Interoperability Standards for MicroLearning

Google Trends:

Mobile Learning:

Ubiquitous Learning:

Micro Teaching:

MicroLearning: Edmodo

https://www.edmodo.com/

Teacher-Learner Interaction

mediated by technology:

Alphabet Soup

AICC Aviation Industry Computer-Based Training Committee
CMI Computer Managed Instructions
CC Common Cartridge
LTI Learning Tools Interoperability
QTI Question Test Interoperability
SCORM Sharable Content Object Reference Model
SCO Sharable Content Object
SIF Schools Interoperability Framework
SIS Student Information Systems

Interoperability

Learning Objects (LOs) are not bound to an LMS, but can be used in different LMSs.

Necessary: course content and structure descriptors.

Syntactic interoperability: through HTML and JavaScript.
Semantic interoperability: through standards.

Older interoperability standards:
AICC (since 1993)
SCORM (since 2000), using XML

Improved Standards

- Common Cartridge: larger focus on blended learning, more inclusion of instructor.
- xAPI (TinCan): takes SCORM further and improves scalability and interaction from the student.
- LTI: provides a standard for 3rd party plugins.
- QTI: provides standardized representation of questions and tests.
- SIS: provides capability for institutional exchange.

Requirements of MicroLearning

- Learning content to be broken down in small segments.
- Large number of content hits to be supported.
- Many user interactions.
- Non-linear sequencing of content.
- Mobile device support.

AICC

First interoperability standard.
Originally file-based, then web-based.
JavaScript runtime interface.
Allows distributed course content.

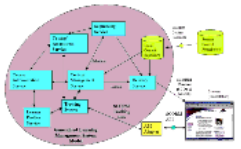
CRS file: general course information.
AU file: lessons.
DES file: course elements.
CST file: course structure.

SCORM

Content packaging in XML files.
Runtime specification for communication with LMS through JavaScript.
Sequencing of course navigation in XML file.

imsmanifest.xml contains the tree structure of the SCOs.

The SCORM Generalised Model



from: IMS Abstract Framework,
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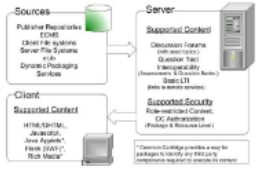
Advantages

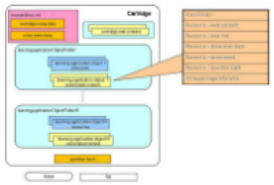
Well supported by most LMSs.
Both AICC and SCORM use CMI data model.

Shortcomings

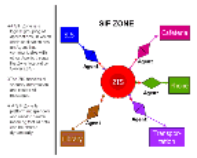
Security problem in SCORM through JavaScript.
Limited scalability and distributability of learning content,

Common Cartridge Application





SIS Architecture



LTI Architecture

Comparison SCORM - xAPI

SCORM:	xAPI:
• Requires constant internet connection.	• Sessions lets communication
• Content must be hosted in an LMS	• Content can exist anywhere
• Tracks full pass, pass-text score, completion	• Tracks wide variety of learner experiences
• Tracks formal eLearning content	• Can track informal, self-guided learning

Relevance of Interoperability Standards

Details are only important for software developers.

But learning content developers need to use authoring tools which support these newest standards.

Also, LMS needs to support those standards.

Recommendation for MicroLearning

Developers should ensure compatibility with newest Interoperability standards:

CC, xAPI, LTI, QTI.

Thank you for your attention!

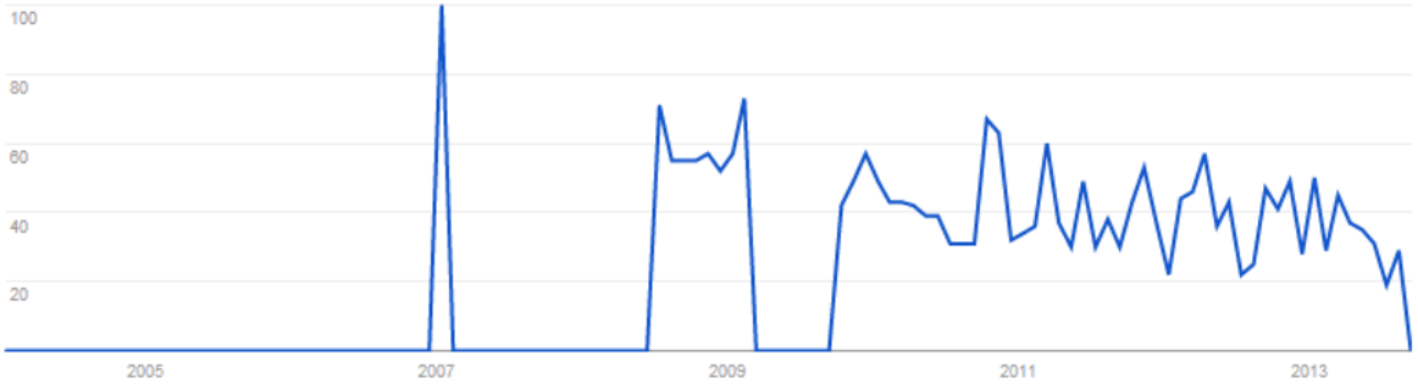
Questions?


Interoperability
Standards
for MicroLearning

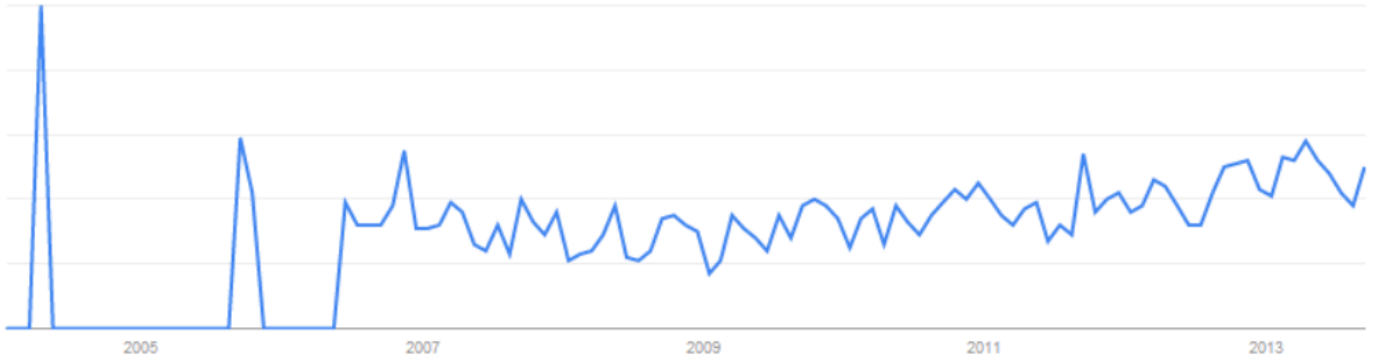
Google Trends:

Mobile Learning:

Ubiquitous Learning:



MicroTeaching:



MicroLearning: Edmodo

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Teacher-Learner Interaction

mediated by technology:

LMS

Learning Management System

- Student identification
- Learning history
- Launch
- Suspension
- Resumption
- Dismissal

- Student timing.
- Student results (tests, assignments)

LO

Learning Object

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- Learning history
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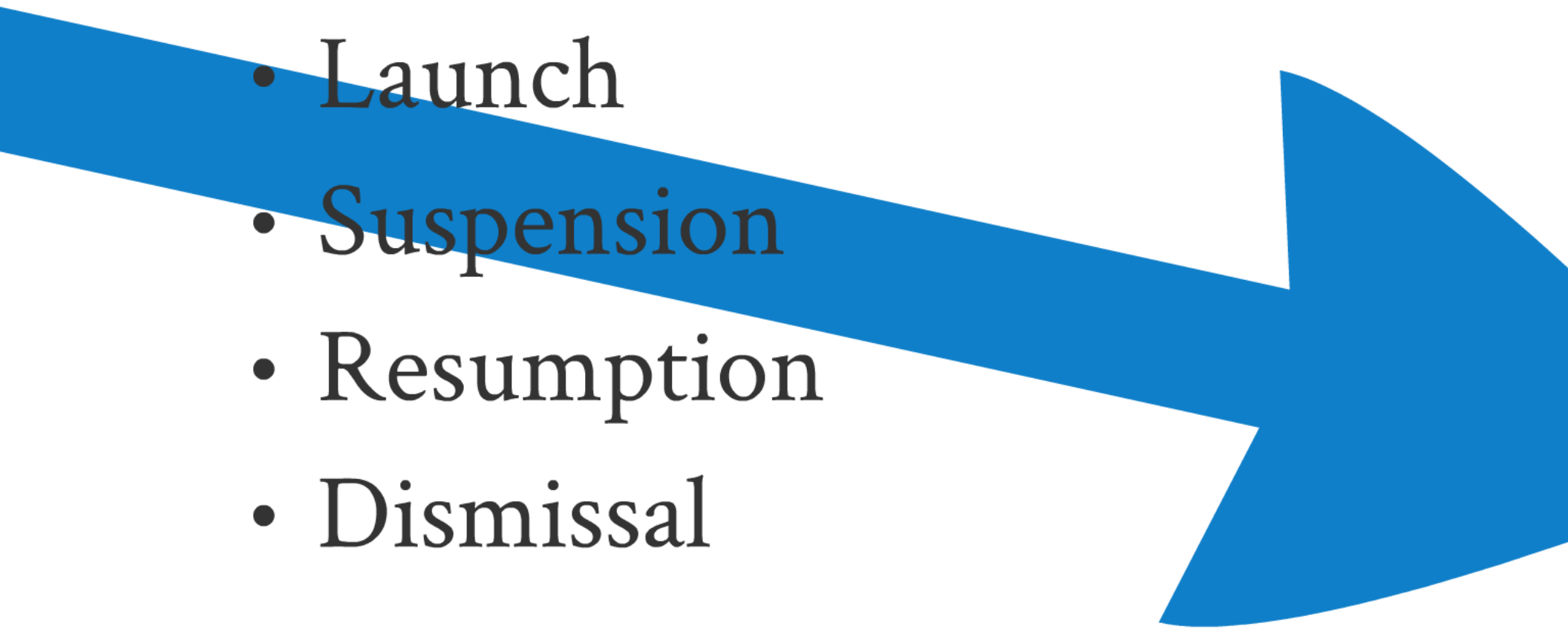

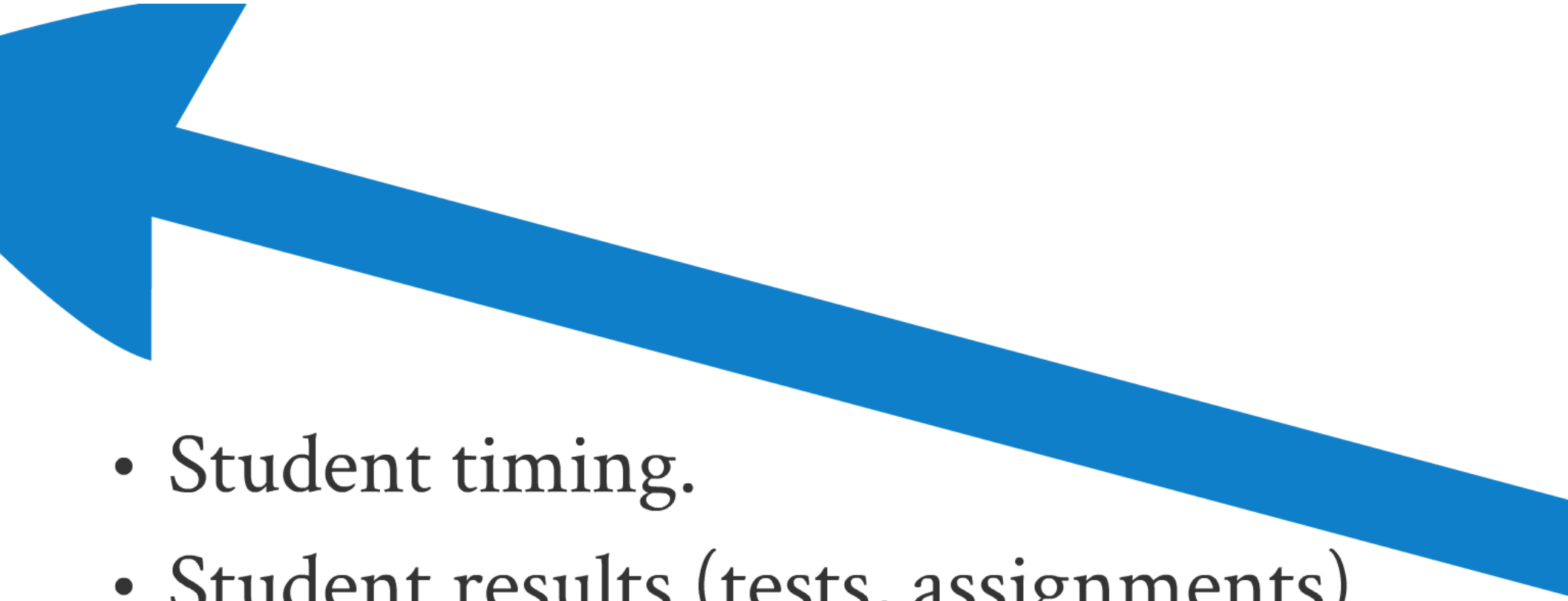

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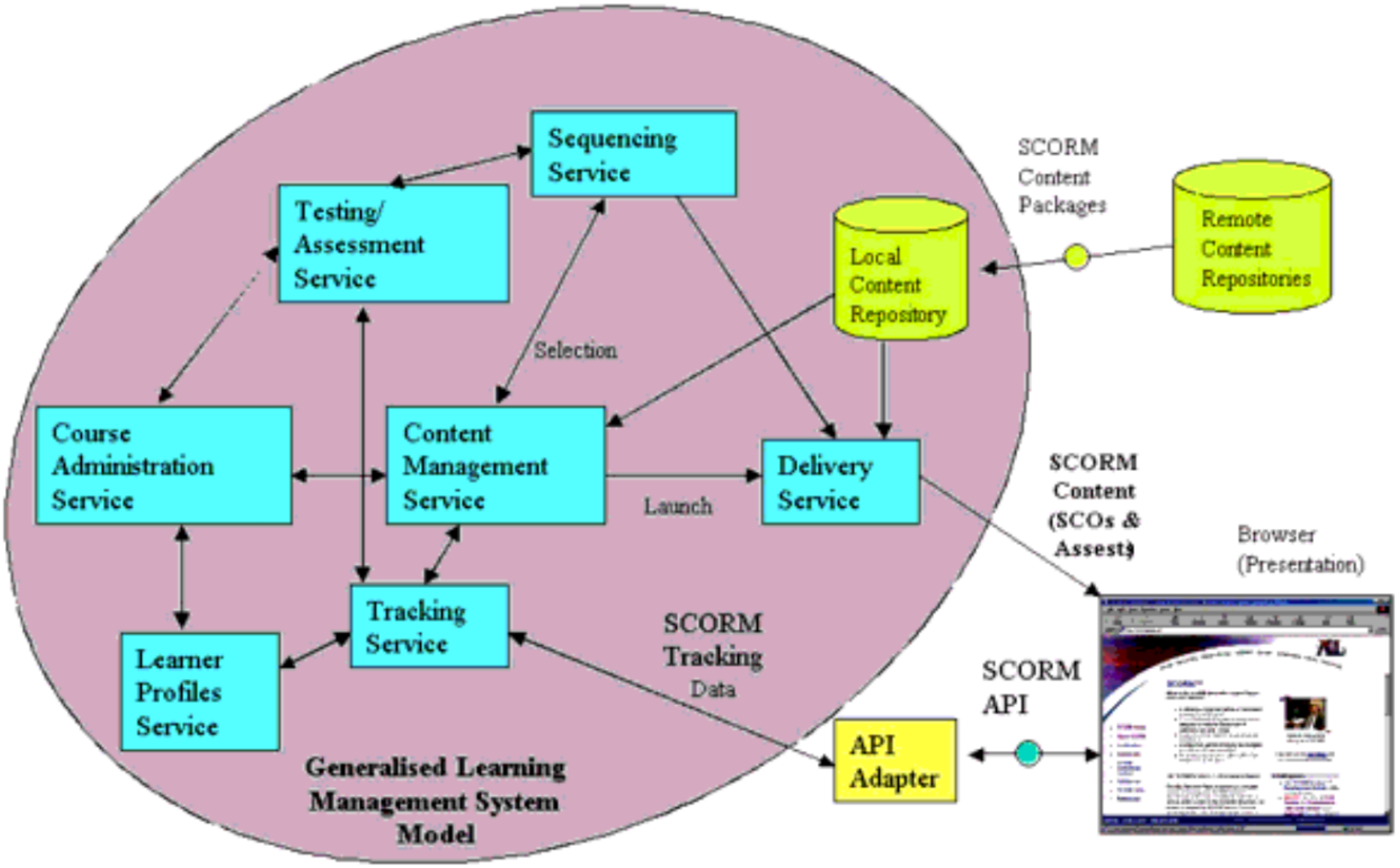

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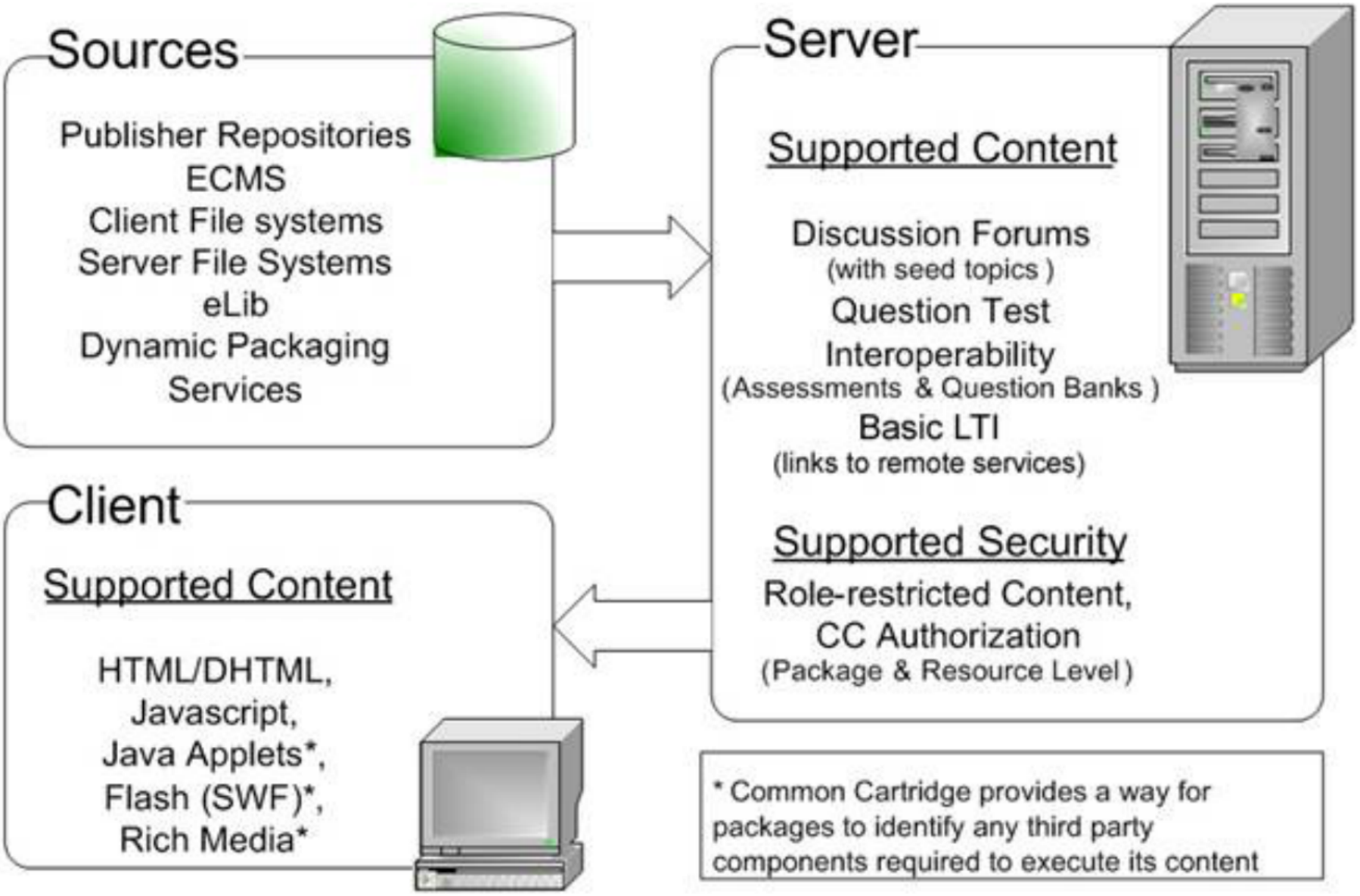
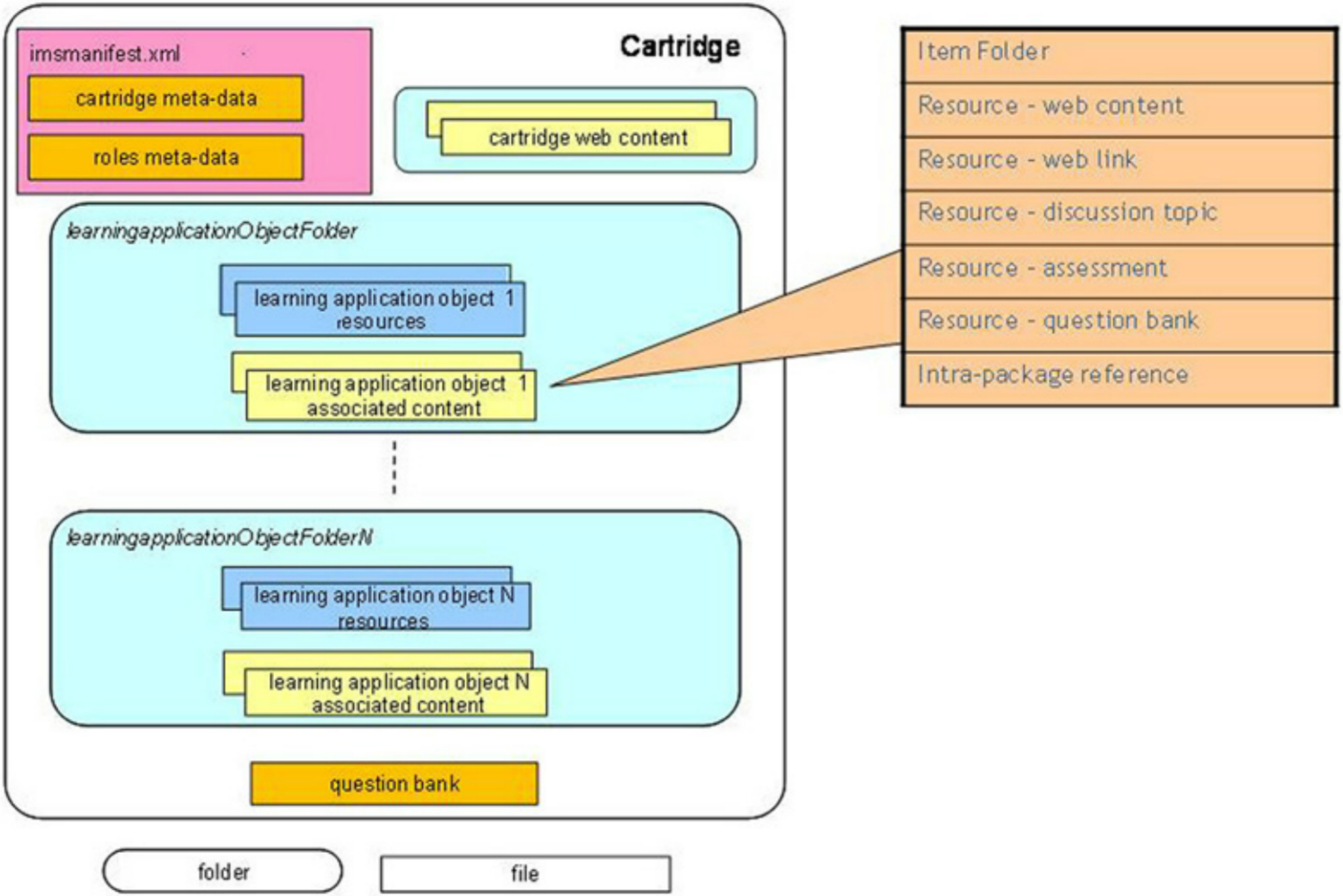
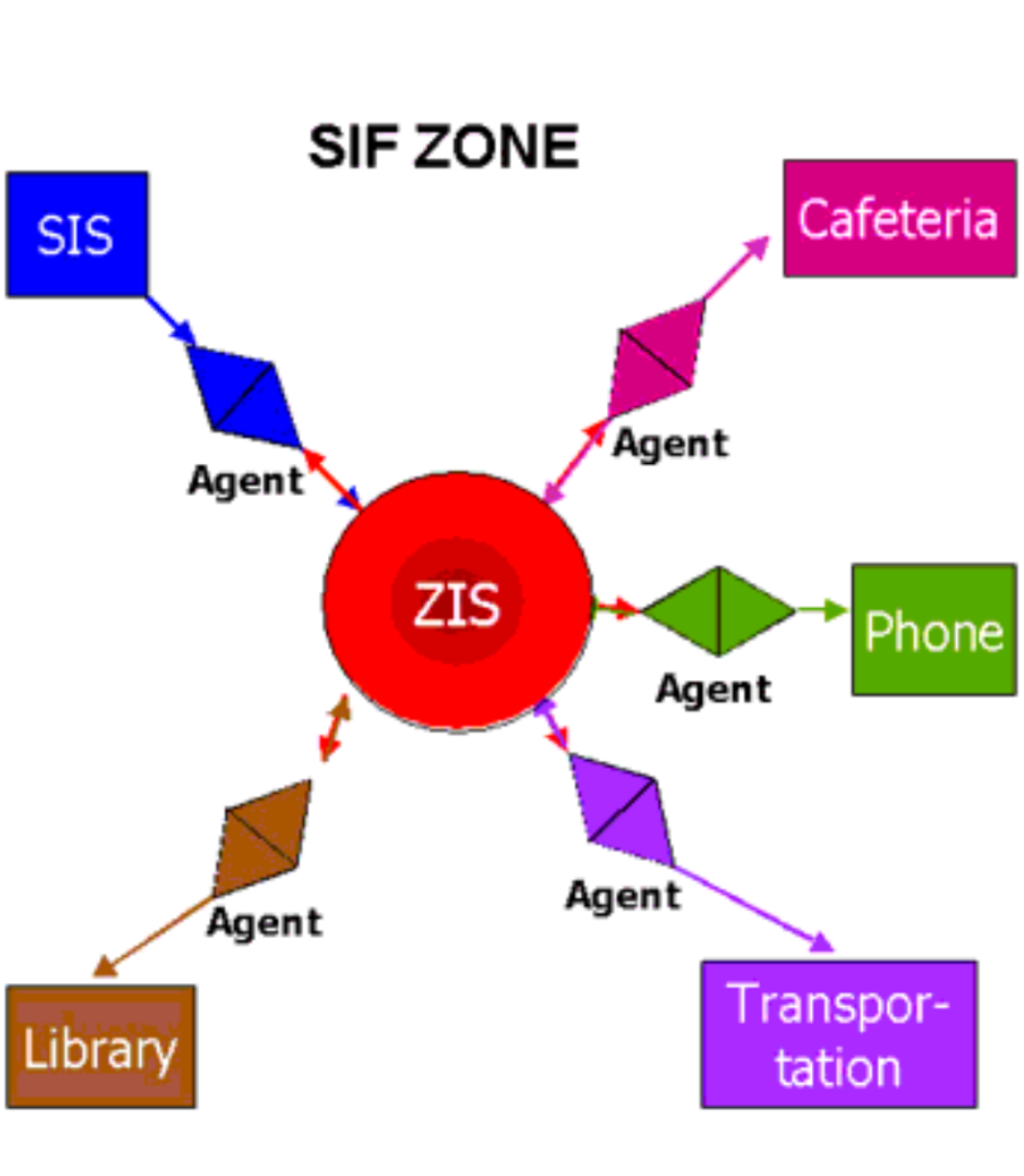



Cartridge
imsmanifest.xml
cartridge meta-data
roles meta-data
cartridge web content
learningapplicationObjectFolder
learning application object 1 resources
learning application object 1 associated content
learningapplicationObjectFolderN
learning application object N resources
learning application object N associated content
question bank
folder
file
Item Folder
Resource - web content
Resource - web link
Resource - discussion topic
Resource - assessment
Resource - question bank
Intra-package reference

SIS Architecture

- A SIF Zone is a logical grouping of applications, in which each application has an Agent that communicates with other Agents through the Zone Integration Server (ZIS).
- The ZIS handles all security information and routes all messages.
- A SIF Zone Is platform independent and vendor neutral meaning that all data can be shared dynamically.



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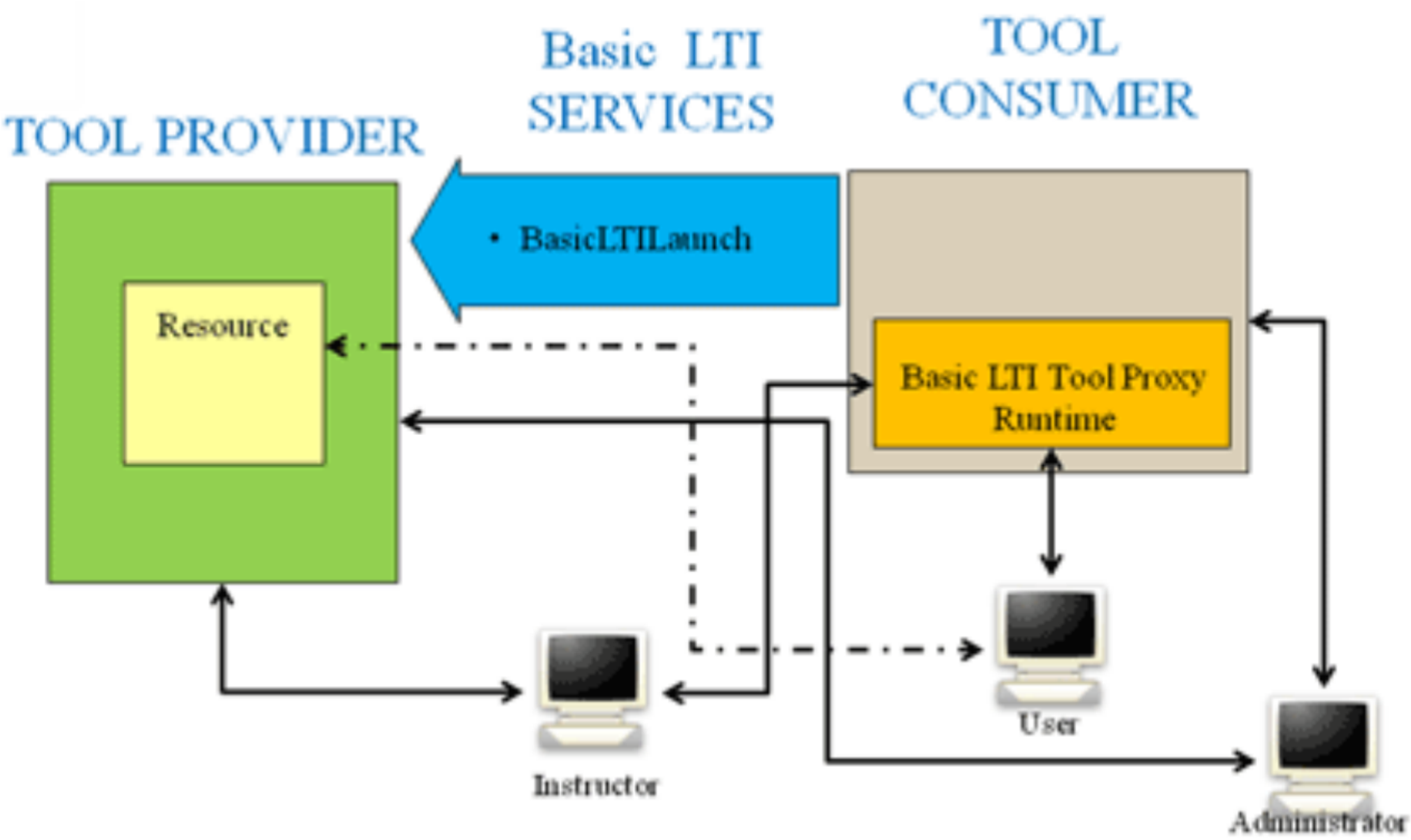

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