

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

The Training and Learning Architecture: Meeting the Needs of the Next Generation of SCORM

28 February 2013

Mr. Andy Johnson, Technical Team, ADL
Problem Solutions Contractor for ADL



SCORM - Today's Capability



SCORM is the de facto global learning standard



Community Needs



- Track diverse user learning experiences
- Move beyond the single-learner model
- Eliminate out-of-date technology practices
- Improve or eliminate the content sequencing
- Include tools, guides, and best practices
- Provide clearer instructions and more efficient testing
- Provide a means to expose user data



Next Gen “SCORM”



Access From Any Device



Personalized and Brokered Content

- Just-in-Time
- Just-for-You



Learn From:

- Intelligent Tutors
- Mentors and peers via social networks
- Self-Discovery

Learn Using:

- Games
- Virtual Worlds
- Intelligent content



Moving Beyond SCORM



- We don't need another evolution of SCORM
 - Adding another "Book" to SCORM is not the answer
 - Sequencing and Navigation drastically changed SCORM
- Rather, we need SCORM Capabilities in a more flexible and current capacity.
- The Training and Learning Architecture will be able to do everything SCORM can do and more.



Training & Learning Architecture (TLA)



TLA

- Experience Tracking
- Content Brokering
- Learner Profiles
- Competency Networks

The Service-Based Approach



DIGITAL GOVERNMENT:
**BUILDING A 21ST
CENTURY PLATFORM
TO BETTER SERVE THE
AMERICAN PEOPLE**

MAY 23, 2012

"I want us to ask ourselves every day, how are we using technology to make a real difference in people's lives."

—President Barack Obama

"Ultimately, a shared platform approach to developing and delivering digital services and managing data not only helps accelerate the adoption of new technologies, but also lowers costs and reduces duplication."



Web Service Benefits



- **Interoperability** – Works with any programming language while providing non-proprietary solution due to standards-based communications
- **Usability** – Exposes logic over the web that can be used instead of reinvented
- **Reusability** – Easy to reuse common tasks without duplication of code
- **Deployability**– Leverages standard Internet technologies



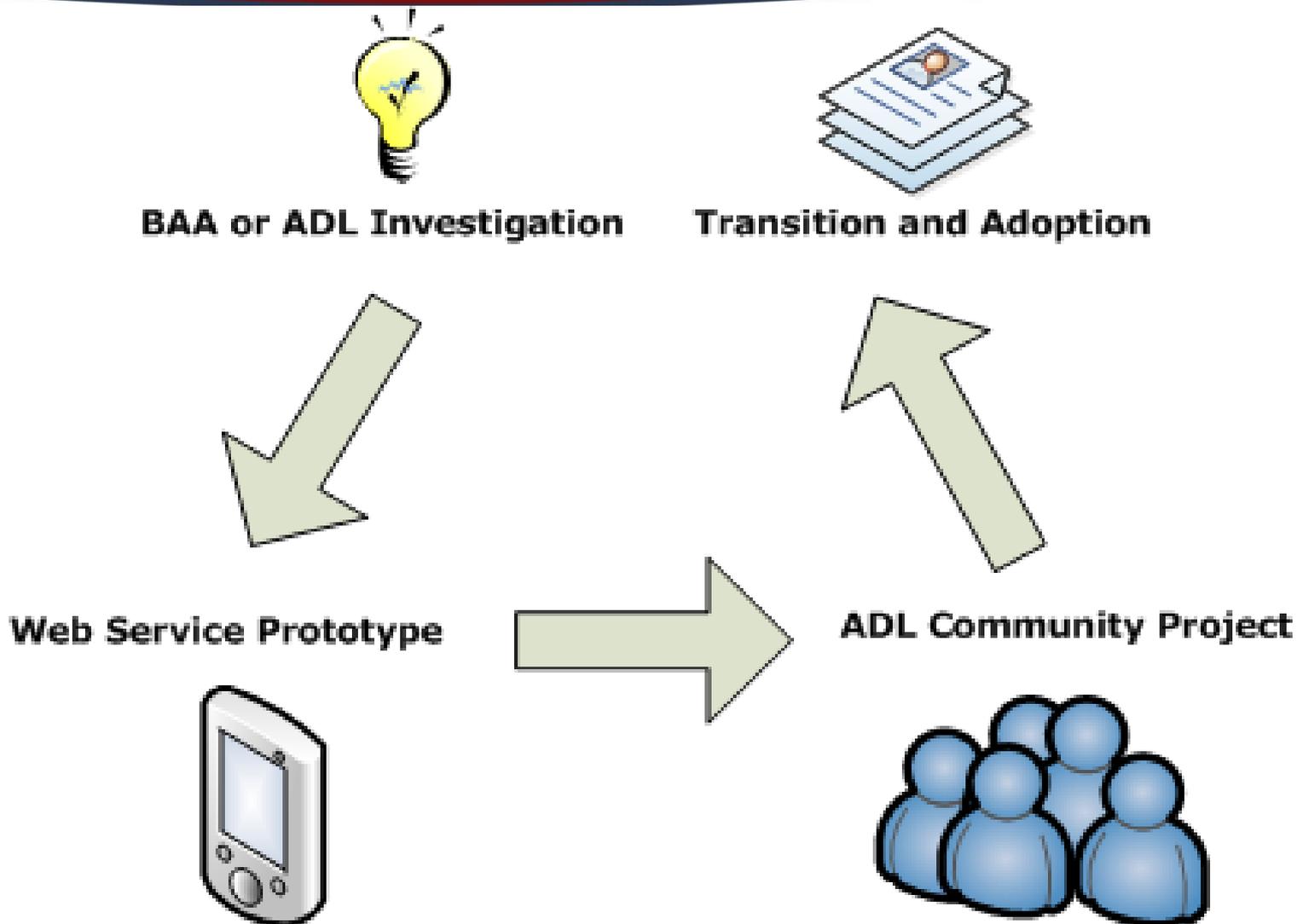
Open Source Benefits



- **Security and Quality** – The more people who see the code, the more likely flaws will be caught and tested quickly
- **Freedom and Customizability** – With all of the code available, any custom updates can be made without vendor reliance
- **Auditability** – Visibility of code means that systems can be verified first-hand
- **Costs** – Licensing costs are low or free
- **Support Options** – Vibrant communities with forums, wikis, newsgroups, chat, etc.



TLA Component Lifecycle





Training & Learning Architecture (TLA)



TLA

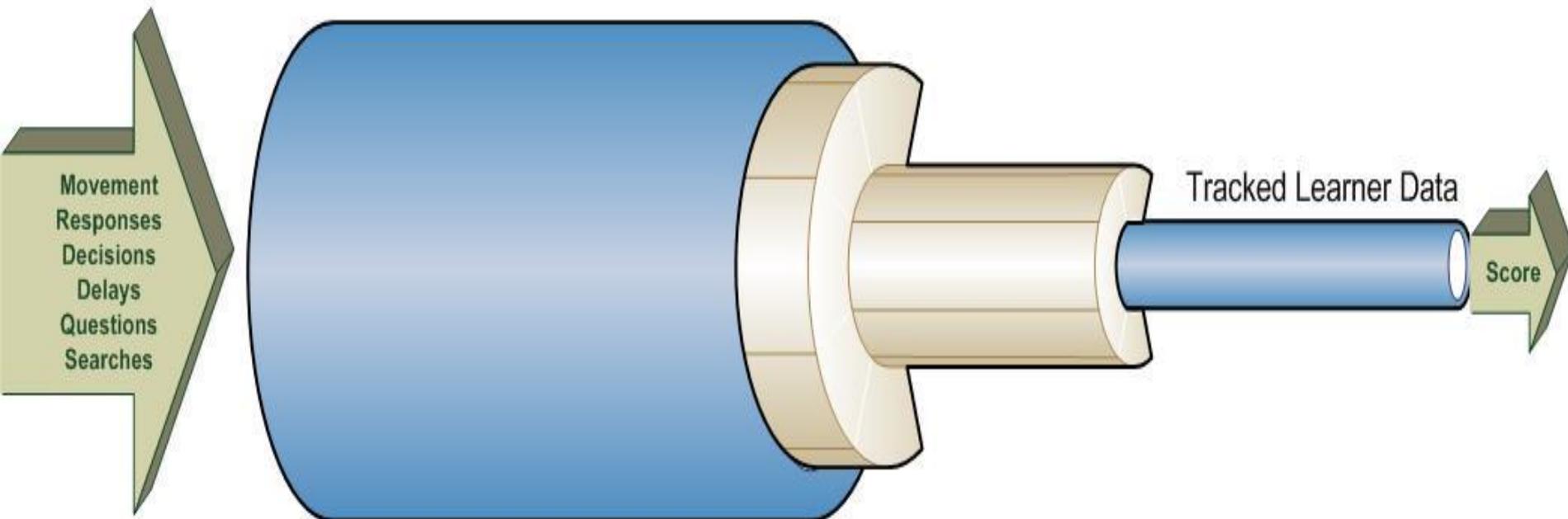
- **Experience Tracking**
- Content Brokering
- Learner Profiles
- Competency Networks



Traditional Tracking



Learner Experiences





TLA Experience Tracking



Requirements

- Track learner data based on interactions with learning experiences
- Provide access to data after it is initially stored

Services and Specifications

- Experience Application Programming Interface (xAPI)

Open Source Software

- ADL Open Source Learning Record Store (LRS)
- Experience API Examples
- Experience API Reusable Code Libraries



ADL Learning Record Store (LRS)

Open Source Software



What is an LRS?



Learning Management System (LMS)

User Management

Learning Records

Scheduling

Course Management

Statistics

Grade Book

Run-Time

Repository

Search

Player

Sequencing

Delivery

Preferences

Reports

Assessment



What is an LRS?



Learning Record Store (LRS)

Learning Records



The Experience API (xAPI)

Web Service Specification & Open Source Examples



Track It



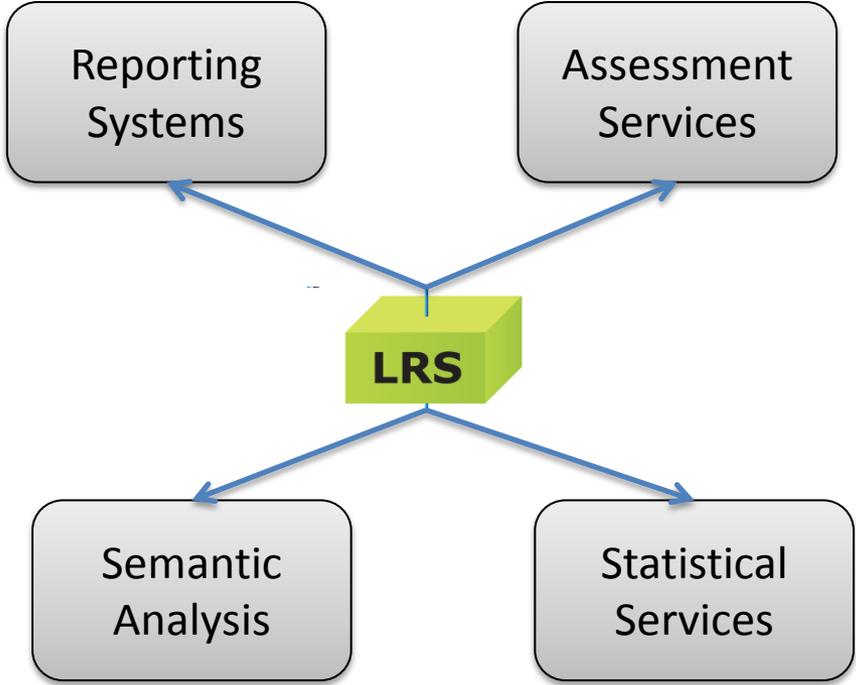
LRS = Learning Record Store



Act on It



LRS = Learning Record Store





TLA Experience Tracking



- xAPI is not a replacement for SCORM
- It cannot do everything SCORM can do as it is just a data protocol
- Both can be used simultaneously – nothing about either format restricts the other from tracking



Transitioning to TLA



- Each component contains a dedicated plan for transition from SCORM to TLA
- Best practices for updating content and systems will be created
- Software libraries and “wrappers” to ease the transition and minimize cost and resourcing impact will be created in an open source environment



Training & Learning Architecture (TLA)



TLA

- Experience Tracking
- **Content Brokering**
- Learner Profiles
- Competency Networks



TLA Content Brokering



Requirements

- Manage content to support just-in-time learning by enabling logical selections of the “next” logical activity
- Provides machines the ability to “understand” content for the purposes of selection and launch

Services and Specifications

- 3D Repository Federation Services

Open Source Software

- Re-Usability Support System for E-Learning (RUSSEL)
- Federal Learning Registry
- ADL 3D Repository



Content Brokering Roadmap



	Standardize Data	Standardize Practice	Map to "Logical Next"
Delivery			
Storage			
Federation			
Adoption			
Policy			
Social			
Metadata			
Paradata			



ADL 3D-Repository



OpenSimulator



3DR Features



	Standardize Data	Standardize Practice	Map to "Logical Next"
Delivery			
Storage	●	●	
Federation			
Adoption	●	●	
Policy	●	●	
Social			
Metadata	●	●	
Paradata			



Khan Academy
www.khanacademy.org

212,760,517 lessons delivered
KHANACADEMY

WATCH PRACTICE

Learn almost anything for free

Examples: Leonardo's Last Supper, mitosis, money supply, etc

Explore computer science
Create beautiful art and design your own simulations while learning how to program.

Education reimaged
Founder Sal Khan talks about how learning is being transformed in classrooms.

Practice
Practice your calculus and...

BROWSE OUR LIBRARY

NSDL.org - National Science Digital Library

NSDL Home

Search The National Science Digital Library

NSDL is the nation's online portal for education and research on learning in Science, Technology, Engineering, and Mathematics.

MATH COMMON CORE
NSDL resources related to MCC

SCIENCE LITERACY MAPS
Browse for resources by concept

NSDL NEWS @ TWITTER

RT @ORiceEEd: Wh...
RT @informatics: Nominations now open to...

Browse OER Materials | OER Commons

www.oercommons.org/oer

LEARNER OPTIONS

Register Now! Log In Help

Search

Home / Browse All / Materials

Browse OER Materials

Browse Collection Providers	Subject Areas		Grade Levels	
	Arts	Business	Primary	Secondary
Featured Searches	(2703)	(1290)	(9092)	(22429)
Art & Social Justice	(8379)	(9505)	Post-secondary	(26578)
Open Textbooks	(20610)	(7030)		
K-12 Textbooks				

Materials Types			
Activities & Labs	(11556)	Lecture Notes	(2273)
Assessments	(2180)	Lesson Plans	(5918)
Audio Lectures	(956)	Readings	(9178)

learning registry
sharing what we know



PBS LearningMedia

www.pbslearningmedia.org

Welcome to PBS LearningMedia™, your new destination for trusted, classroom-ready, curriculum resources... up for free to tag favorites, access standards-aligned digital resources, and more.

Browse Collection by Subject

Click to see a collection of tens of thousands of resources by subject area.

- Arts
- English Language Arts
- Health and Physical Education
- Mathematics
- Preschool
- Professional Development
- Science
- Social Studies

Math Measures in the Kitchen and Out

Math is made meaningful when it's connected to students' experiences. Learn how to decorate an intricate cake. Play the role of the pharmacist. Multiply a recipe. Use PBS LearningMedia resources to measure with math.

2012 Teach Innovate Award



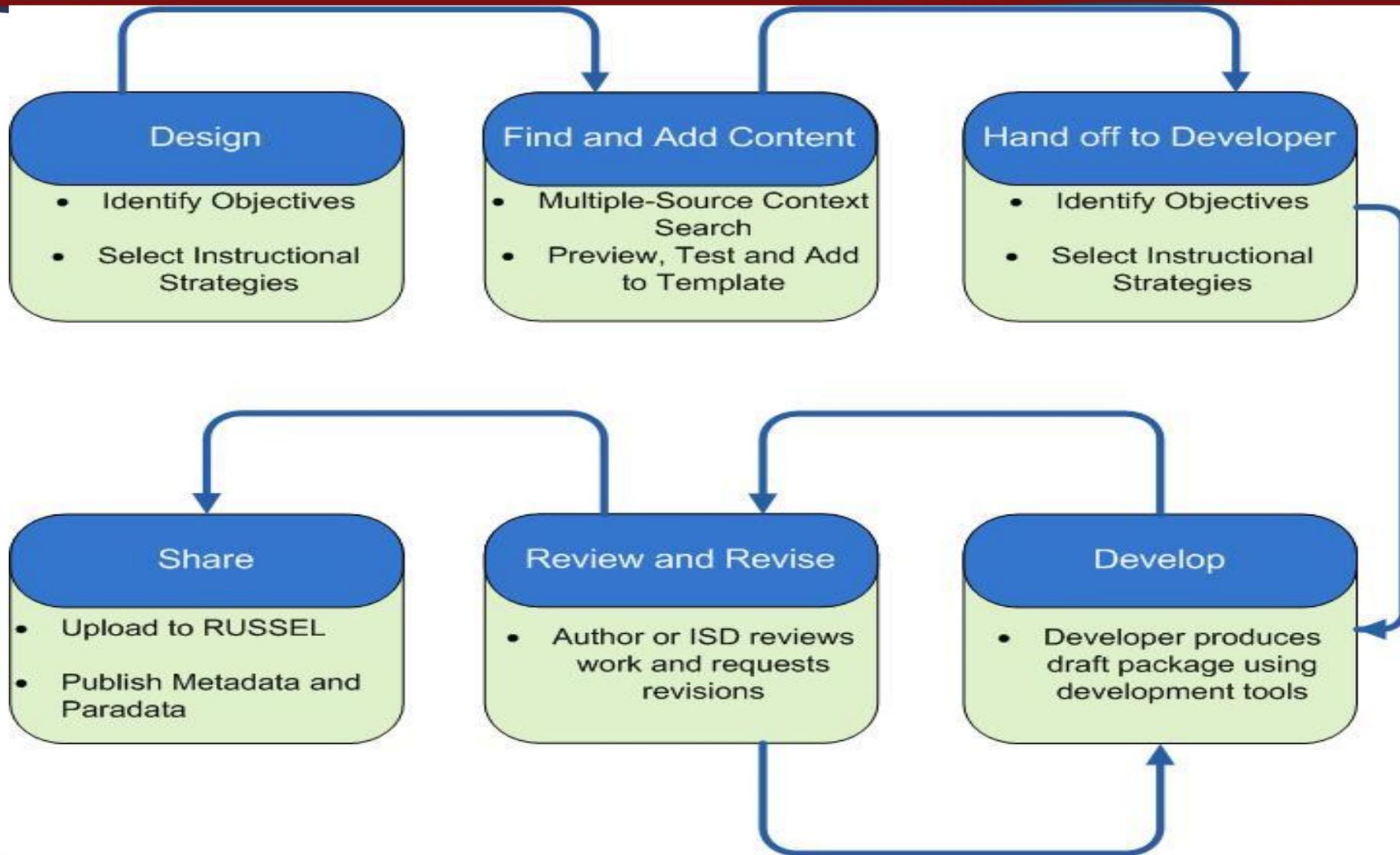
Learning Registry Features



	Standardize Data	Standardize Practice	Map to "Logical Next"
Delivery			
Storage	●	●	
Federation			
Adoption	●	●	
Policy	●	●	
Social			
Metadata	●	●	
Paradata			



RUSSEL Workflow





RUSSEL Features



	Standardize Data	Standardize Practice	Map to "Logical Next"
Delivery			
Storage	●	●	
Federation	●	●	
Adoption			
Policy			
Social	●	●	
Metadata	●	●	●
Paradata	●	●	



Training & Learning Architecture (TLA)



TLA

- Experience Tracking
- Content Brokering
- **Learner Profiles**
- Competency Networks



TLA Learner Profiles



Requirements

- Compile data about a learner to include previous course completions, competencies, preferences, learning style, and portfolios
- Provide access to profile information to be used to tailor learning experiences to an individual

Services and Specifications

- Adaptive Navigation Support and Open Social Learner Modeling for PAL (BAA)

Open Source Software

- TBD



Training & Learning Architecture (TLA)



TLA

- Experience Tracking
- Content Brokering
- Learner Profiles
- **Competency Networks**



TLA Competency Networks



Requirements

- Establish a common way for content and systems to reference objectives and competencies
- Provide a means to represent a competency and competency relationships

Services and Specifications

- TBD

Open Source Software

- TBD



The Future

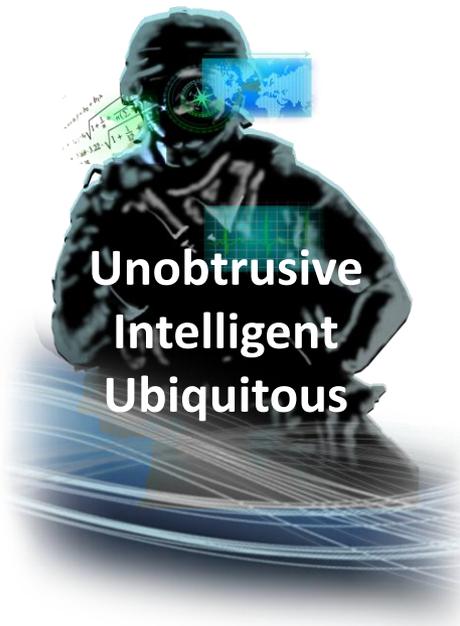


Personal Assistant for Learning

*Sharing information
across multiple platforms*

Networked to facilitate mentoring and peer-to-peer communications

Integrated Artificial Intelligence (AI) System



**Unobtrusive
Intelligent
Ubiquitous**

Dynamic Learner models
for individuals and teams

*Personalized to the
individual*

Transparent interface to enhance user experience

Assess and track learner performance
Anytime & Anywhere



The Relationship Between the PAL and TLA



- The PAL is a holistic solution
- Reality is that the components aren't even designed yet
- Much less the necessary ties between components and infrastructure
- ADL is researching individual components as a part of the Training and Learning Architecture
- Components from the TLA pave the way for the PAL



Get Involved – TLA



www.adlnet.gov/capabilities/tla

- **Get information on the latest TLA projects**
- **Download specifications and software**
- **Find out how to contribute**



Experience API



xapi.adlnet.gov

- **Stakeholders** – Find out about the latest spec release, open source software and other major announcements
- **Adopters** – Work with ADL and other developers to integrate the Experience API into your learning environment
- **Specification Contributors** – Influence the specification and technology roadmap



Resources



Next Generation SCORM Requirements:

Summary:

<http://www.adlnet.gov/adl-summarizes-next-generation-scorm-requirements>

White paper:

http://www.adlnet.gov/wp-content/uploads/2012/01/NEXTGEN-SCORM-requirements-20120130_v1.pdf

Training & Learning Architecture (TLA): <http://www.adlnet.gov/capabilities/tla>

Experience API: <http://www.adlnet.gov/tla/experience-api>

SCORM: <http://www.adlnet.gov/capabilities/scorm>

ADL Github: <https://github.com/adlnet>

ADL Tech Team Blogs:

http://www.adlnet.gov/?s=+&tag=next-generation-scorm&category_name=blog-post



Contact Us



Andy Johnson
andy.johnson.ctr@adlnet.gov
Twitter: @AndyJohnsonADL

Webinar Resources

<http://www.adlnet.gov/webinars/tla>