

**The Power of Global Collaboration**  
Defense | Government | Industry | Academia

# I'm Using SCORM. What Does the Experience API ("Tin Can API") Mean?

iFest 2012

Tom Creighton, ADL Tech Team, Subcontractor for Katmai

# Agenda

- ▶ SCORM Update
- ▶ TLA Experience API (Tin Can) History
- ▶ Experience API Overview
- ▶ Specification Development Timeline
- ▶ Should I Switch from SCORM?

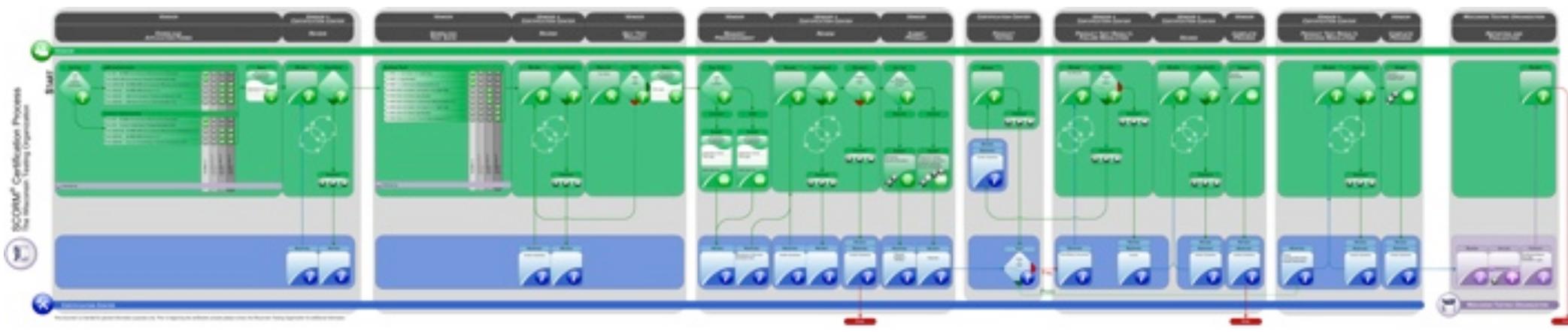
- ✓ 508 Enhancements
- ✓ Usability Updates
- ✓ General Updates

No Functional Changes



# SCORM 2004 4<sup>th</sup> Edition Certification

- ▶ ISO Certification Process
- ▶ LMS-Only



Thursday, July 26, 12

New certification process

old cert had no accountability after the product was certified [ products versions could continue to change but certification still applied -- broken implementations still could advertise conformance]

-- -- new process recognizes that conformance can become invalid if the product changed

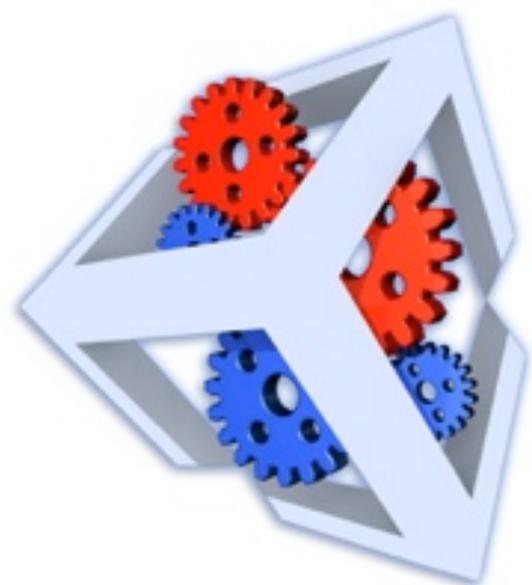
-- -- new cert process only covers LMSs

# Unity-SCORM Integration Toolkit Released

R&D effort on games and simulations as part of an e-learning curriculum

Supports SCORM 2004 and SCORM 1.2

*Run-Time Environment  
Minimal Packaging*



<http://www.adlnet.gov/scorm-unity-integration>

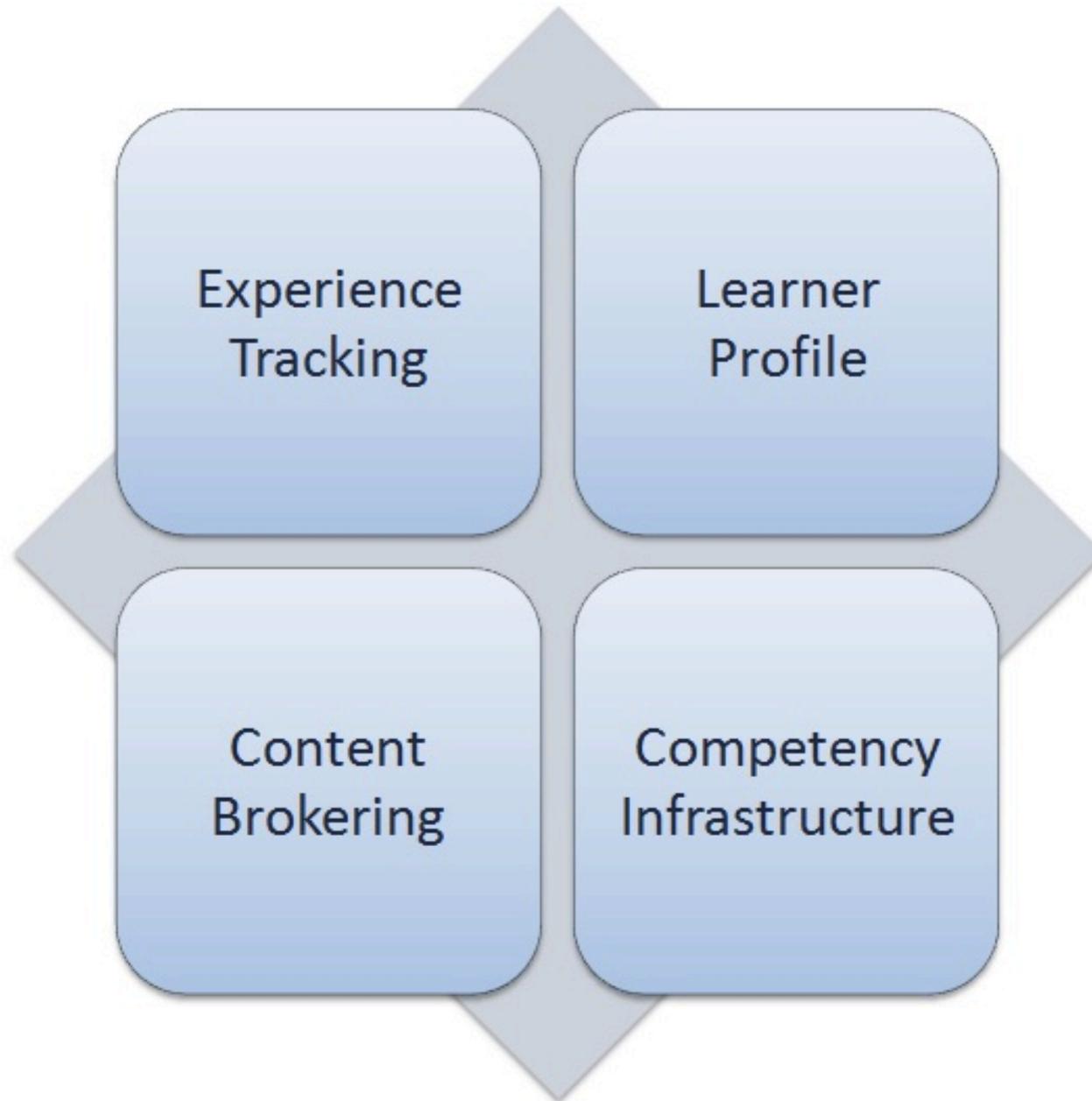
- -- unity, game engine company, has an option to export the game to a web version, like games on yahoo games..
- -- this export to a web deliverable version aligns nicely with SCORM's requirement that all content is web deliverable
- -- unity, game engine company, and ADL developed a plug-in for unity that allows games to be exported as a SCORM package

# TLA Experience API (Tin Can) History

Thursday, July 26, 12

It is valuable to explain the motivations behind developing this Experience API and to understand some of the use cases it is designed to meet

# Training & Learning Architecture (TLA)



Thursday, July 26, 12

TLA stands for Training & Learning Architecture. It is the umbrella term for all of the projects designed to create a rich environment for online training and learning. Informally, this has been called "SCORM Next", "Next Gen SCORM", "FLeX".

These projects are initially R&D projects funded through Broad Agency Announcements to investigate and build out specific aspects of the overall architecture.

## Experience Tracking

- the current project we are working on (Experience API)
- explained in the rest of this presentation

## Learner Profile

- ways to describe information about a learner :
  - preferences, competencies, experiences

## Content Brokering

- ways to describe, discover, and deliver content

## Competency Infrastructure

- Authoritative, machine readable definitions of learning objectives, competencies, tasks, standards, and conditions

# SCORM Limitations

# I Can't Get My Data!...



Thursday, July 26, 12

SCORM data is stored in an LMS and then is only accessible via LMS reports. What if I want to send that data to another system or build a custom report. Right now, there is no interoperable means to do this.

-- -- no access to data (training > hr system issues, transferring from job) [never defined data access in SCORM, worse there's no requirement to persist data after a session end]

# I want to train multiple users in a virtual world...



Thursday, July 26, 12

Most virtual worlds do not have unrestricted access to JavaScript in a browser. As a result, tracking to a SCORM LMS is not possible.

Also, SCORM is a single learner model, with data that only describes an individual.

-- -- virtual worlds (groups, package-less) [SCORM requires LMSs to contain/manage the content and deliver it to a browser... SCORM is also on a user and session basis, no group support]

# I want to track data in a simulation...



Thursday, July 26, 12

Many simulations are not web-based, especially full-scale simulators. What if I want to track what a learner is doing or provide guidance or a score?.. Not possible with SCORM.

-- -- simulations (large amounts of data) [SCORM's data model is rigid, never described how to extend the data model in an interoperable way... also no requirement to archive or store data after a session ends.. and no interoperable access to data, anyway]

---- surgery simulation example from norway.. how can the information from the surgery simulator be stored and retrieved using SCORM's static data model

# Learning is social. How do I integrate all of this social media?



Thursday, July 26, 12

Learning is social, but SCORM does not allow for user-generated content or content hosted by a third party (on another domain). How do I track when learner learns socially?...

-- -- social media (va earthquake read about before felt in NYC, self guided learning, wikipedia/stack overflow/kahn academy) [informal learning, social media, self guided learning not supported in SCORM, the LMS needs to know about the content before it tracks.. needs to have a session.. data model (language used to report info) not descriptive enough to capture interactions with social media -- i read something, i talked to someone, i attended a lecture]

# What about mobile apps and augmented reality?...



Thursday, July 26, 12

Mobile apps, AR glasses, tablets... all great platforms for education and training. All not natively supported by SCORM.

-- -- future, mobile, blended [SCORM strict data model and in browser javascript communication model makes it difficult to support emerging technologies and "non-content package" style methods of training]

# Project Tin Can BAA

Thursday, July 26, 12

Project Tin Can Broad Agency Announcement

-- -- BAA project tasked to modernize the communication method within SCORM

# Gathering Requirements - Phase I

- ▶ SCORM Should be Able to Handle Distributed Content
- ▶ SCORM Needs to be Simpler
- ▶ SCORM Should Handle Offline or Long-Running Content
- ▶ SCORM Should Provide a Way to Expose the Data it Tracks
- ▶ SCORM Should Remove Sequencing Altogether
- ▶ SCORM Needs to Track More Robust Data

[http://www.adlnet.gov/wp-content/uploads/2012/01/NEXTGEN-SCORM-requirements-20120130\\_v1.pdf](http://www.adlnet.gov/wp-content/uploads/2012/01/NEXTGEN-SCORM-requirements-20120130_v1.pdf)

## Creating a Solution - Phase II

- ▶ Document the new communication process
- ▶ Create examples based on the process
- ▶ Deliver the documentation, demonstrations, code to ADL

# Open Community Effort

- ▶ Create the specification in an open, collaborative forum
- ▶ 400+ Stakeholders Signed Up
- ▶ 350 at the Kick-Off Meeting
- ▶ 20-30 Active Specification Contributors
- ▶ LMS Vendors, Authoring Tools, Content Developers,  
Government, DoD, Academia, Industry

Thursday, July 26, 12

- -- ADL understands that successful adoption of the new specification would require cooperation from the community
- -- Additionally the cooperation of the community would help to develop a more robust specification
- -- In the early spring, ADL held a kick off meeting to announce the continued development of the specification to a stable 1.0 version of the spec.
- -- The meeting had over 400 stakeholder sign up and 350 attend.
- -- It was announced that we were going to openly develop the specification and began a weekly specification call, currently there are around 20 contributors on that call (thursdays at 2:30 eastern)
- -- ADL also created Google groups where the community could come to discuss issues on implementing, adopting and creating the specification

# Experience API Overview

Thursday, July 26, 12

- A specification (a document describing how to build a system).. like SCORM it's a set of rules applications need to follow so that they can communicate to each other
- A new way for activities to communicate learner experiences, by defining a new API and data model

# New API (Application Programming Interface)

A process for communicating with a system of services

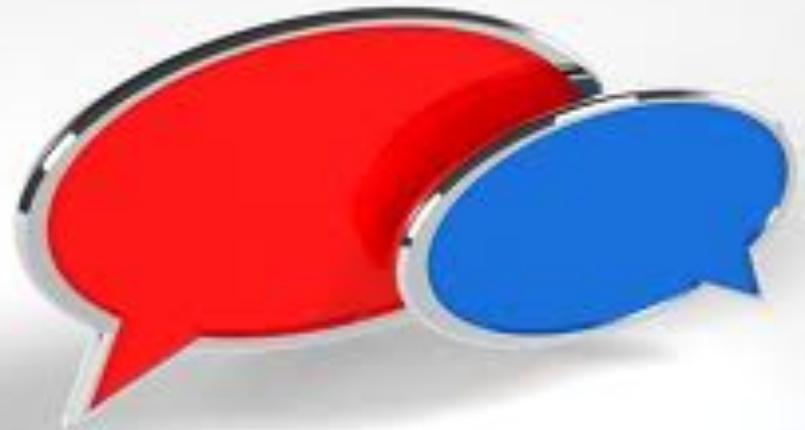


<b>SCORM API</b> 	<b>Experience API</b> 
Requires continuous communication session	Session-less communication
Embedded in a web page at the launch of the content	Always available at a URL
LMS needs to manage and launch the content	Content can exist outside of the system
Content needs to be “web deliverable”	Content can be anything

- The difference between SCORM and Experience APIs is a lot like the difference between a telephone call and an email
- -- a phone call is one continuous communication between both sides of the call.. the connection breaks, the call ends
- -- an email is an asynchronous conversation.. the connection only needs to last long enough to send the message

# New Data Model

- ▶ The language used to communicate
- ▶ Based on Activity Streams
- ▶ Natively supports extending (tailoring the data)



# LRS (Learning Record Store)

- ▶ New term introduced in the Experience API spec
- ▶ A system that stores and maintains learners' experiences
- ▶ Similar to a database
- ▶ It can be stand alone or integrated into another system

## Learning Management System (LMS)

User Management

Learning Records

Scheduling

Course Management

Statistics

Grade Book

Run-Time

Repository

Search

Player

Sequencing

Delivery

Preferences

Reports

Assessment

Thursday, July 26, 12

-- -- -- In other words, even though it is possible to build a stand-alone LRS, not tied to an LMS, it is more likely that you will see the Experience API built into LMSs in the future.

## ment System (LMS)

ords

Scheduling

AICC

Grade Book

SCORM 1.2

Search

SCORM 2004

Delivery

Experience API

Assessment



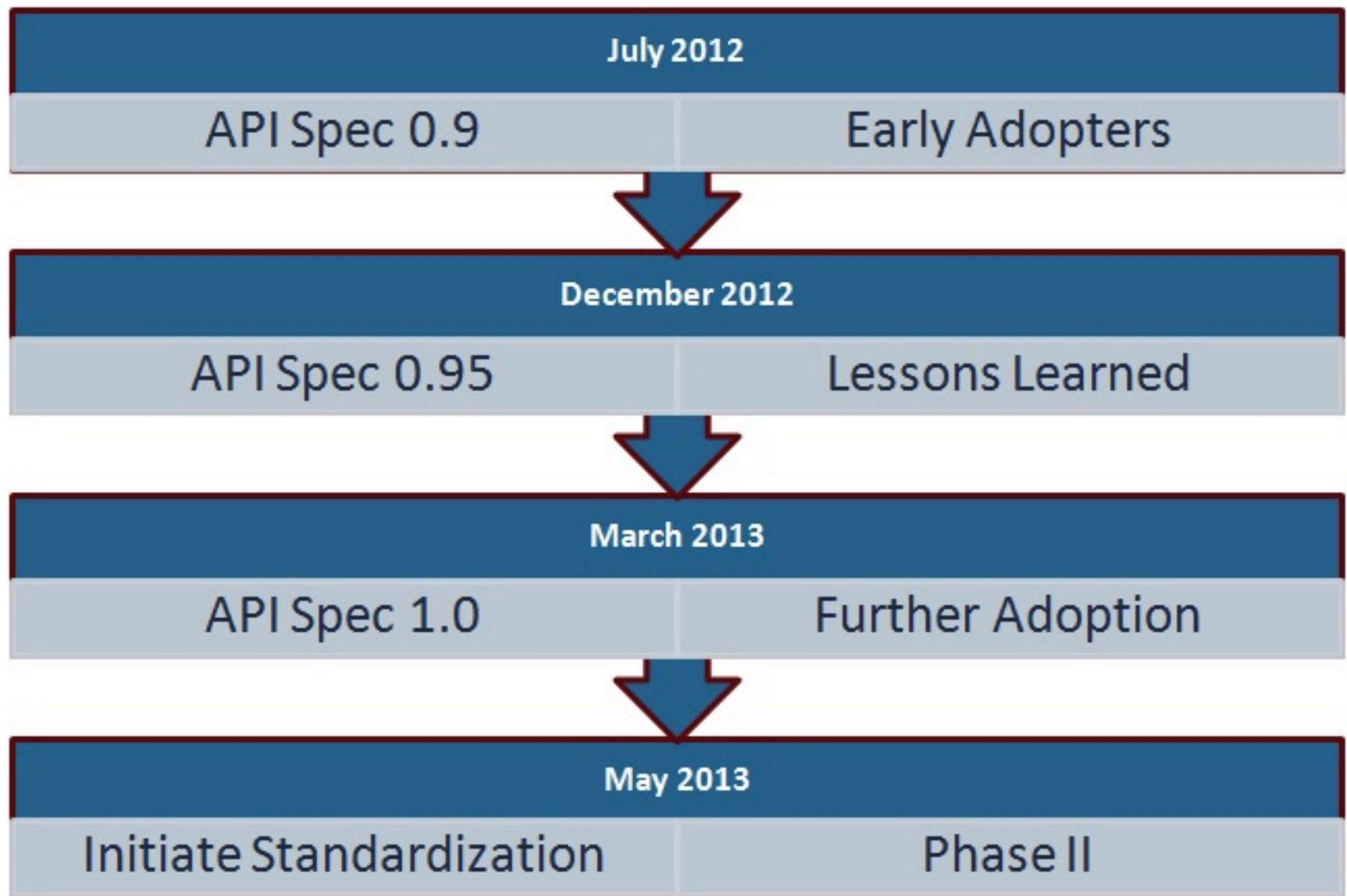
YouTube



Thursday, July 26, 12

- That means that the LMS you are using right now may come out with an update in the future that includes the Experience API as an option for your content to use, just like many LMSs now support AICC, IMS common cartridge, scorm 1.2 and scorm 2004
- And that you will be able to choose which communication method you use based on your content

# Specification Development Timeline



Thursday, July 26, 12

- current is 0.9
- 0.95 around end of the year
- and final 1.0 (stable) early/mid 2013
- after the stable 1.0 version, our efforts will focus on development of the spec to adoption of the spec, and we will hand the specification over to a standards body, which will continue to develop the spec
- Phase II means we will turn our focus onto one of the other projects that make up the TLA

# Should I switch from SCORM now?

## I have content, an LMS, and everything is fine

- ▶ If everything is working for you, stick with SCORM
- ▶ Large selection of resources
- ▶ Standardized

Thursday, July 26, 12

The Big Question - Should I switch from SCORM to this new API, now?

-- The answer: It depends

-- the following are some positions developers and ISDs may now be in..

-- If your organization/client/customers are happy with the current situation, stick with SCORM

-- Content development tools, selection of LMSs, experienced developers

-- SCORM is standardized.. it is stable and has years of testing and development

-- -- it is likely that most will experience an overlap. LMS vendors are likely to include the Experience API as another option, not the only option. And with the ability to extract data from the LRS, it's also expected that tools will appear that will perform the service of transferring information from an LRS to another LRS or LMS.

# I'm developing training for mobile apps/games/virtual worlds...

- ▶ The Experience API is for you
- ▶ No “web deliverable” requirement
- ▶ Mobile friendly
  - ▶ supports disconnected/sporadic connection
  - ▶ doesn't require embedding the API in a web page
- ▶ Game/virtual world friendly
  - ▶ supports reporting about groups and social interaction
- ▶ Simulation friendly
  - ▶ provides a dynamic data model, allowing for the vast amount and varying type of data

Thursday, July 26, 12

- I am developing training for mobile apps/virtual worlds/simulations and I need to do some strange stuff to get it to work with SCORM
- -- Experience API is what you need.
- -- -- It will allow you to communicate through a connection that is not embedded in a web page and that is not a constant connection, which solves some of the big issues with SCORM mobile support.
- -- -- It allows you to report information about groups and social interactions, which supports virtual worlds
- -- -- It provides a dynamic data model, which supports the vast amount of data simulators can describe

# I want to track informal/self-directed learning

- ▶ The Experience API leverages technologies used for social sites
- ▶ Supports features such as a “i experienced this” button
- ▶ Doesn't require content to be managed and launched by the LMS

Thursday, July 26, 12

-- -- I'm looking to track informal learning

-- -- -- Experience API is built off the same technology as used by social sites..

-- -- -- it supports features like a "like" button.. we have an example 'bookmarklet' which is a small javascript app that can be used to report web pages you've visited

-- -- -- don't need to launch and manage the course in the LMS... you can use content on other sites like youtube, wikipedia, kahn academy, ted talks

# I want to leverage the data that is tracked

- ▶ The Experience API provides a way to get to the tracked experiences

- ▶ Build analysis tools

- ▶ What did the successful students do differently?

- ▶ Reporting tools

- ▶ Leader board



-- I want to leverage the data that is being tracked

-- -- -- The Experience API exposes a way to access the data stored [Disclaimer: this depends on the security profiles applied to the API]

-- -- -- Using that data you could build analysis tools (ex. perhaps to identify behaviors of the successful students - what sites do they frequent?, did certain videos help? were they active in the discussion boards?)

-- -- -- or reporting tools, such as the leader board for the game we demonstrated at iFest

# I want to stay informed about the Experience API

## ▶ Join the Google Groups

- ▶ <http://www.adlnet.gov/getting-involved-with-the-next-generation-scorm-tin-can-api>

## ▶ Look at the Specification

- ▶ <http://tincanapi.wikispaces.com/Tin+Can+API+Specification>

## ▶ Monitor ADL Website

- ▶ <http://www.adlnet.gov/capabilities/next-generation-scorm/tin-can-api>

## ▶ Check out the prototypes on GitHub

- ▶ [https://github.com/adlnet/TinCan\\_Prototypes](https://github.com/adlnet/TinCan_Prototypes)



## **TLA (Next Gen SCORM) Information**

<http://www.adlnet.gov/capabilities/next-generation-scorm>

## **SCORM 2004 4<sup>th</sup> Edition**

<http://www.adlnet.gov/capabilities/scorm/scorm-2004-4th>

## **Unity-SCORM Integration Toolkit**

<http://www.adlnet.gov/adl-releases-the-unity-scorm-integration-toolkit-version-1-0-beta>



**Tom Creighton**  
tom.creighton.ctr@adlnet.gov