

EDUPUB: Melding IMS Education Interop Standards with EPUB3

Rob Abel (IMS Chief Executive Officer)
rael@imglobal.org

Colin Smythe (IMS Chief Architect)
csmythe@imglobal.org

<http://www.imglobal.org/>
<http://www.imglobal.org/edupub/index.html>

Follow IMS Global:
@LearningImpact

IMS Global Learning Consortium

Better Learning from Better Learning Technology™

- Collaborative ecosystem of global leaders enables faster progress in advancing education (technology)
- Open architecture enables agility and flexibility in a time of rapid change
- 10-1000x better connectivity of diverse apps and digital resources enables better data access

Learning Platforms that Accept IMS Apps!

<http://imscatalog.org/>

campuscruiser



Blackboard



Sakai



UniServ



Pearson
LearningStudio

SAFARI
MONTAGE

NovoED



Google

edX



canvas
BY INSTRUCTURE



OpenClass™



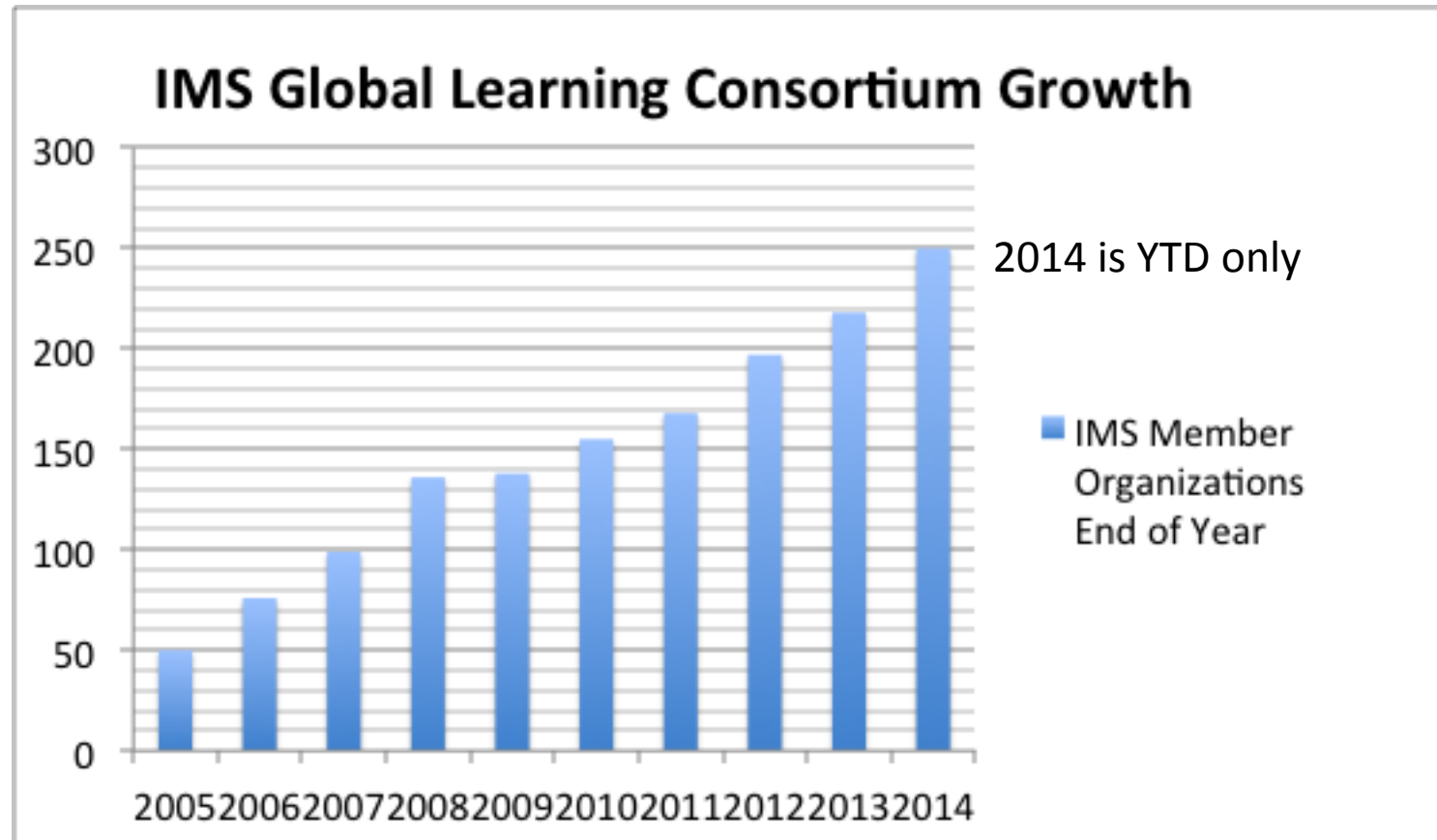
GlobalScholar



its

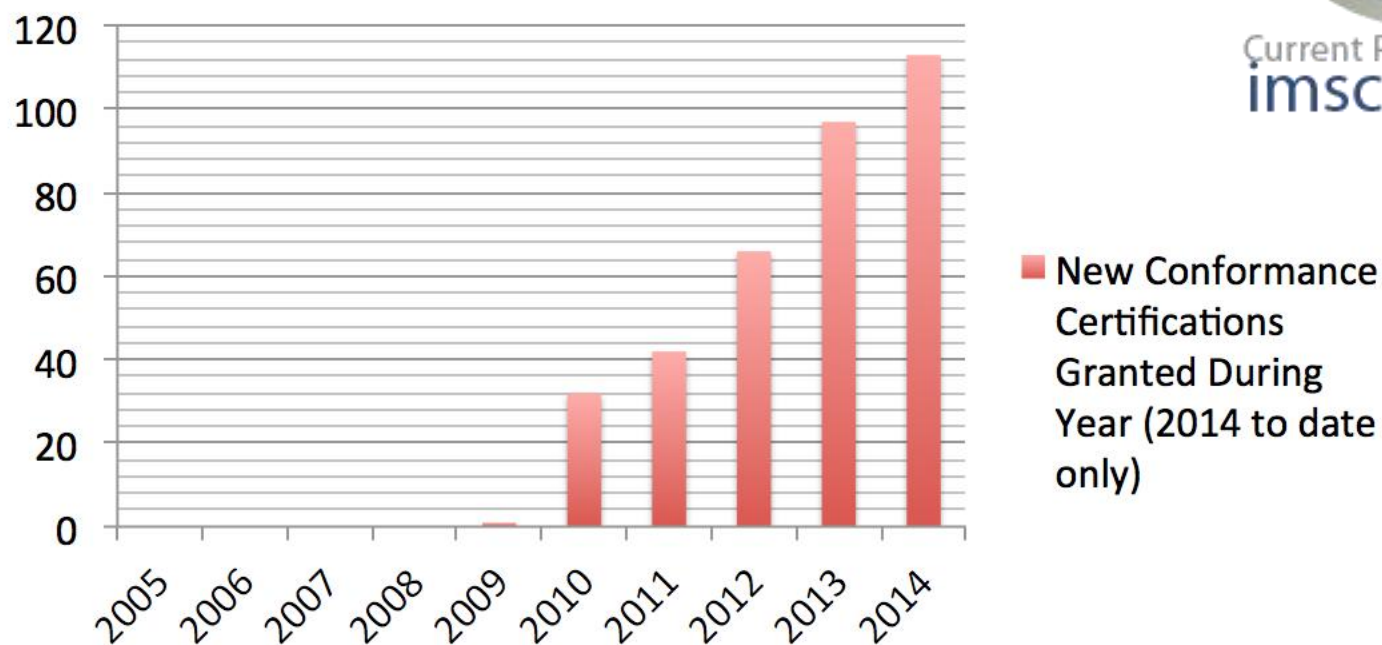


ATutor





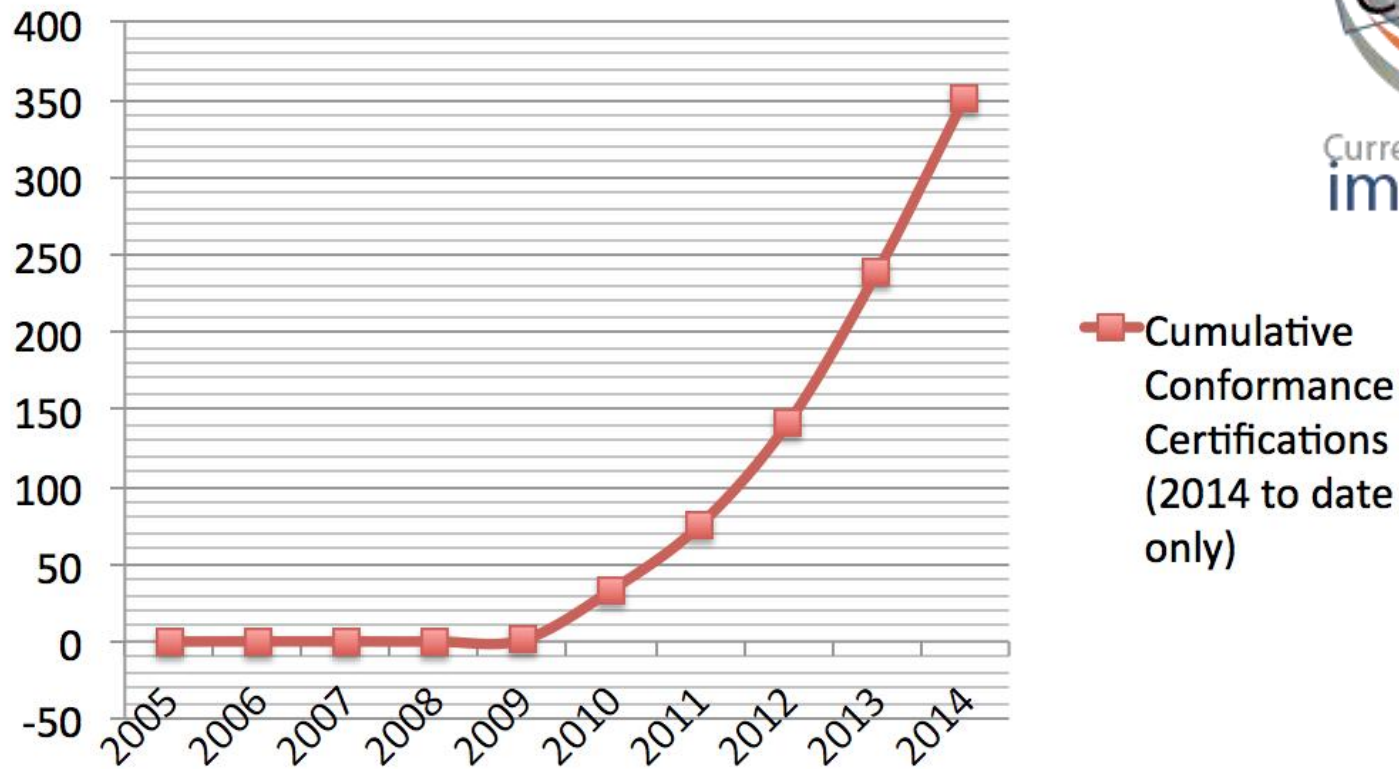
IMS Global Conformance Certification Growth





Current Registrations:
imscert.org

IMS Conformance Certification Growth



Open Digital Innovation Revolution in Education

Better Learning from Better Learning Technology™

- Collaborative ecosystem of global leaders enables faster progress in advancing education (technology)
- Open architecture enables agility and flexibility in a time of rapid change
- 10-1000x better connectivity of diverse apps and digital resources enables better data access

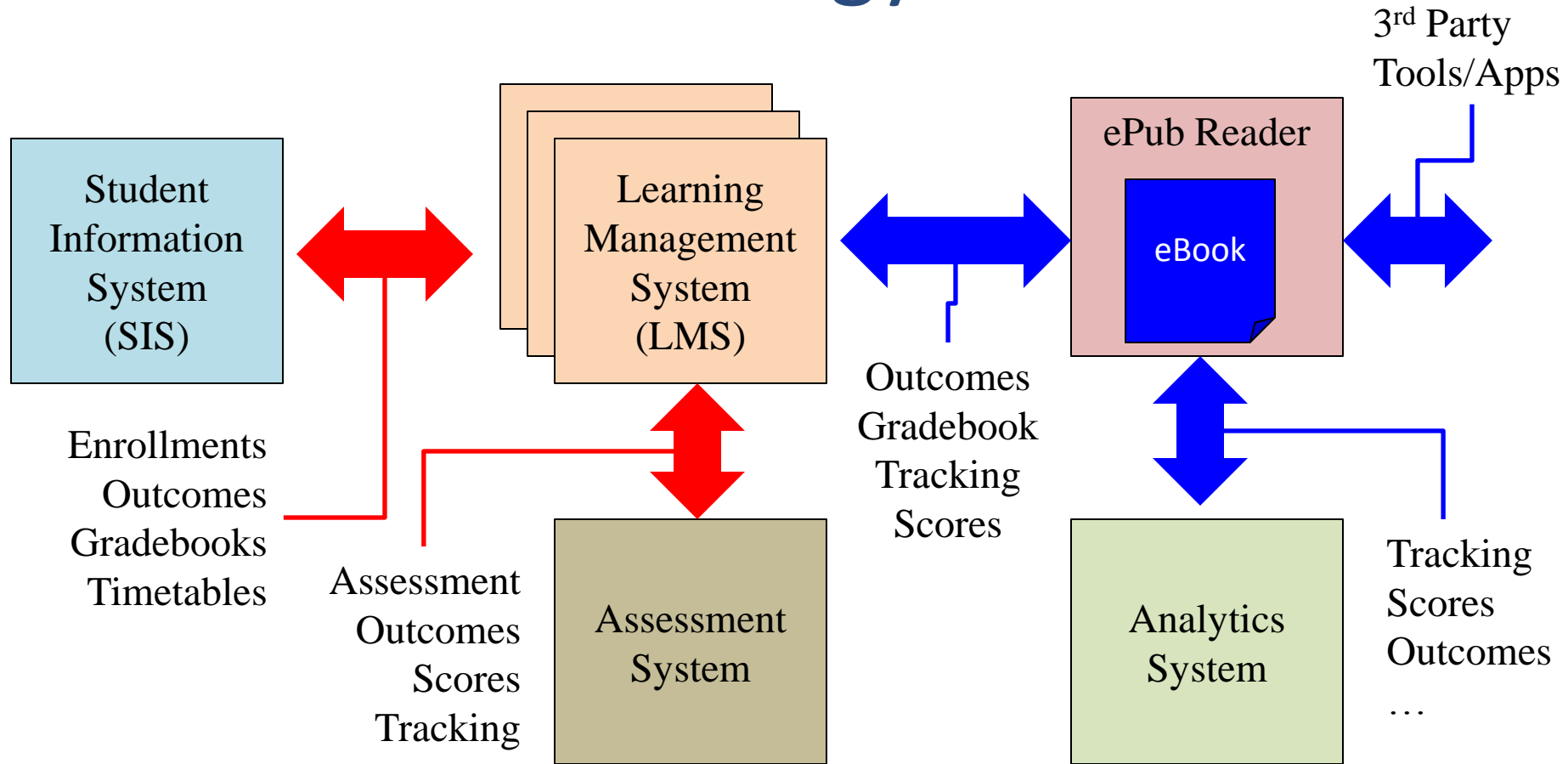
EDUPUB IMS Work Summary

Initial best practices doc and code base (using Radium) published:

<http://www.imsglobal.org/edupub/index.html>

- LTI enablement
- Caliper analytics enablement
- QTI enablement

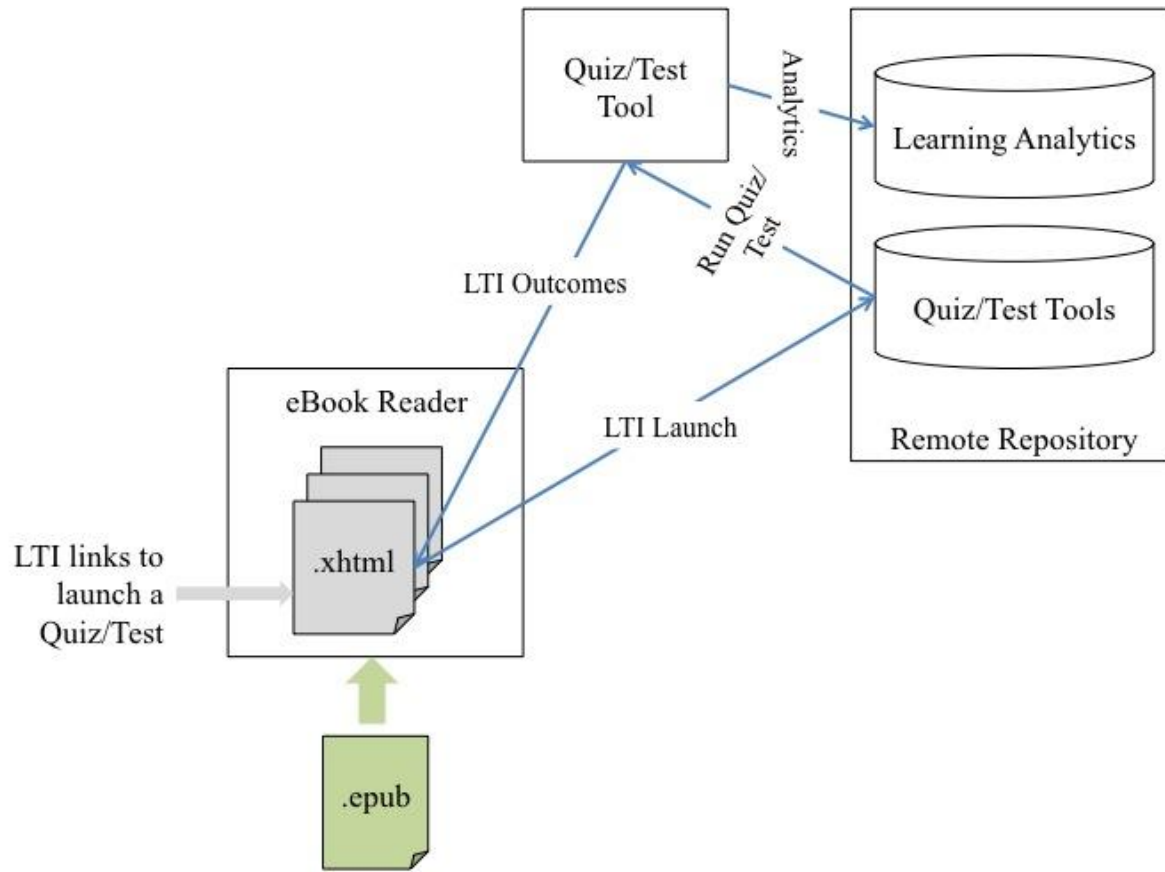
EDUPUB Technology Architecture



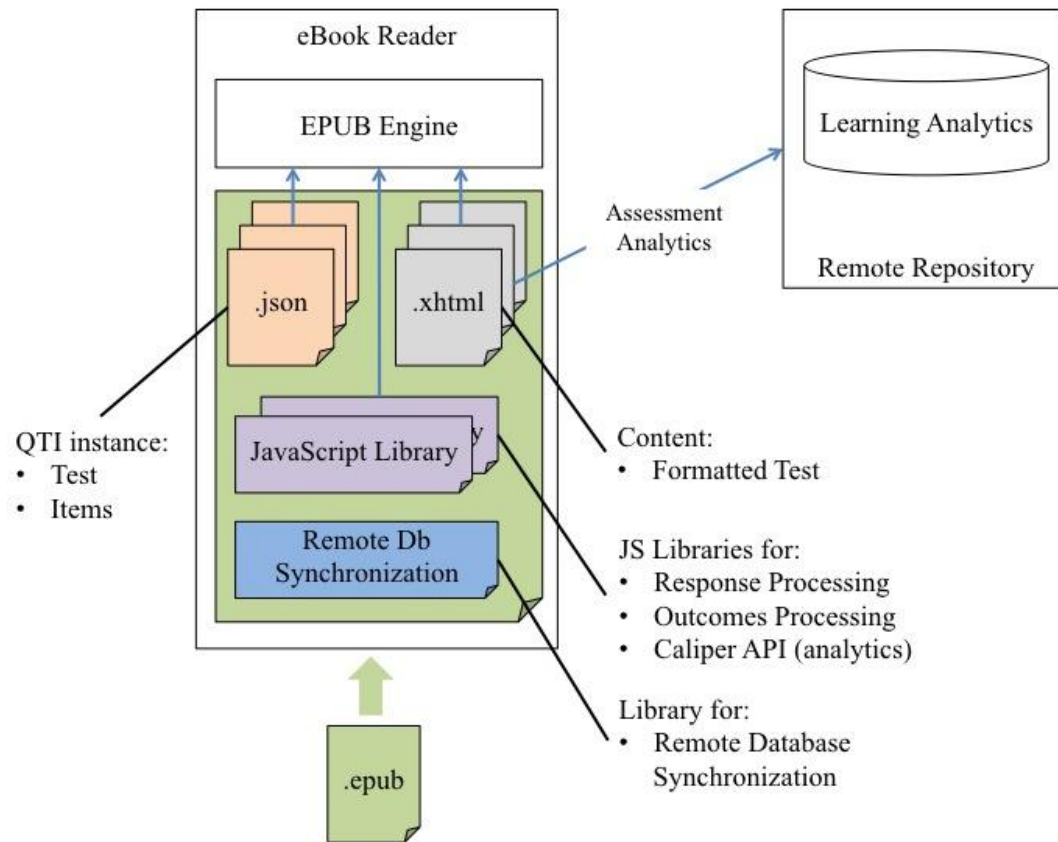
IMS EDUPUB Standards Integration

- Learning analytics reporting enabled using IMS Caliper Analytics Framework
- Application & learning platform interoperability enabled using IMS LTIv1.1: Learning Tools Interoperability
- Quiz enabled using various forms of IMS QTIv2.1: Question & Test Interoperability
- Remote-content access/usage enabled

LTI-Enabled QTI Approach



EPUB3-Embedded QTI Approach



Proposed Workflow

- Formative Assessment (Quiz) supplied in QTI-XML Package (reference form)
- Transform from the QTI-XML to the target EDUPUB formats and embed in EPUB3
- Add the JScript libraries to provide the run-time features e.g. navigation, response processing, analytics reporting, etc.
- Complete EPUB3 packaging and release

Radium Codebase

- Radium is an open source EPUB3 reader initiative (grew from IDPF but now standalone activity)
- Radium used as our EPUB3 reader codebase (Hosted service and desktop versions)
- IMS made a code fork for the EDUPUB work (Dec 2013!!)
 - LTIv1.0 enabled (Consumer and Provider)
 - Sensor API enabled

Launching the Quiz

Quiz: A Short Quiz on Intense Machines

Try *all* of the following questions.

End Quiz

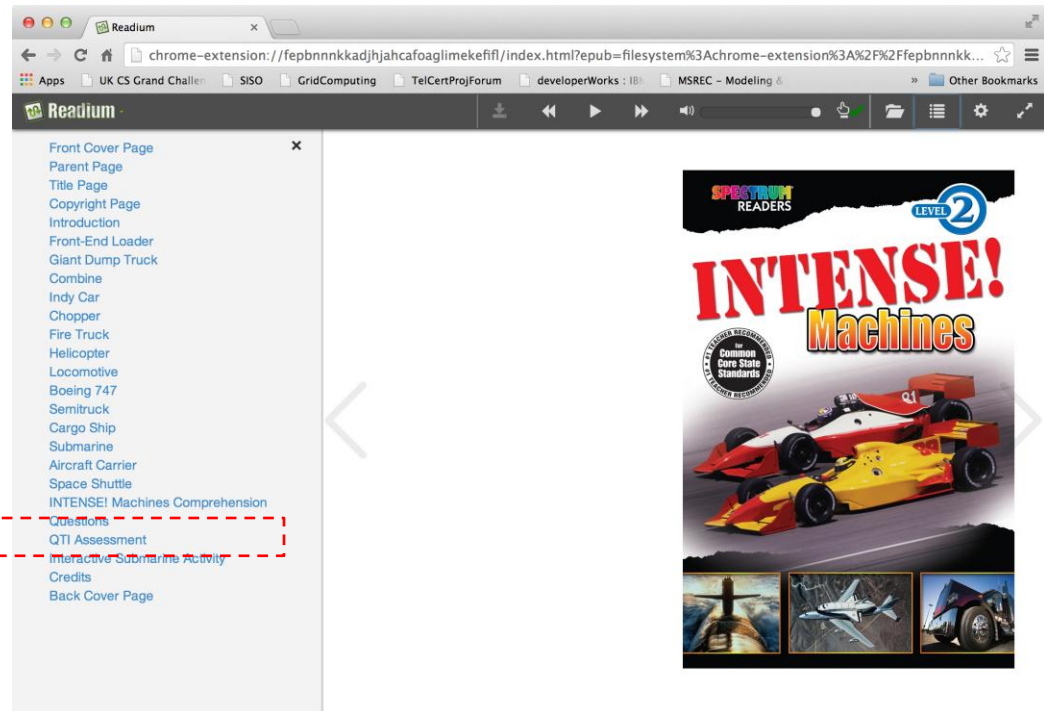
Start Quiz

Launch LTI Tool: Questionmark

[Questionmark](#)

Launch LTI Tool: YouSeeU

[YouSeeU](#)



Original INTENSE! Machines EPUB3 supplied by Carson Dellosa Publishing

Desk-top Demonstration

- Desktop version of Radium
- Accessed using Chrome/Radium app
- Standard Radium distribution
- Only embedded Quiz access available

Best Practices Doc

TRADEMARK NOTICE	
ACKNOWLEDGEMENTS	
1 INTRODUCTION	
2 ARCHITECTURAL FRAMEWORKS	
3 EPUB3 AND LEARNING TOOLS INTEROPERABILITY V1.X	
4 EPUB3 AND CALIPER	
5 EPUB3 AND QUESTION & TEST INTEROPERABILITY	
APPENDIX A – TERMS & DEFINITIONS	
APPENDIX B – ANNOTATED LTI/EDUPUB EXAMPLES	
APPENDIX C – ANNOTATED CALIPER/EDUPUB EXAMPLES	
APPENDIX D – ANNOTATED EMBEDDED QTI/EDUPUB EXAMPLE	
APPENDIX E – METADATA IN EDUPUB	
APPENDIX F – READIUM SUPPORT FOR EDUPUB	
APPENDIX G – BEST PRACTICES CHECKLIST	
APPENDIX H – LTI/CALIPER/QTI EDUPUB CONFORMANCE	



IMS GLOBAL
Learning Consortium

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

Using IMS Caliper Analytics™, Question and Test Interoperability™ and Learning Tools Interoperability™ with EPUB3™: EDUPUB Best Practices

Title: Using IMS Caliper, Question & Test Interoperability (QTI) and Learning
Tools Interoperability (LTI) with EPUB3: EDUPUB Best Practices

Authors: Lisa Mattson (IMS Global, USA)
Colin Smythe (IMS Global, UK)
Stephen Vickers (IMS Global, UK)
Thor Anderson (IMS Global, USA)
Chris Vento (Intellify Learning, USA)
Prashant Nayak (Intellify Learning, USA)

Version: PUBLIC DRAFT

Version Date: 16th June 2014

Release: 1.0

Status: Discussion Document

Summary: This document presents the best practice recommendations for using IMS Learning Tools Interoperability™ (LTI™), IMS Caliper Analytics™ and IMS Question & Test Interoperability™ (QTI™) based content within an EPUB3 context. These form a key part of the EDUPUB standard. Examples of these best practices are presented using the Radium open source EPUB3 reader but are generally applicable to other EPUB3 readers provided they follow the conformance requirements.

© 2014 IMS Global Learning Consortium. All Rights Reserved.

The IMS Global Learning Tools Interoperability (LTI), Accessible Portable Item Protocol (API), Question and Test Interoperability (QTI), Common Cartridge (CCT), AccessForAll (Caliper Analytics) and SANSOR (SANSOR) are trademarks of IMS Global Learning Consortium, Inc. in the United States and/or other countries.

Recommendations

- Ensure eBook/EPUB3 readers **are** IMS LTIv1.0 compliant
- Ensure eBook/EPUB3 readers **are** IMS Caliper compliant
- Encourage eBook/EPUB3 readers to become IMS LTIv1.2 compliant
- Establish best practices for using these in EPUB3 publications



IMS EDUPUB Information



IMS GLOBAL
Learning Consortium

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

[search](#) : [contact us](#)

[Home](#) [Initiatives](#) [Leadership](#) [Learning Impact](#) [Public Resources](#) [Members Only](#) [Join IMS](#) [About Us](#)

EDUPUB2 Workshop

- [Overview](#)
- [Agenda](#)
- [Agenda Topics](#)
- [Committees](#)

Participate

- [Submit an application to participate on the EDUPUB 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

[Presentations from the EDUPUB2 Workshop](#)

[Using IMS Caliper Analytics™, Question and Test Interoperability™ and Learning Tools Interoperability™ with EPUB3™: EDUPUB Best Practices - DRAFT](#)

[Examples and Code available in the IMS Affiliates Website](#)

The goal of this two-day 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 [1st Workshop](#) held October 29-30, 2013 in Boston.

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

<http://www.imsglobal.org/edupub/>

IMS EDUPUB Implementation Pathway

- Start with the best practice guide & open source Radium code:
<http://www.imsglobal.org/edupub/index.html>
- If serious, join IMS developers community to work closely with other education -sector providers
- Achieve IMS conformance certification via IMS developer community
- Developers workshop: 24-26 Feb 2015, Phoenix
- Contact: rabel@imsglobal.org



Thank You!

Questions, Issues & Comments

<http://www.imsglobal.org/>
<http://www.imsglobal.org/edupub/index.html>

Follow IMS Global:
@LearningImpact