

# A New Architecture for Learning: Enabling New Opportunities in Connected Education

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### A New Architecture for Learning

by Rob Abel, Malcolm Brown, and John J. Suess

Published on Monday, October 7, 2013 | 0 Comments

If we are to support students and faculty as connected learners and instructors, we must rethink our approach to academic technology architecture. At the foundation and core of that architecture is information technology, in its role as the strategic enabler of connected learning.





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# eCampus News

#### Dear Rob,

Educators hope massive open online research funded by the Bill & Melinda Gates Foundation will shine a light on the ever-evolving MOOC model and give professors a clearer picture of what works in the online courses, and – perhaps more importantly – what doesn't. See our featured MOOC story for more, and check out other coverage focusing on the emergence of "MOOC 2.0" and a question of whether the experimental courses could one day produce the next Albert Einstein.

#### Read this week's headlines on MOOCs:



UW-L will study MOOCs with Gates Foundation grant

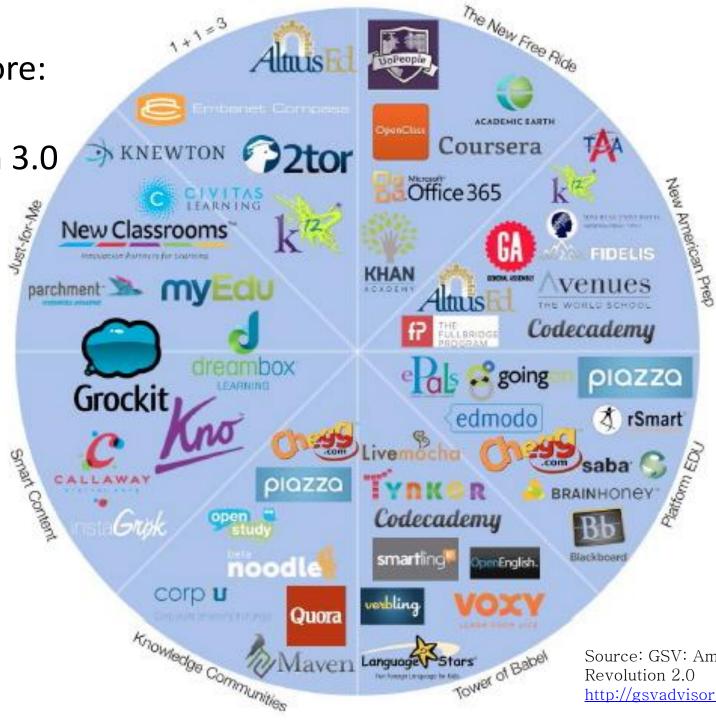
- MOOCs: Too much hype, or not enough?
- . 5 signs that MOOC 2.0 is here
- Can MOOCs cure homelessness?
- MOOCs and their discontents
- Europe's iversity launches 1st MOOCs with 100k+ students
- MOOCs: Can they produce the next Einstein?
- · EdX to examine personalized MOOC experience

#### MOOC Video Resource:



The MOOC

+ A Lot More: Education Innovation 3.0



Source: GSV: American

http://gsvadvisors.com

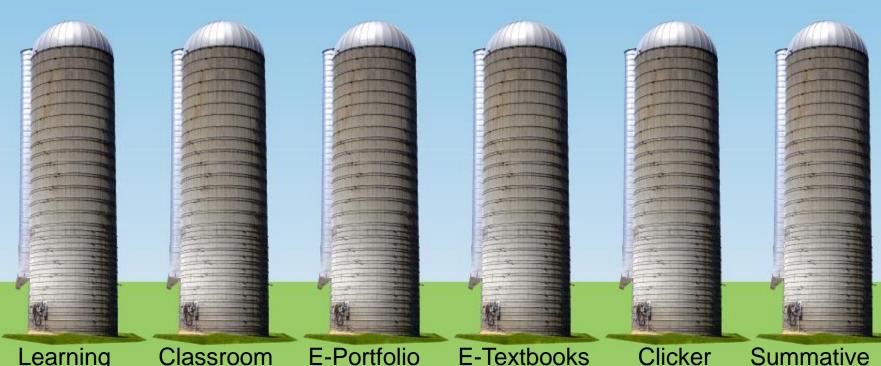


## ar·chi·tec·ture noun \'är-kə-ıtek-chər\

**a**: formation or construction resulting from or as if from a conscious act <the *architecture* of the garden>

**b**: a unifying or coherent form or structure <the novel lacks *architecture*>

# Lack of Architecture = Silo'd Systems



Learning
Management
System

Classroom Capture System

E-Portfolio System

E-Textbooks

& Diverse

Digital

Content

Clicker Classroo m Feedback System

Summative Assessment System



# A New Architecture for Learning

# What if ...

- ✓ IT could safely integrate applications in a day rather than months?
- ✓ Faculty could seamlessly combine tools into a course with one click?
- ✓ Analytics data flowed easily from all learning resources and apps?

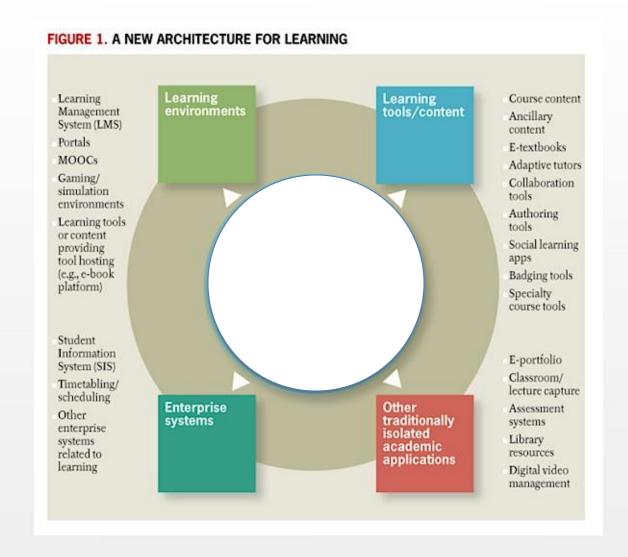


Figure 1. A New Architecture for Learning

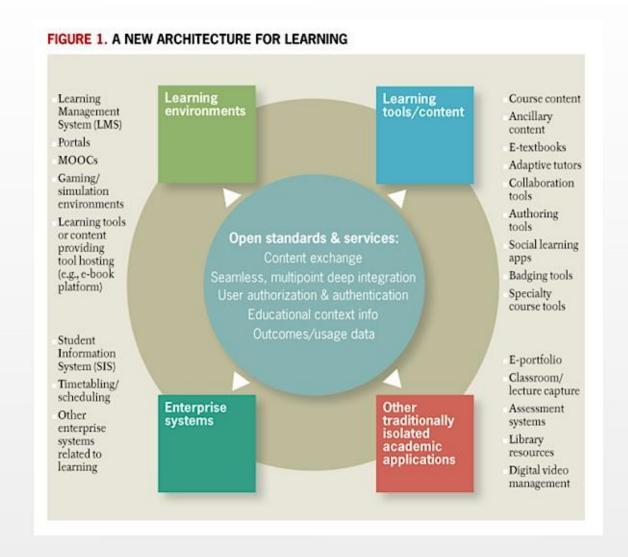
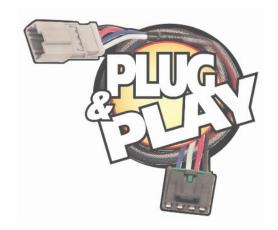


Figure 1. A New Architecture for Learning

Reducing the integration time for Connected **Education Apps** from 6 months to 6 hours to 1-click







# Learning Tools Interoperability

#### Scenario

Alex is an IT admin at a private college for the performing arts. This morning the IT committee is meeting with the provost to discuss learning tools interoperability (LTI), a standard that makes integration with the LMS much faster and less expensive. The campus LMS is LTI-compliant, and Alex suggests that whenever possible the college should choose applications that conform to LTI. The provost asks how doing this might affect future platform migrations. Alex explains that in such a plug-and-play environment, migration would be fast, interoperability would not be a concern, and LTI-compliant digital resources and tools would simply appear in the LMS as if they were built into it, making life easier for teachers and students alike.

Back at his desk, Alex receives a call from Professor Addison, who wants to know how long it will take to integrate a new music composition tool into the campus LMS. Integration would allow him to assign collaborative work in which each member of the study team could use the new tool to write a score for a different instrument. Team members could discuss their joint intent in the class forum and test their combined work in real time in the new composition tool. Issues can be tweaked on the spot during an online group meeting, and the results can be sent to a

### ■ What is it?

Learning Tools Interoperability (LTI) is an open specification from the IMS Global Learning Consortium. It is designed to enable plug-and-play integration of educational applications with the institutional enterprise. Previously, to connect a custom or vendor-provided learning tool with a campus platform such as the LMS, a university IT department either had to assign a developer or hire a specialist to integrate the application with the platform. In either case, the process might take months to complete and would probably need to be redone for each tool and potentially redone yet again when software is upgraded to a new version. By contrast, if the APIs (application programming interfaces) for learning tools and platforms conform to the LTI specification, it is comparatively easy to get the platform and tools to interoperate. Integration time with LTI-compliant components is typically a fraction of what it would otherwise be.

### Mow does it work?

The most common use of LTI is to integrate tools into the campus LMS. A "tool" in this context refers to any service or application that might be interconnected with an LMS: e-portfolios, e-books, presentation/authoring tools, collaboration tools, library resources, assessment tools, homework tools, grading tools, video tools, and subject-specific tools.









#### Everything here is IMS LTI Certified!

#### learning tools interoperability catalog

Use LTI tools inside these platforms- See what they support

dick icon for more info



Blackboard







### ebook tools



#### CourseSmart

Find and access eTextbooks and digital course materials



#### Courseload

Delivers course materials through any web-enabled device



#### VitalSource

Integrated online, downloadable and mobile access for your e-textbooks



#### Barnes and Noble

Use Nook Study to read your ebooks and texts

### eportfolio tools



#### Chalk&Wire

ePortfolio authoring. assessment system, and data analysis tools for students, faculty and professional staff

in higher education and K-12





Open source eportfolios where you can collect, reflect on and share your achievements success.



#### **Pathbrite**

ePortfolios help students collect, track and showcase a lifetime of learning and achievement, and

recommend pathways for continuous success.

#### PebblePad

Users create records of learning, achievement, and aspiration

#### collaboration tools



#### Learning Objects

Social software for learning

#### LTI Plugin for Vanilla 2



Provides forum capability via a LTI connection

#### Elgg



Create your own fully-featured social networks and applications

#### assessment tools



#### Learning.com

Web delivered curriculum and assessments

### specialty course tools



#### ChemVantage

An Open Education Resource for General Chemistry

#### classroom capture/lecture tools



#### McGraw-Hill Tegrity

Records dass time and course content for students to watch



# Platforms that Accept LTI Apps!



















coursera





















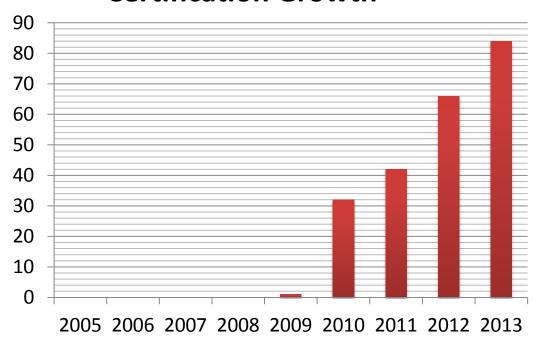




### IMS GLOBAL®



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New Conformance Certifications

2013 number through Nov 8

http://imscert.org/

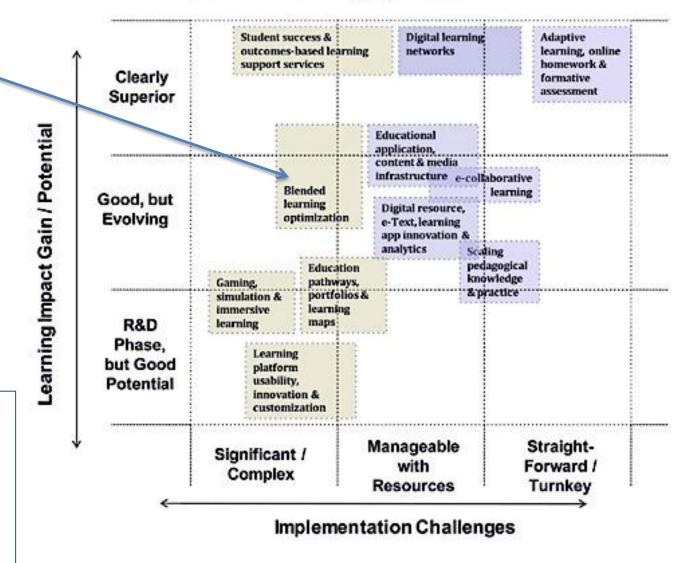
http://www.youtube.com/watch?v=u4GnV26S OCU&feature=youtu.be CourseSmart® **Disruptive Data** How Educational Analytics Will Transform Teaching, Learning, and Organizational Performance 0:01 / 3:58

Learning Impact - CourseSmart Analytics Dashboard



Figure 3A – 3x3 Learning Impact Project Matrix







2013 Learning Impact Report: e-Texts and Adaptive Learning Leading the Way to an Emerging World of Educational Apps

ANALYSIS OF LEARNING IMPACT AWARD WINNERS TO IDENTIFY PROJECTS AND TRENDS IN THE USE OF TECHNOLOGY TO IMPROVE ACCESS, AFFORDABILITY, AND QUALITY OF EDUCATION WORLDWIDE http://www.imsglobal.org/learningimpact 2014/LIA2013Report.pdf



# **EDUPUB**

http://idpf.org/edupub-2013-agenda









#### IMS Global Announces EDUPUB2 Workshop February 12-13 Salt Lake City USA

IMS will host 2<sup>nd</sup> in a series of workshops in collaboration with IDPF to establish a globally interoperable, accessible, open ecosystem for e-Textbooks and other digital learning materials

November 21, 2013 - Lake Mary, FL - IMS Global Learning Consortium today announced the topics and venue for EDUPUB2, the 2<sup>nd</sup> in a series of workshops led by the global publishing and education segment to accelerate market adoption of digital textbooks and learning materials by collaborating on enabling open standards and best practices. These standards and best practices will leverage the work of several leading global standards organizations, namely IDPF, IMS Global, W3C and others as needed. The EDUPUB2 workshop will occur on February 12-13 in Salt Lake City, Utah USA.

The EDUPUB2 workshop agenda will be finalized based on submissions from prospective participants. The initial themes will include: (a) Overview of the emerging EDUPUB specification, (b) Assessment, outcomes & analytics, (c) e-text app integration & widgets library, (d) metadata, content structure & accessibility, and (e) technical and business issues summary discussions. These themes encompass ten project areas that were agreed upon at the 1st EDUPUB workshop held October 29-30, 2013 in Boston.

To learn more about the EDUPUB2 workshop please visit the workshop web site. Those wishing to attend are requested to fill in the request to participate, to indicate qualifications and a willingness to provide a demonstration, present a position paper or serve on a topical panel. For organizations interested in becoming an EDUPUB2 event sponsor, please send an email to: EDUPUB2@imsglobal.org

### To participate in



### **EDUPUB** focus areas

contact rabel@imsglobal.org or

attend next EDUPUB workshop at

IMS quarterly meeting in Salt Lake City, Utah, USA

February 12-13, 2014

Advancing Learning Impact by Enabling the Open Foundation for Seamless, Agile and Information-Rich Educational Technology Integrat

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#### **EDUPUB2 Workshop**

- Overview
- Agenda Topics

#### **Participate**

- Submit an application to attend and present at EDUPUB2
- Submit an application to participate on the EDUPUB2 Executive Steering Committee or the Technical Program Committee

#### **Hosts & Sponsors**







#### EDUPUB2 Workshop on Digital Publishing for Education

Establishing a globally interoperable, accessible, open ecosystem for e-Textbooks and other Digital Learning Materials via EPUB 3, Educational Sector Standards and the Open Web Platform

February 12-13 2014, Salt Lake City, USA

The goal of this two-day invitation-only IMS Global Learning Consortium workshop is to bring together major players of the global K-20 education segment- including publishers, institutions, platform and solution providers, standardization organizations, content distributors, and accessibility organizations - to help advance the effective adoption and use of e-textbooks and other digital learning materials by improving interoperability and baseline capabilities via broad adoption of enabling technical standards.

The EDUPUB2 Workshop will provide an update on the emerging EDUPUB profile of EPUB 3, including progress on the follow-on projects defined via shared consensus at the <u>1st Workshop</u> held October 29-30, 2013 in Boston.

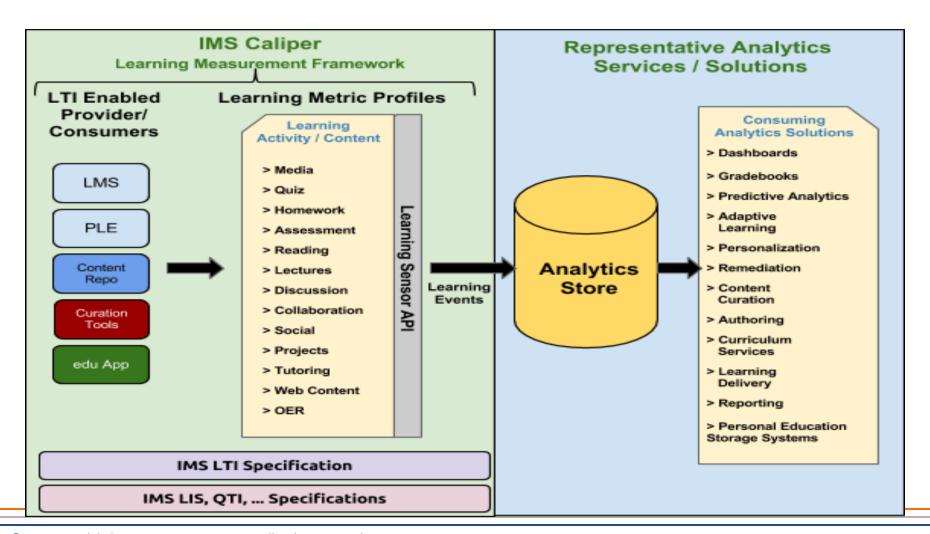
EDUPUB2 will be hosted by the IMS Global Learning Consortium with organizational cosponsors IDPF and W3C. Potential corporate sponsors should send an email to: EDUPUB2@imsqlobal.org

Digital content in education has the potential to significantly improve learning outcomes. As compared to paper-based textbooks and learning materials, digital content can better support accessibility, adapt to individual learning modes, increase engagement and experiential learning through interactivity, provide immediate assessments and analytics, enhance social connectivity, and potentially reduce costs.

In order to realize these benefits, it is critical to globally enable utilization of digital content that transcends the print-replica shackles of first-generation portable document formats and associated "page flipper" applications. And, such digital content must be

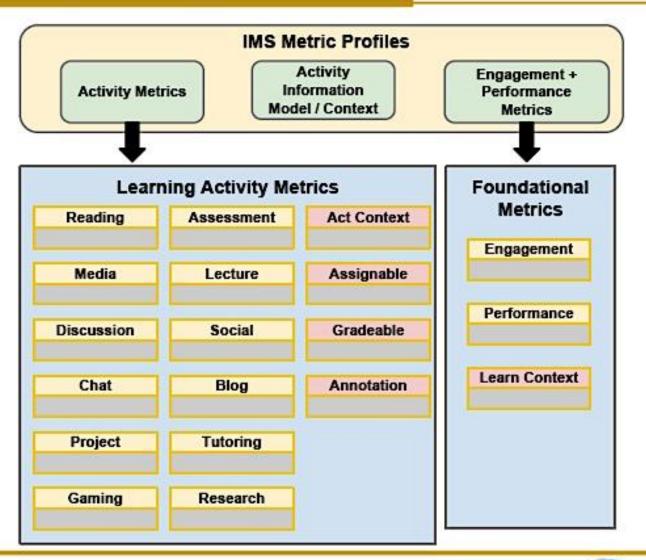


### Overview – Learning Analytics Measurement Framework



# IMS Caliper

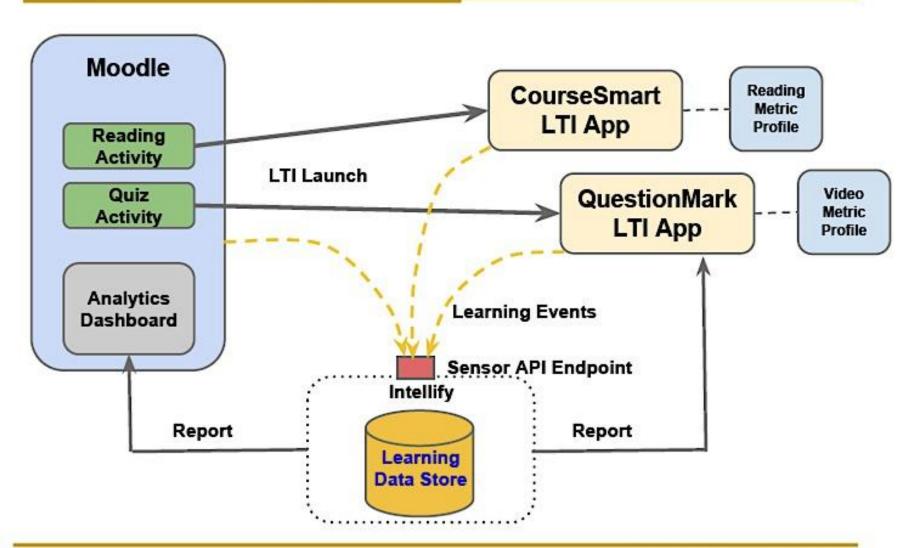
### Sensor API Metric Profiles Contextualize Events





# Caliper PoC Demo

Components in Play...









http://www.imsglobal.org/learningimpact2014/index.html