

ADL: Preliminary Systems and Content Integration Research within the Next Generation Learning Environment

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Overview

- **Office of Under Secretary of Defense (OUSD) planning to develop the next generation training and learning environment**
 - **Long-term Personnel and Readiness (P&R) Training Research and Strategy (TR&S) goal: Personal Learning Assistant (PLA)**
 - **The big idea! “an adaptive, intelligent capability that anticipates needs, engages our senses and interoperates seamlessly with yet-to-be-available information; gathering and sharing capabilities with total transparency.”**
- **ADL Near-term R&D focus areas**
 - **Next Generation Learner**
 - **Next Generation Learning Environment**

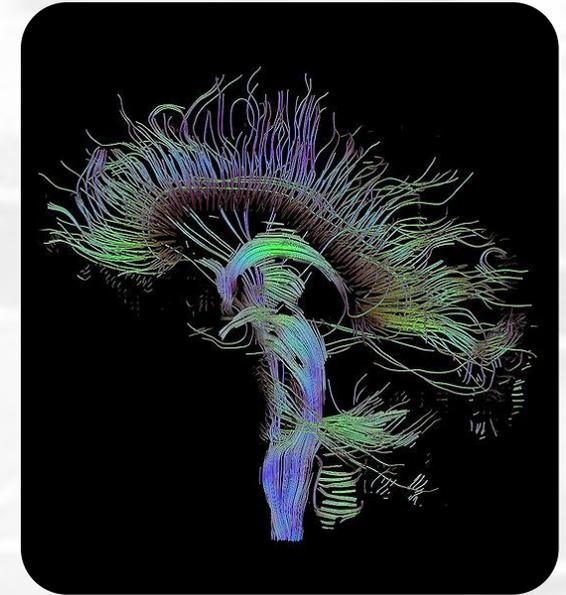
Operating Environment

- **Future Operating Environment**
- **Future operating environments “are characterized by uncertainty, complexity, rapid change, and persistent conflict” (Capstone Concept for Joint Operations, 2009; p. 2).**



Next Generation Learner

- **Adaptability**
 - **Assess pattern of adaptive and complex-decision making behaviors over time**
 - **Measure adaptability and complex decision-making in the field over the course of a career**
 - **Assessment of various proficiency levels**
 - **Utilization of micro-world environments or other simulations to a variety of other complex situations**
- **Learner skills**
 - **Cognitive Domain**
 - **Affective Domain**



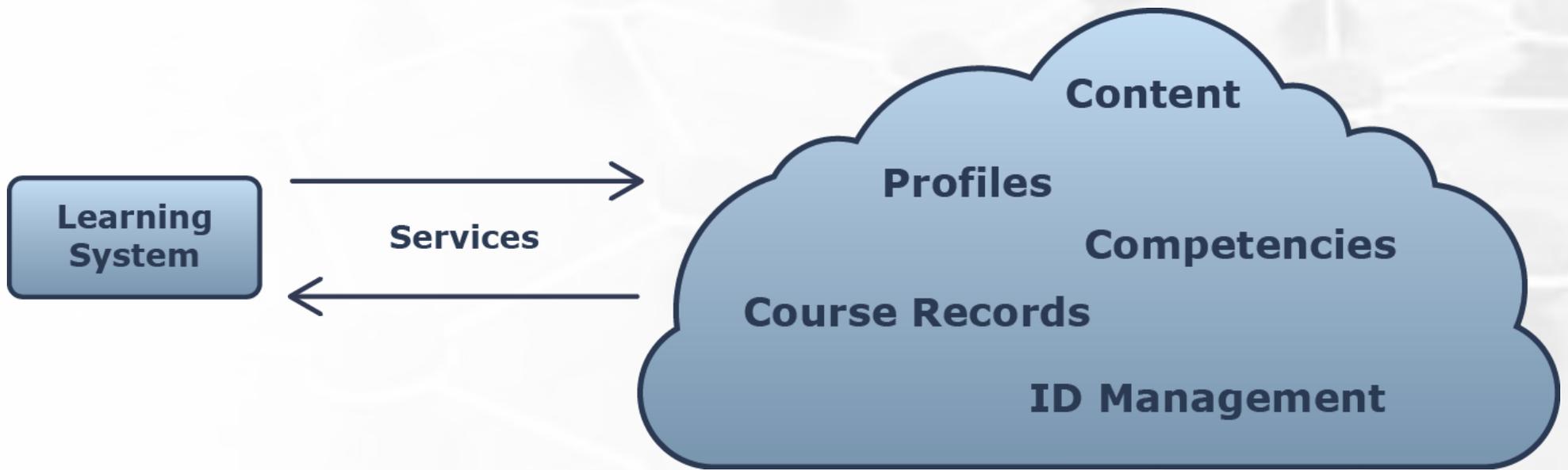
Next Generation Learning Environment

- **Challenges**
 - **Rapid pace of emerging technologies, each with unique instructional strengths**
 - **Not all systems able to communicate with one another**
- **Develop content and system data sharing environment**
 - **Considerations in new environment**
 - **Design**
 - **Technology**

Next Generation Learning Environment

- **New Environment will enable the following:**
 - **Sharing and integration of performance data across systems**
 - **Content as a Service (CaaS)**
 - **Common data representation**
 - **Foundational architecture upon which the PLA can operate**
- **Community Driven**
 - **Requirements gathered from multiple communities**
 - **Everyone faced with SAME issues**

Web 2.0 and the Cloud



Enterprise Architecture Approach

Preliminary R&D Progress

- **Web Services API Development**
 - **LMS Web Service API**
 - **Virtual World Support**
 - **Social Networking and Learner Profiles**
- **Legacy Content Support**
- **Data Models**
- **Each new development enables Content as a Service (CaaS)**

- **Learning Record Store (LRS)**
 - **Android Tablet Application**
 - **Mobile Content as a Service (CaaS) Course**
 - **Microsoft Kinect Simulation**
 - **Virtual World Learning Experience**
 - **Unity Game (CMI5 Prototype Extension)**
- **Legacy Content/LMS**

Learning Record Store

- **LRS \approx LMSs of today**
- **Administration of demo components**
- **User management**
- **Content management**
- **Learning record storage**

**Does *not* provide sequencing
or navigation**



Android Tablet Application

- **Native Android tablet application**
- **External interface to LRS data**
- **“Learning dashboard”**
- **Out-of-browser administration**



Mobile CaaS Course

- **Illustrates 'hosted' content**
- **Smart rendering per device**
- **Cross-domain content**
- **Tracking performance to LRS**



Microsoft Kinect Simulation

- **Motion and speech control “simulation”**
- **Microsoft SDK sample**
- **Out-of-browser content**
- **Tracking to LRS via voice command**
- **Speed of integration**



Unity Game

- **“Serious” game demonstration**
- **Open source Unity game**
- **Out-of-browser content**
- **Tracking performance to LRS**



Virtual World

- **Multiple Users**
- **Tracking to LRS**
- **Integration of content within the virtual world**
 - Learning dashboard
 - Autotutor Lite
 - Google Docs
 - Yammer
 - Legacy Content



Existing SCORM Content

- **Integration via a “wrapper”**
- **Legacy content tracking in a service-based system**
- **Uses legacy systems for import, sequencing, etc.**

SCORM[®]
Sharable Content Object Reference Model

SCORM
2004
4th Edition

Common Scenarios Enabled

- **Learning Scenarios**
 - **Problem-based, generative and collaborative learning models**
 - **Immersive learning models**
 - **Personal learning networks**
 - **Team-based learning models**
 - **Qualitative assessment models – e.g. portfolios, 360, rubrics, essay**

Common Scenarios Enabled

- **Supportive Technical Scenarios**
 - **Non-traditional electronic content support**
 - **Distributed content**
 - **Sharing learning data**
 - **Backwards compatibility**
 - **Multi-modal delivery**
 - **Advanced quantitative assessment models – e.g. continuous data tracking**
 - **Learning outcome/target, assessment, learning intervention/experience discovery, alignment, and matching**

Questions?

Thank You

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