
- Supports mobile devices, games, simulations, virtual worlds, and real-world experiences
Goals for the TLA

• Support the Global Force
• Leverage mobile devices, virtual worlds, simulations, and games
• Capture lifelong learning
• Enable a truly distributed learning environment
• Allow sharing of learning data across systems
• Deliver relevant content using Semantic Web technologies
How will we start to meet these goals for our stakeholders?

Government, Industry and Academia
Social Learning

- Social networks are online communities of shared interest (ex. Twitter)
- Learners develop a trusted “Personal Learning Network” via social media interactions
- Enables learners to look for knowledge outside their personal experience
- Learners can connect to experts, peers, and mentors for knowledge
- Traditional LMSs don’t track and record these social learning activities
Activity Streams

• The major social media companies developed the Activity Streams specification to capture social learning activities

• Format: “I Did This” - <actor> <verb> <object>

  – Activity Stream examples:
    • Jason authored I/ITSEC Paper
    • Jonathan mentored Jason
    • Andy completed CPR 101
    • Nikolaus attended I/ITSEC 2012

• Social networks provide “streams” of data

• Research shows Twitter streams being used effectively as an educational tool

• Instructors gain credibility from students when posting social or scholarly information
Semantic Web

- Activity Streams can be thought of as a triple
  - Ex. “Mark Twain wrote Huckleberry Finn”
  - Allows questions like “What other works did Mark Twain write?”
- Enable systems to infer information through the defined semantic relationships
  - Ex. recipes have prep time, calories, and ingredients
  - Ex. bank search gives phone #, directions, and a map
- Many available options to add rich semantic data to content
  - schema.org, microformats, microdata, Open Graph, META Tags
- GOAL: Systems can make meaning from the learner’s context to deliver relevant, related content through semantic analysis
Looking to industry to set an example for Activity Streams
Activity Streams Industry Support

• Google+, Twitter, Instagram
  – Ex. Nikolaus *liked* a photo
  – Ex. Jason *commented* on a photo

• Massively Multiplayer Online Games (MMOGs)
  – Ex. Andy *found* 86 Gold Coins

• Facebook “Open Graph” platform
  – Ex. Jonathan *read* the Odyssey

• ADL is representing the learning and training community
How do we track such diverse data?
Experience API Features ("Tin Can API")

- Comprises the first component of the TLA
- Stores all data in a Learning Record Store (LRS)
- Features an updated runtime communication method
- Allows reporting of Activity Streams from virtual, online, or real world activities
- Enables communication with out-of-browser content
- Allows flexible reporting and new data collection capabilities with a fully extensible architecture
Short Term Research Objectives

• Complete Experience API Specification v1.0
  – Drive spec changes and features from community
  – Develop open source prototypes
  – Allow early adopters in commercial space to build support into their products
  – Move version 1.0 to standards body

• Support mobile learning!
  – Solve immediate needs of community to track mobile learning
  – Support both web and native mobile applications
  – Build reusable libraries
  – Prototype with the Services
Long Term Objectives

- Define domain-specific extensions for communities of practice
  - Ex. Medical, DoD, K-12 and Higher Education
- Support team-based learning, informal learning, and social learning
- Enable tools for roles other than learners
  - Ex. instructors, mentors, aides
- Let community build apps on top of the API
  - Ex. City of San Francisco public transportation
Future Research Areas

- Learner profile technologies
- Just-in-time content brokering
- Intelligent tutoring
- Cognitive adaptability
- Improvement of retention
- Experiential learning
- Big data analytics
- Open independent learner models
- Semantic determination
- Application of virtual environments
- Social problem solving
- Self-directed learning
Questions?

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