IMS Basic Learning Tools Interoperability

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http://www.dr-chuck.com/

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IMS: Digital Learning Standards

Free the content

IMS Common Cartridge

Seamlessly connect to learning

IMS Learning Tools Interoperability (LTI)

The information architecture for learning

IMS Learning Information Services (LIS)

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Outline

- Overview of Learning Tools Interoperability
- Basic Learning Tools Interoperability
- Basic LTI Certification
- Basic LTI Developer Tools

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Learning Tools Interoperability

- Problem
  - Every CMS has their own very unique "module", "tool" "block", "nugget", "powerlink", etc
  - External tools like QuestionMark, Wimba, Elluminate, etc must prioritize which CMS they invest in plugging into
  - Tool Providers wait until customers are willing to pay money to start development

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Learning Tools Interoperability

- Solution
  - Build a standard plug-in for all CMS systems
  - Tool and Content Providers can build one integration and use it in any CMS that supports the standard
  - Start simple and basic and then expand feature sets to allow market to adjust over time and insure that engineering due diligence is being done – phased release

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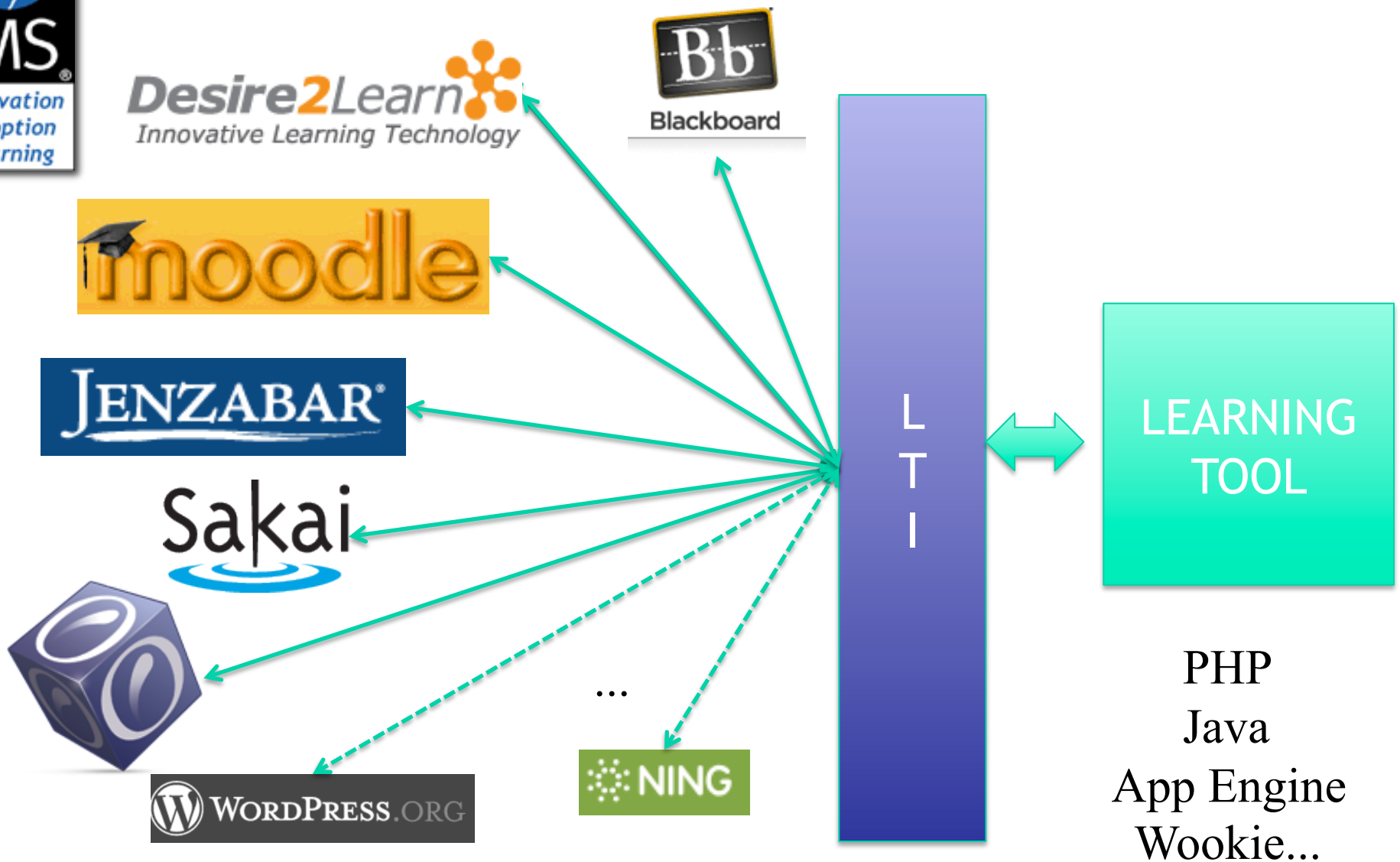

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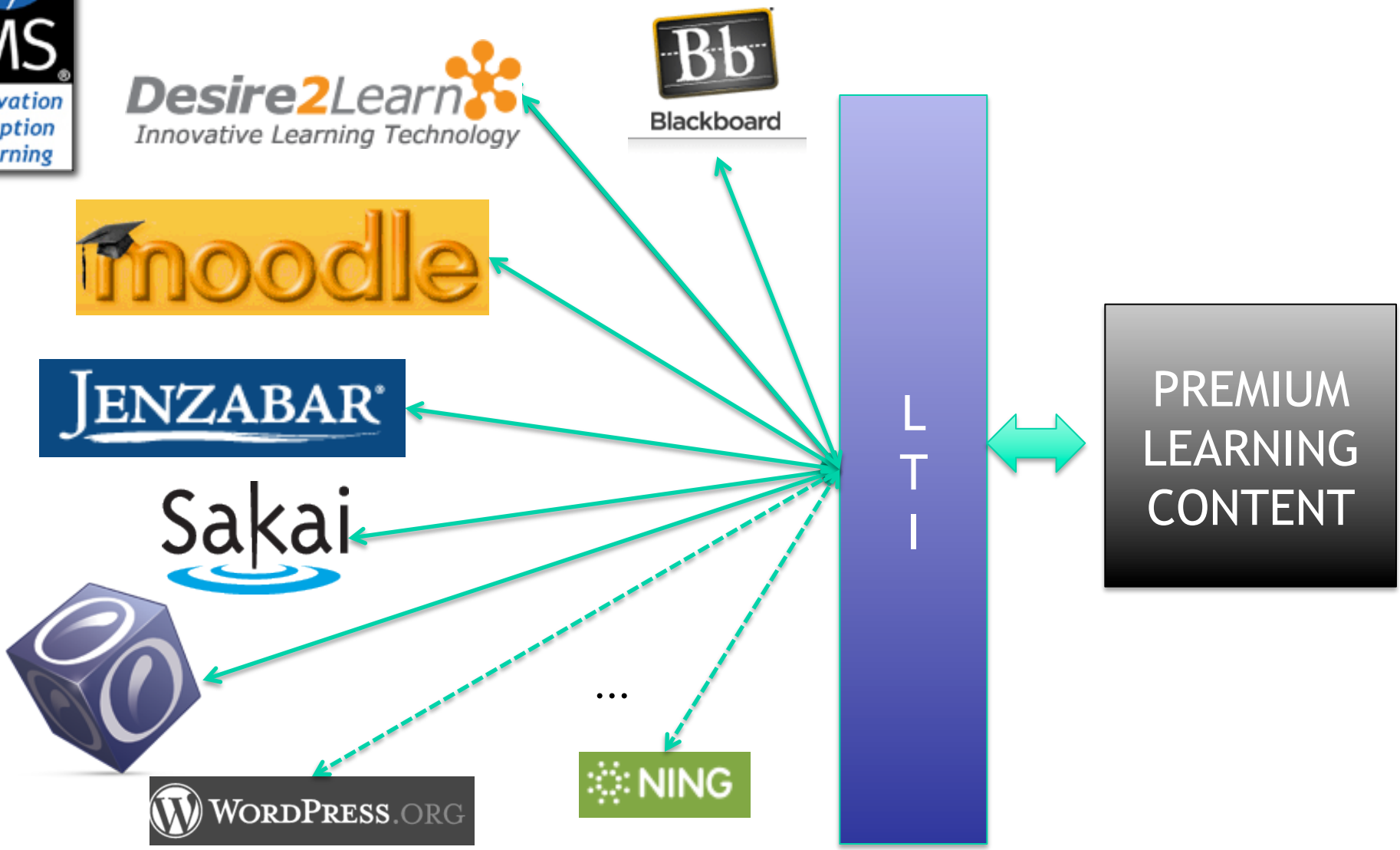

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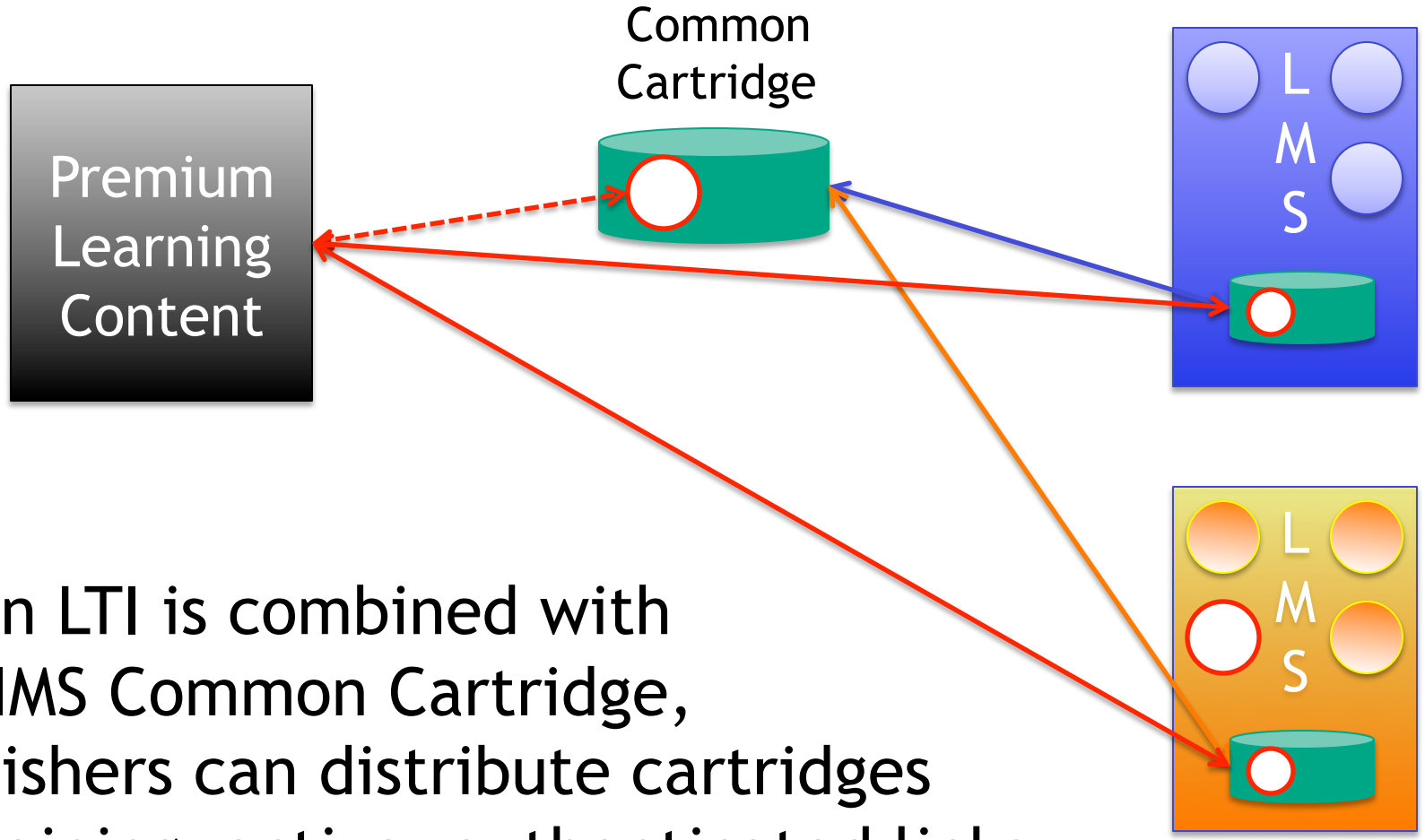

When LTI is combined with the IMS Common Cartridge, publishers can distribute cartridges containing active, authenticated links back centrally hosted content.

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LTI Terminology

- Tool Consumer – The system that "consumes" the tool (i.e. the Learning Management System – e.g. Blackboard, Moodle)
- Tool Provider – The system that provides the tool (e.g. Wimba, LearningObjects, etc..)

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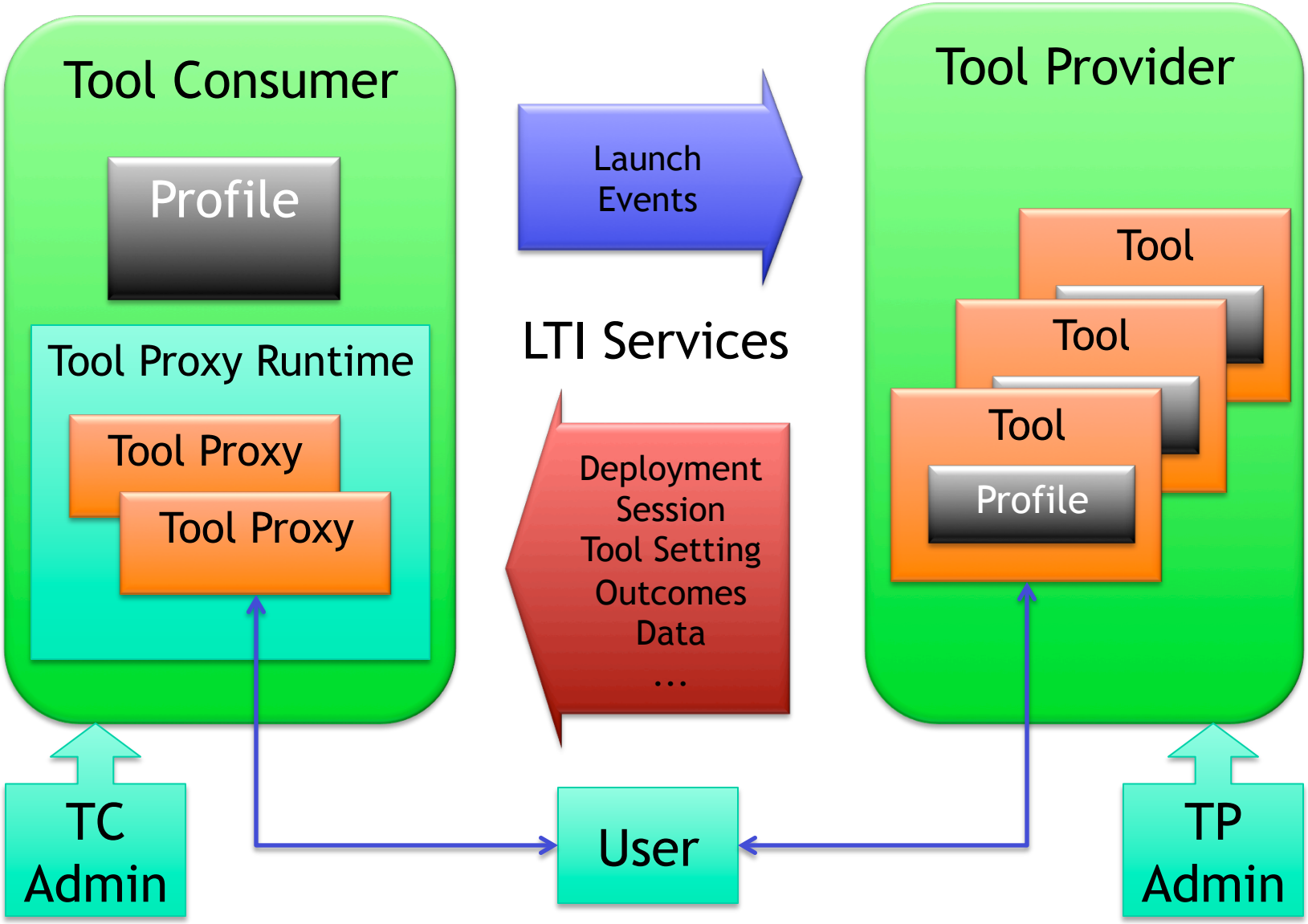

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Purpose of Certification

- Assure the end-user/purchaser that products will interoperate
- Any certified Provider (Tool) should be able to interoperate with any certified Consumer (LMS)

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http://www.imsglobal.org/developers/alliance/lti/blti-cert/

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Certified - LMS

- PowerLink for Blackboard WebCT v8
- Building Block for Blackboard Learn v9
- Desire2Learn Learning Environment v8.4
- Desire2Learn Learning Environment v9.0
- Jenzabar JICS v7.2
- Learning Objects Campus Pack v4
- Sakai v2.7
- Sakai 3 v0.4

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Certified - Tool

- Learning Objects Campus Pack v4
- SpACE v0.5 (Spatial Activities in Course Environments, map application)
- WebPA v1 (online peer assessment application)

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LTI Scenario: Adding a Proxy Tool to a Consumer

Seamlessly connect to learning

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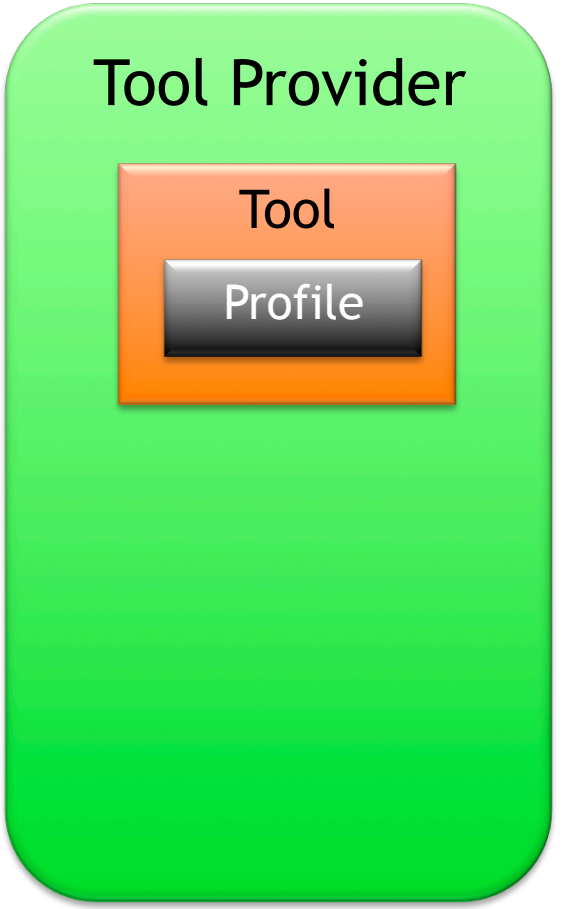

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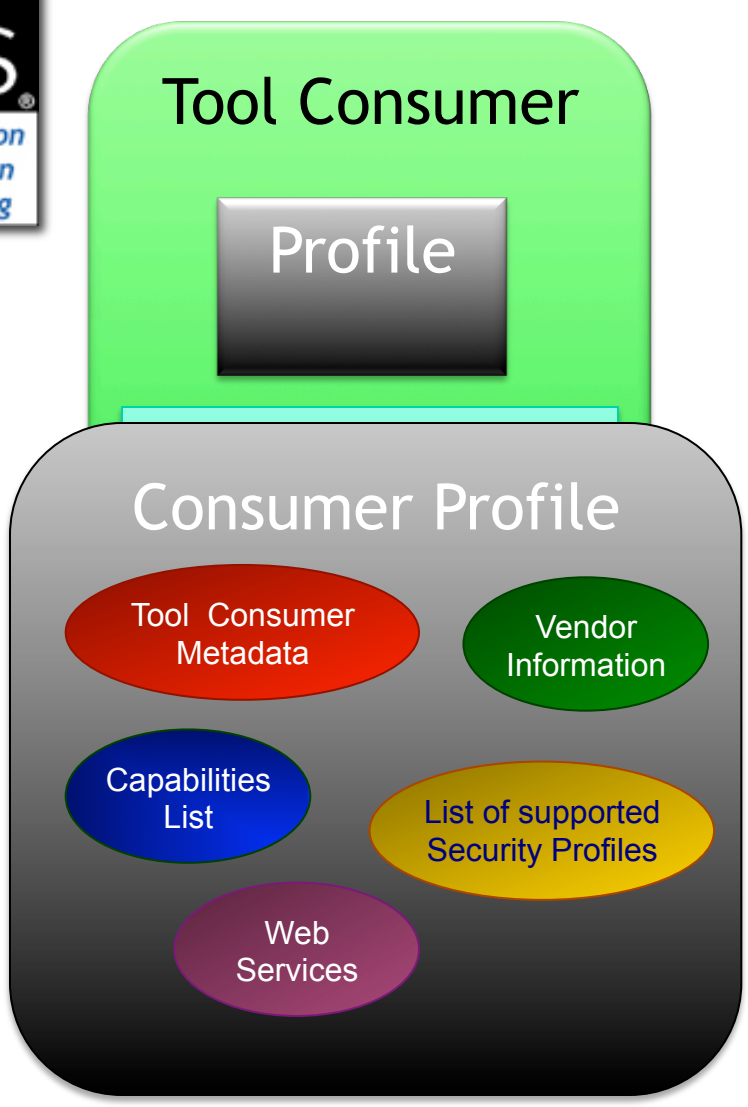

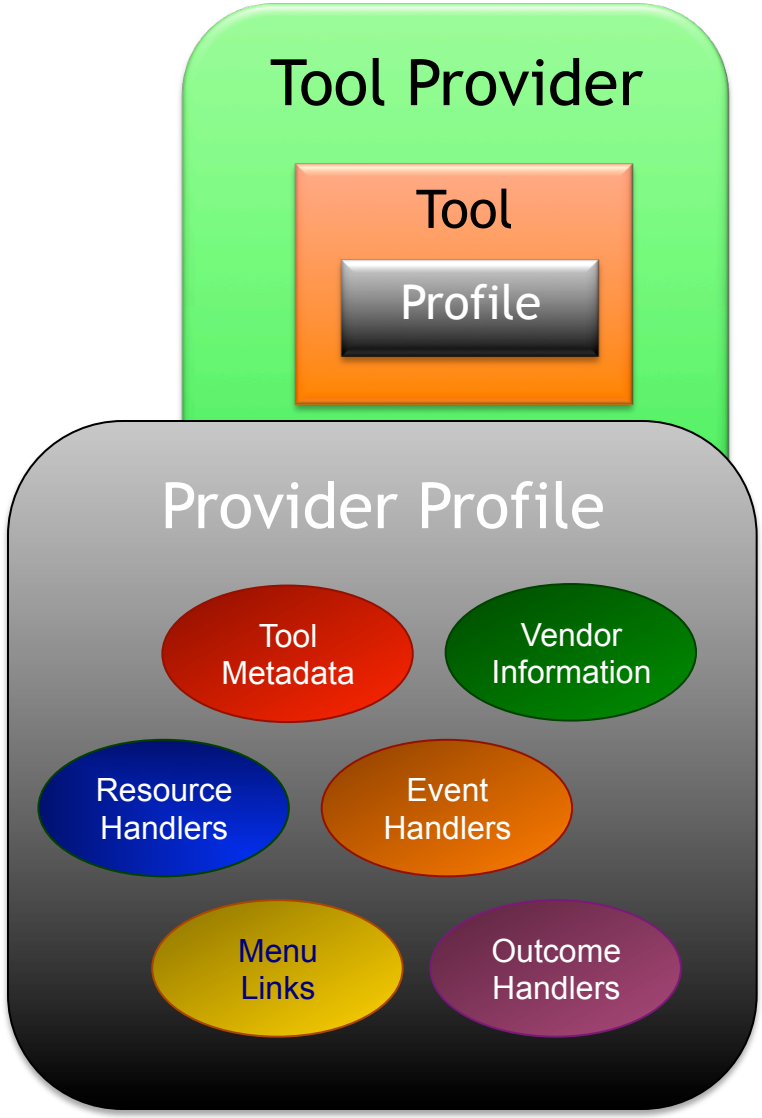

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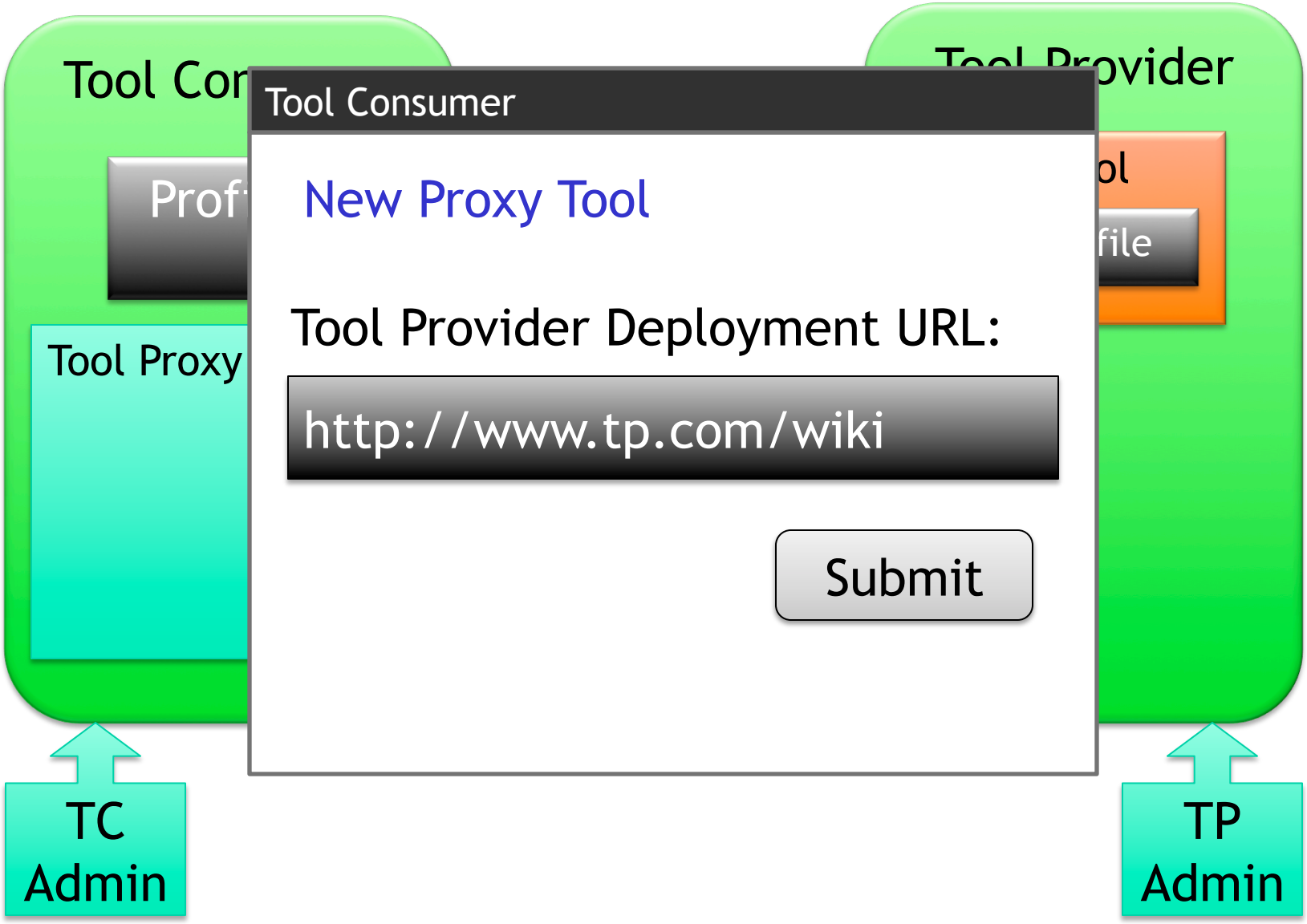

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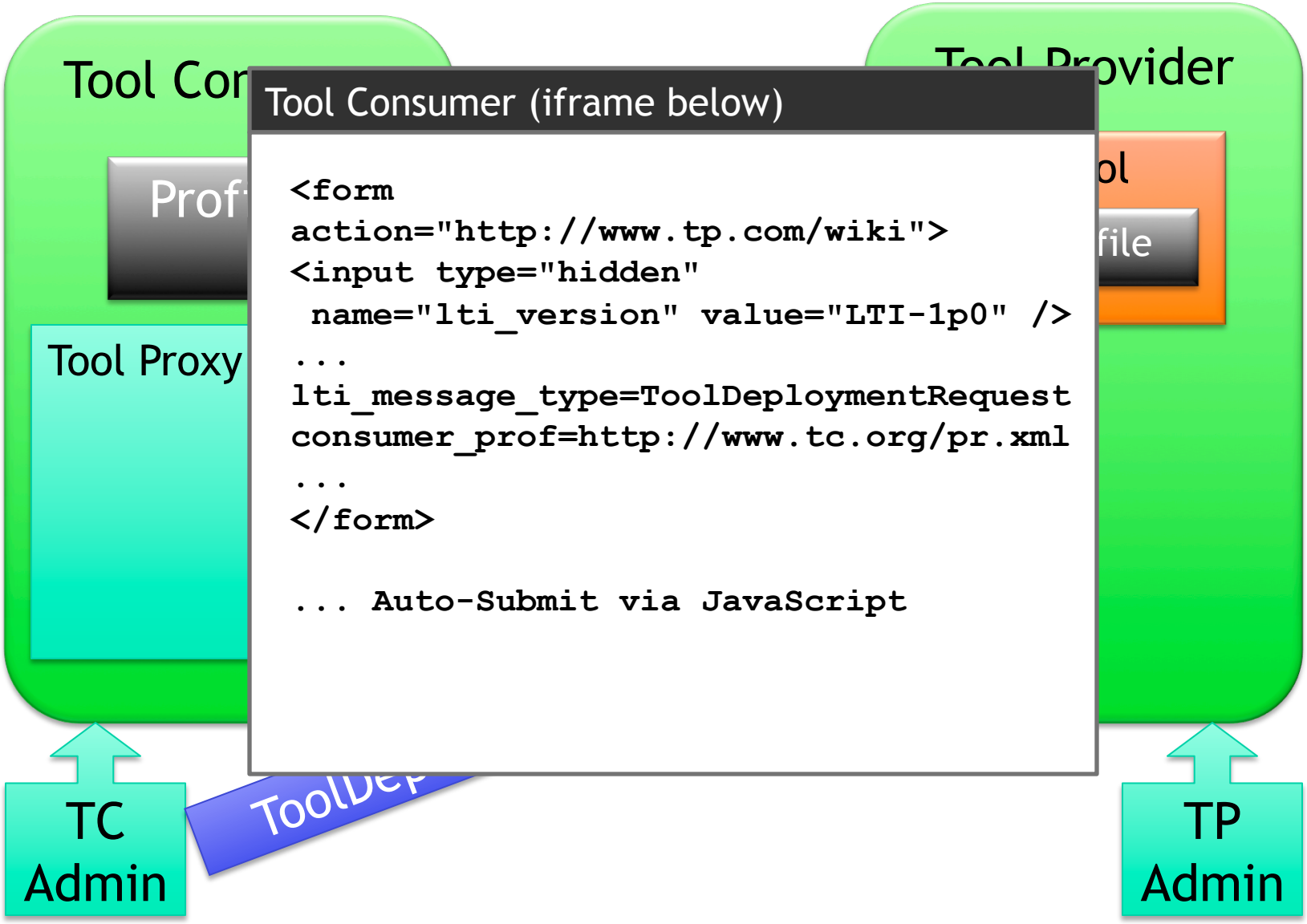

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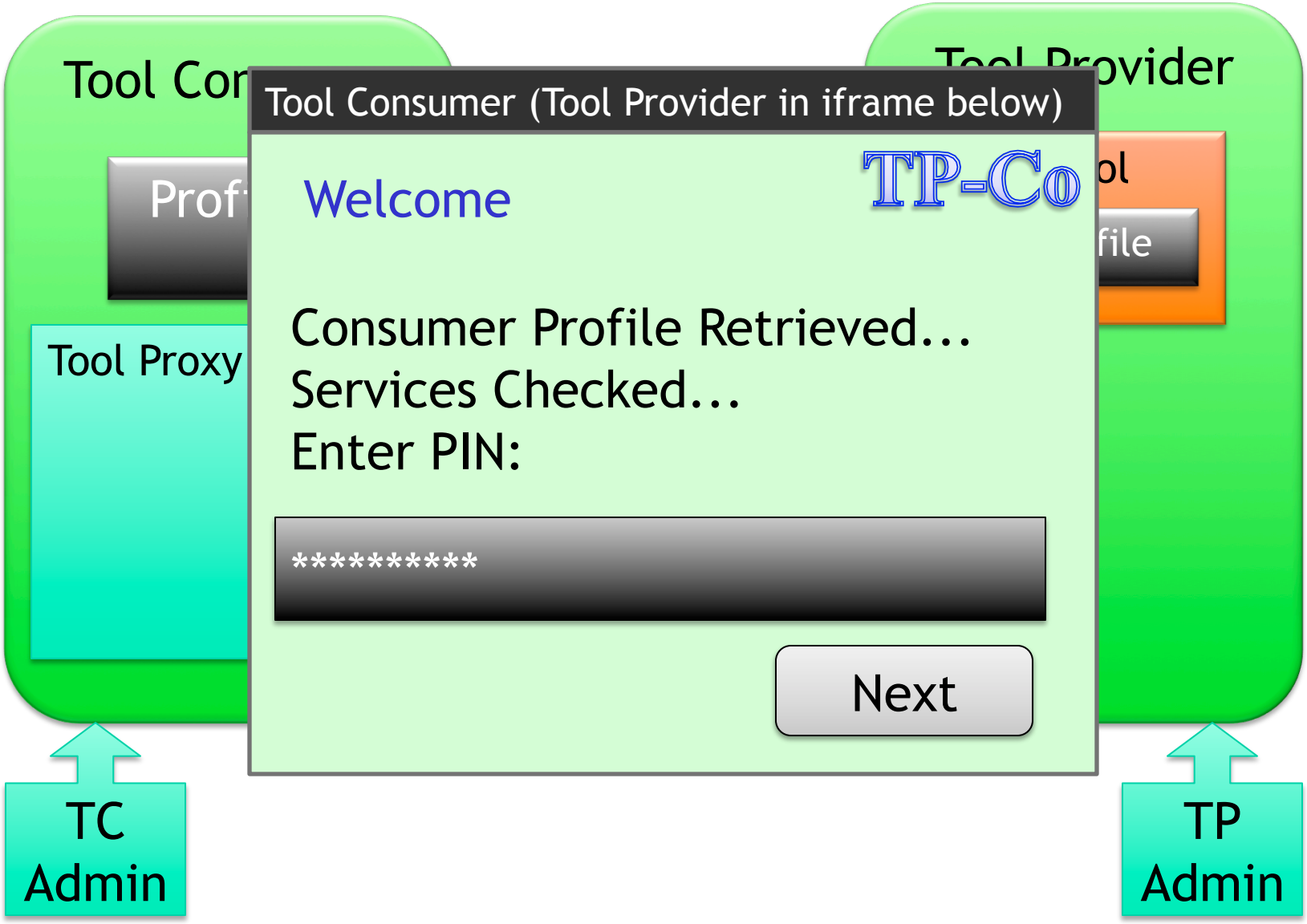

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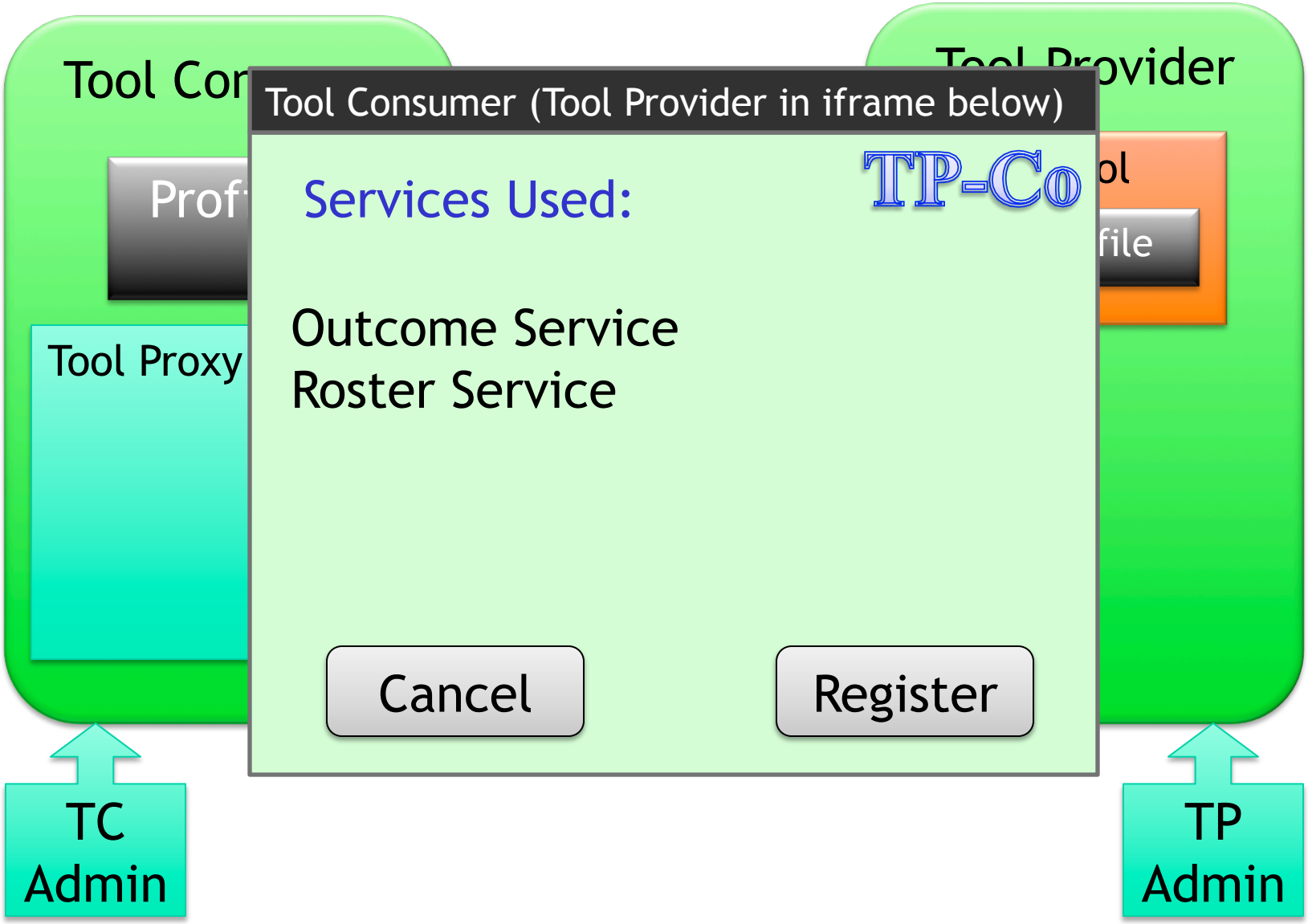

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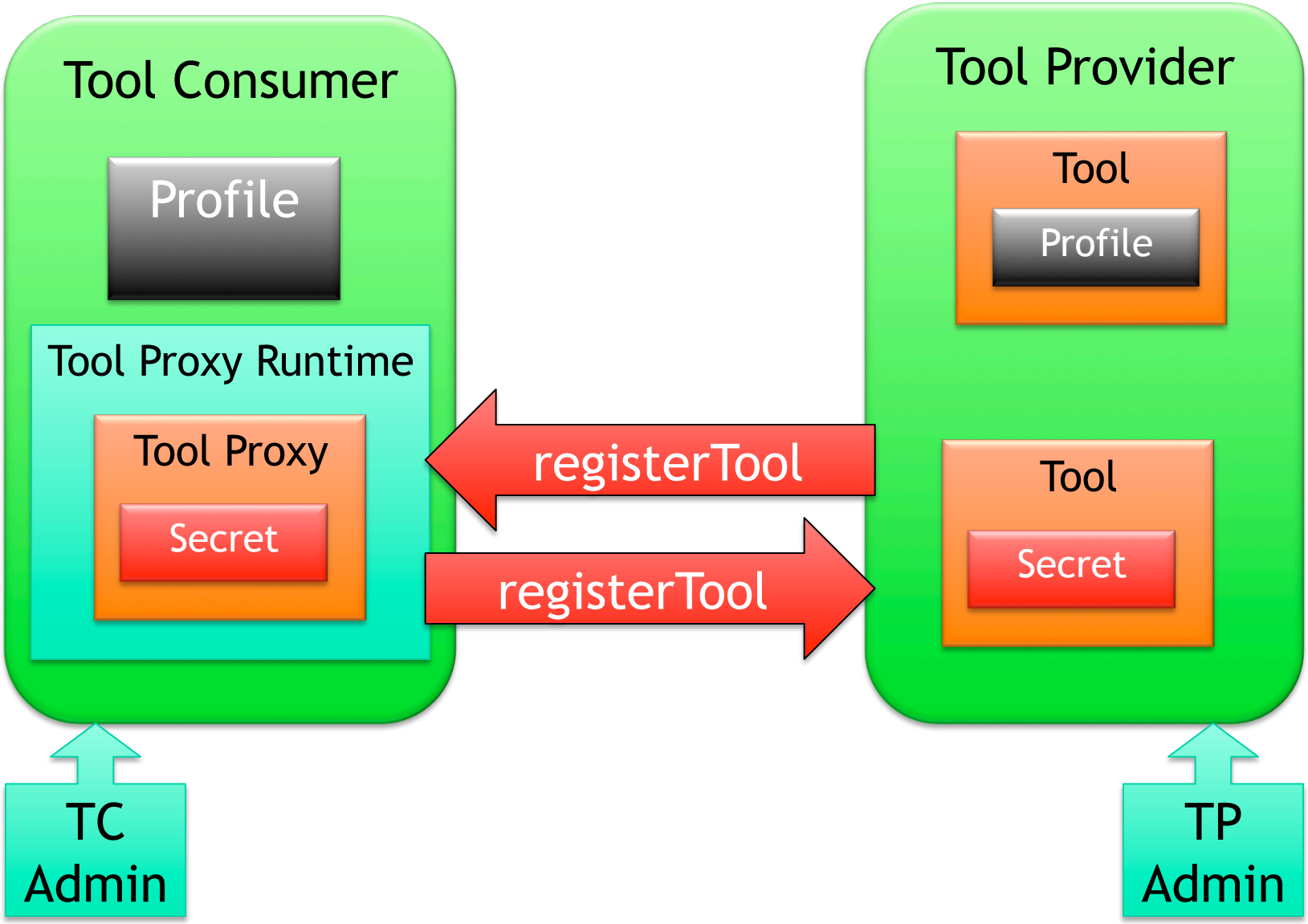

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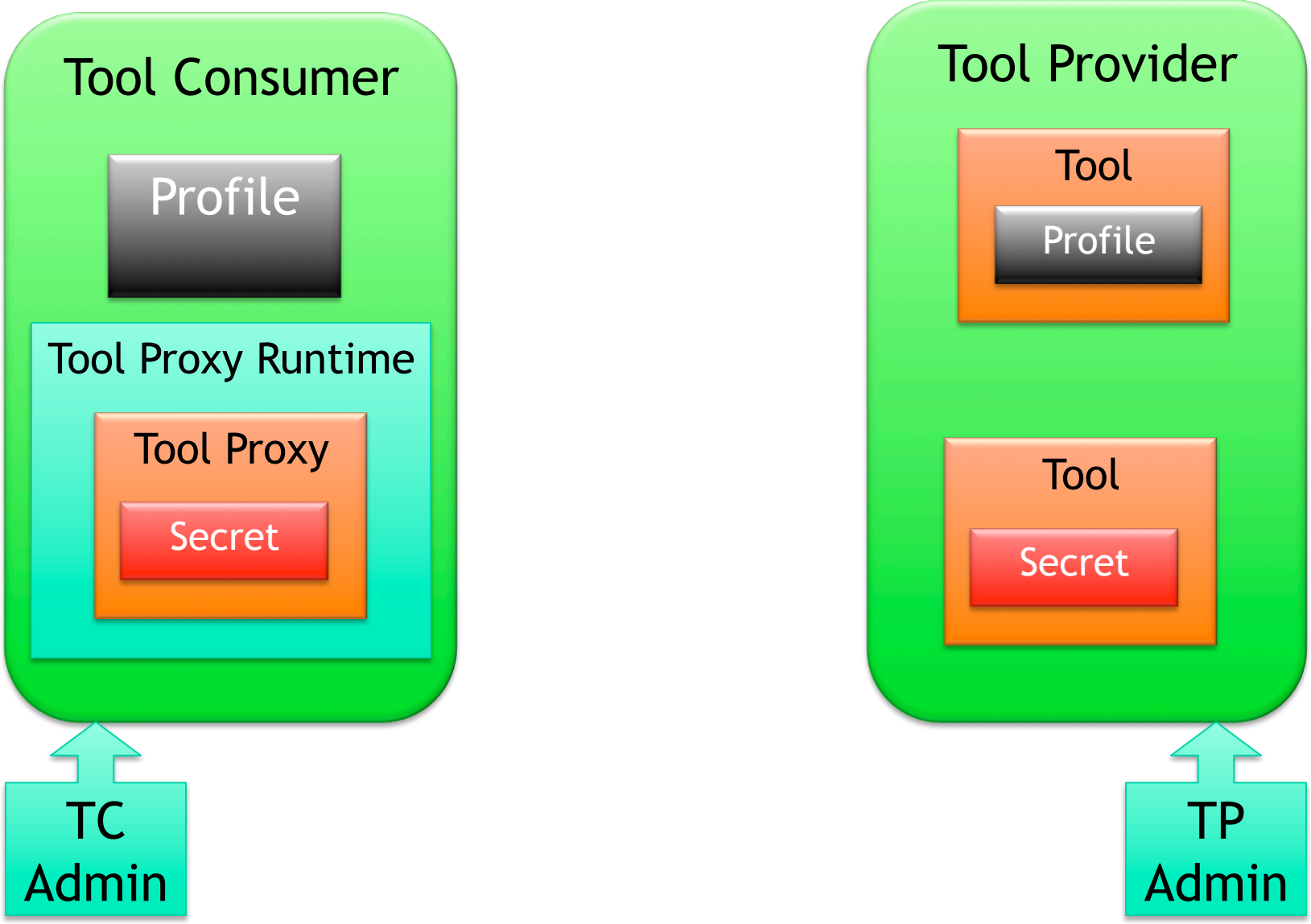

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Scenario: End User Launches Proxy Tool

Seamlessly connect to learning

IMS Learning Tools Interoperability (LTI)

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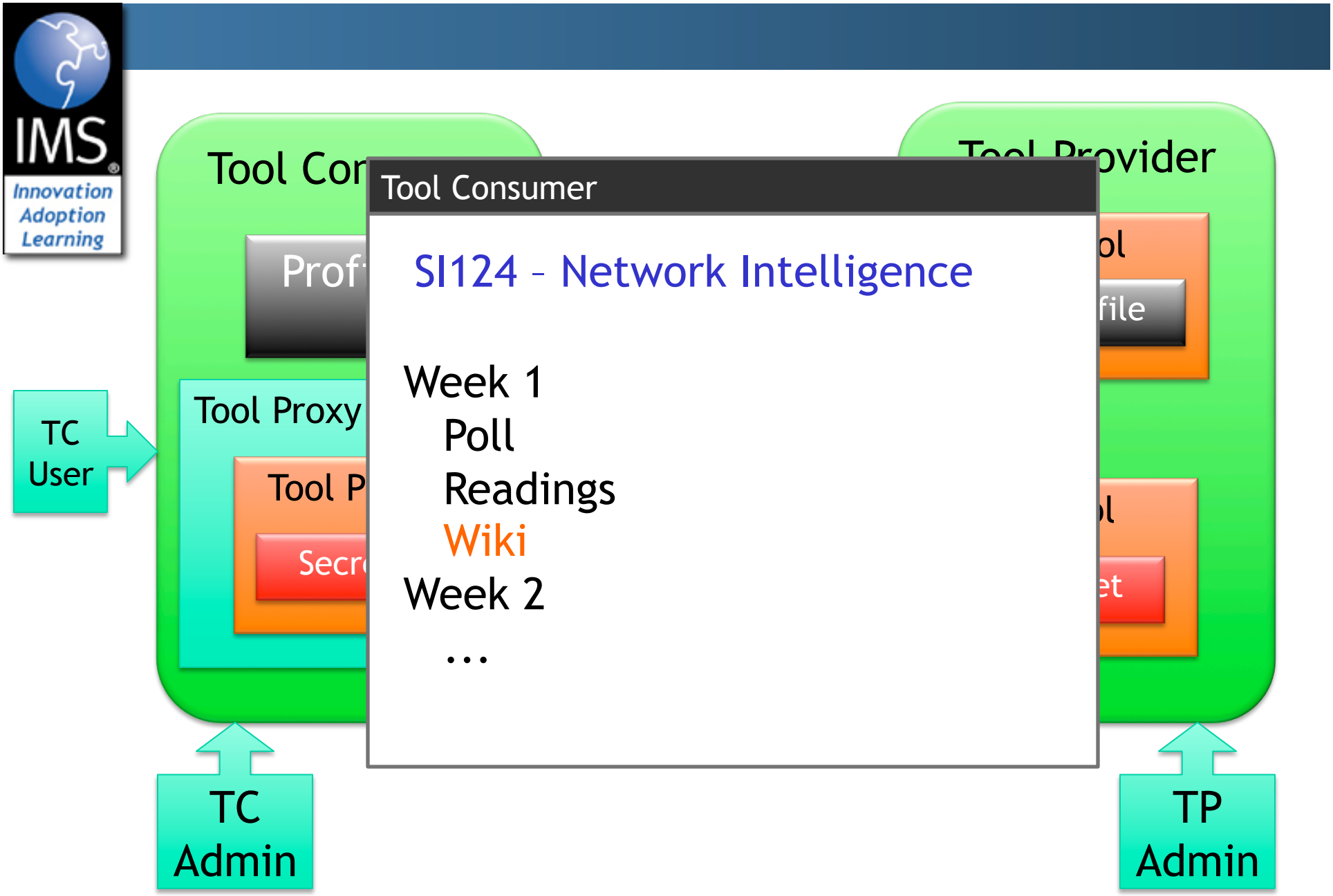

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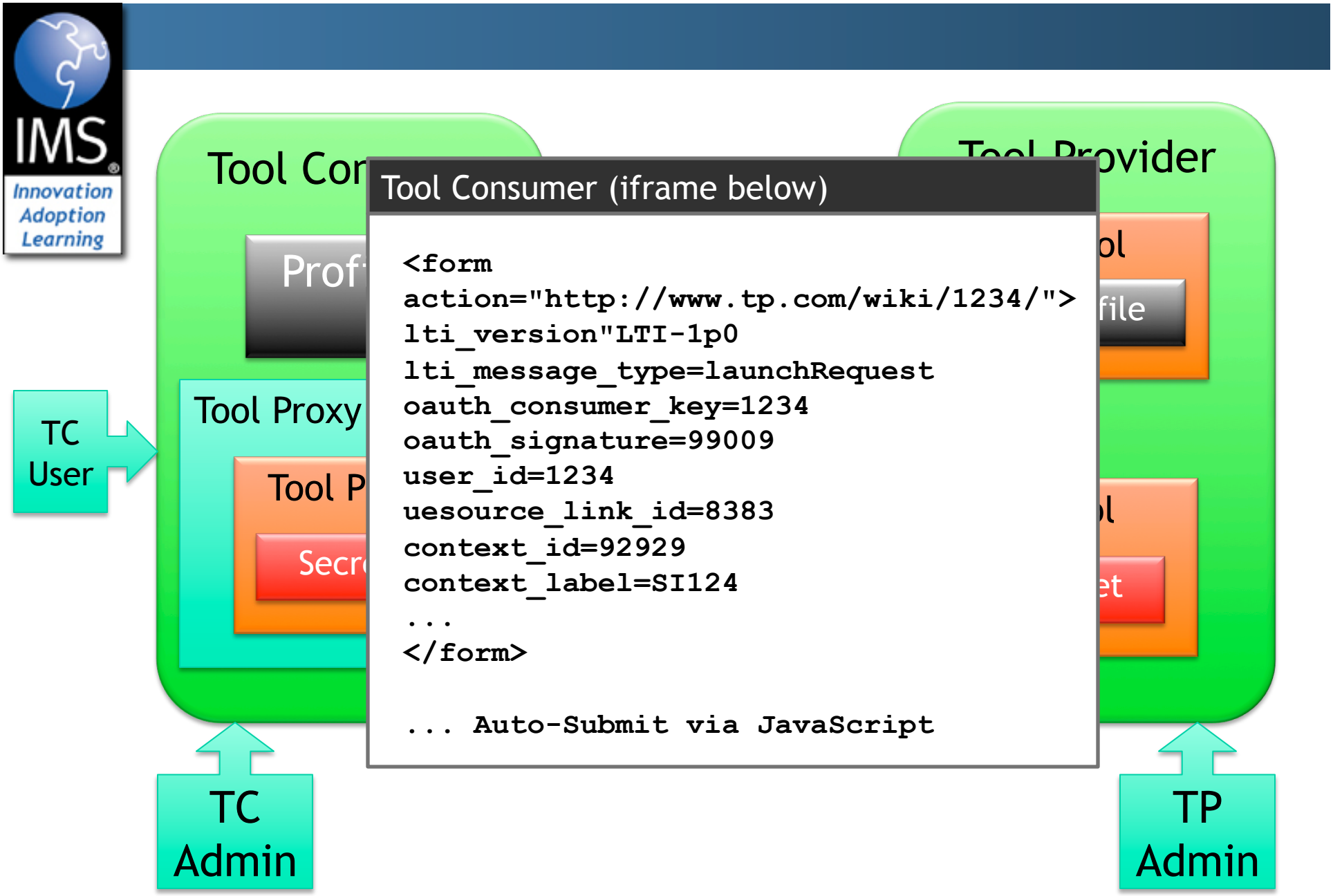

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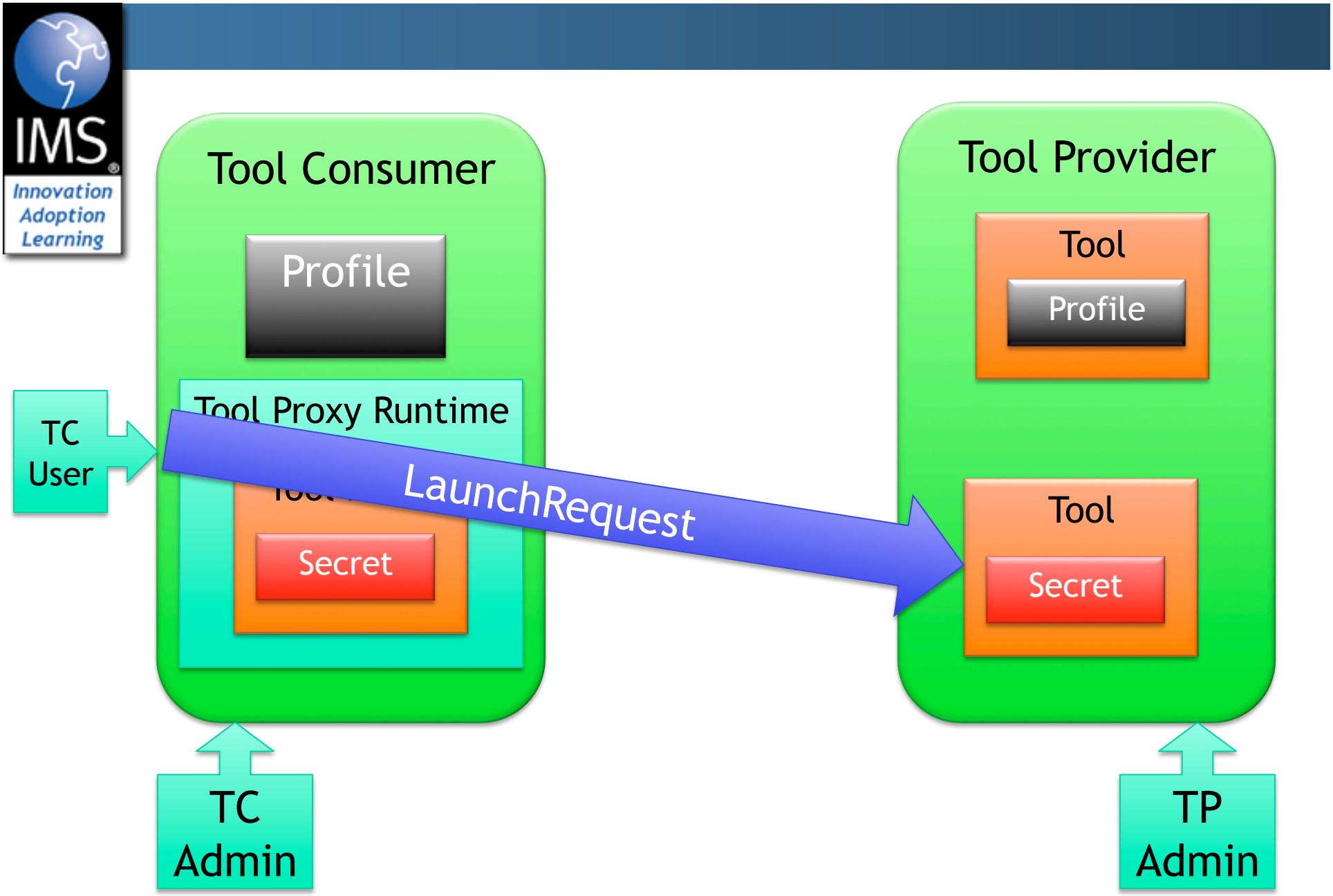

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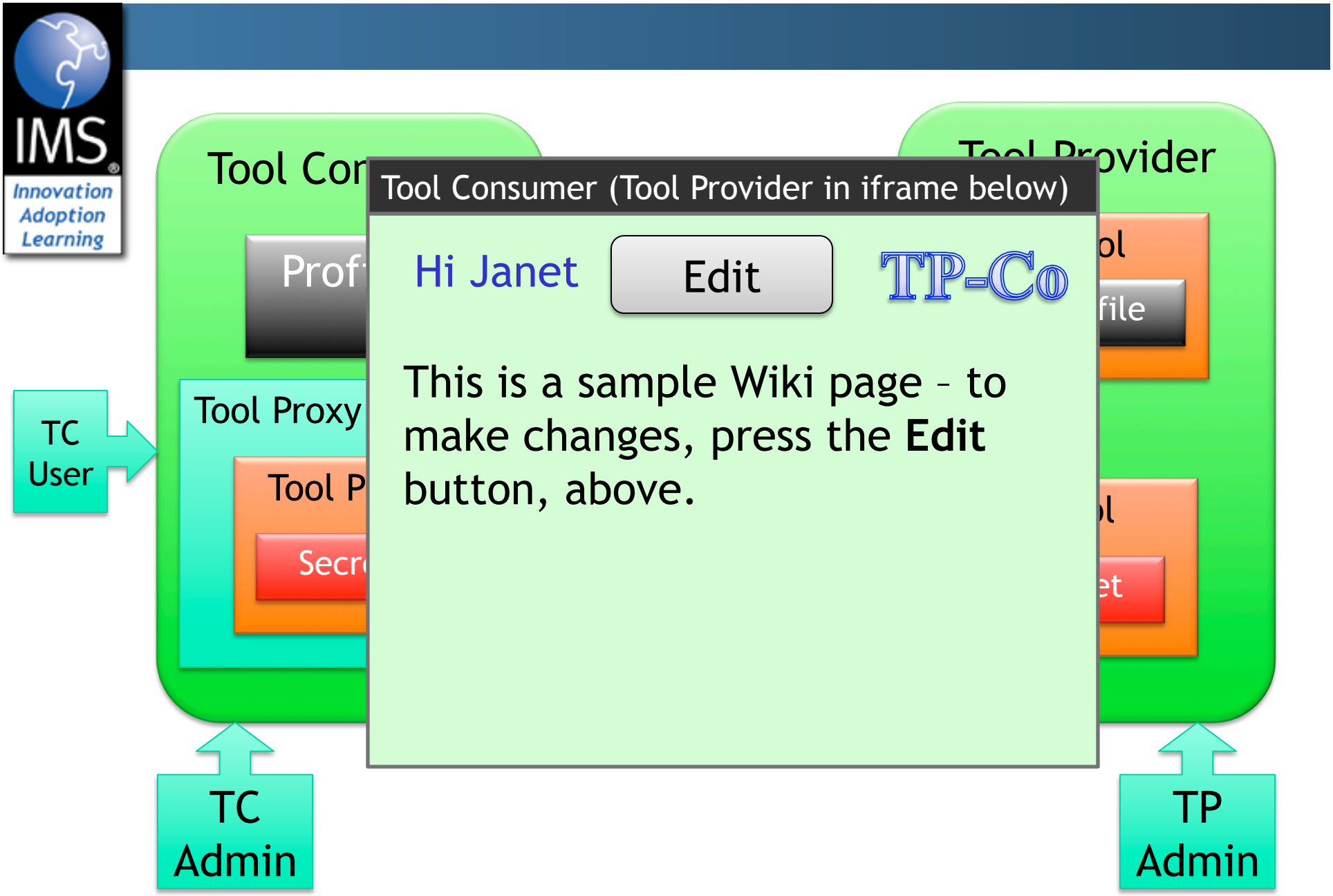

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Scenario: Tool Provider Returns Outcome (i.e. a grade)

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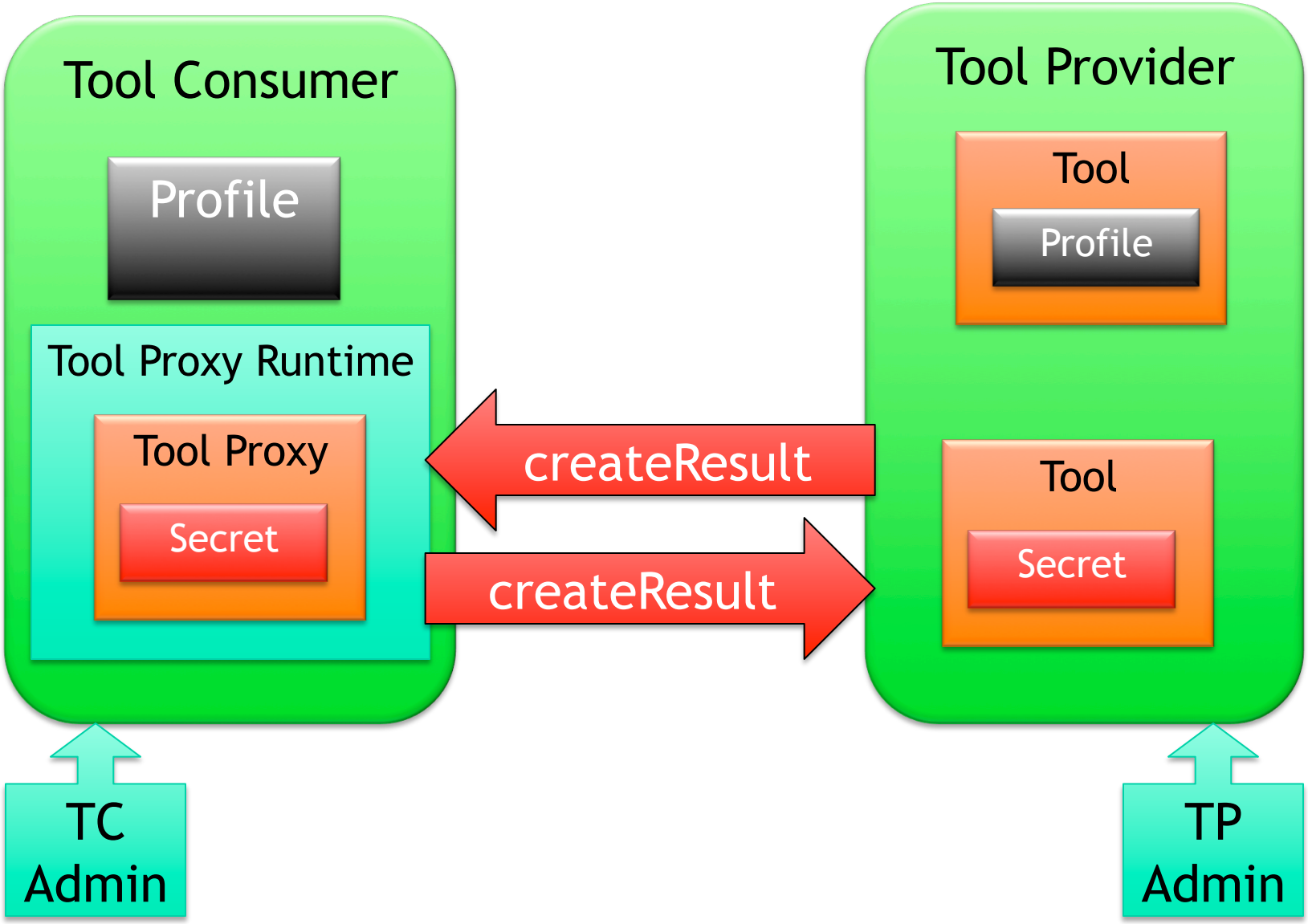

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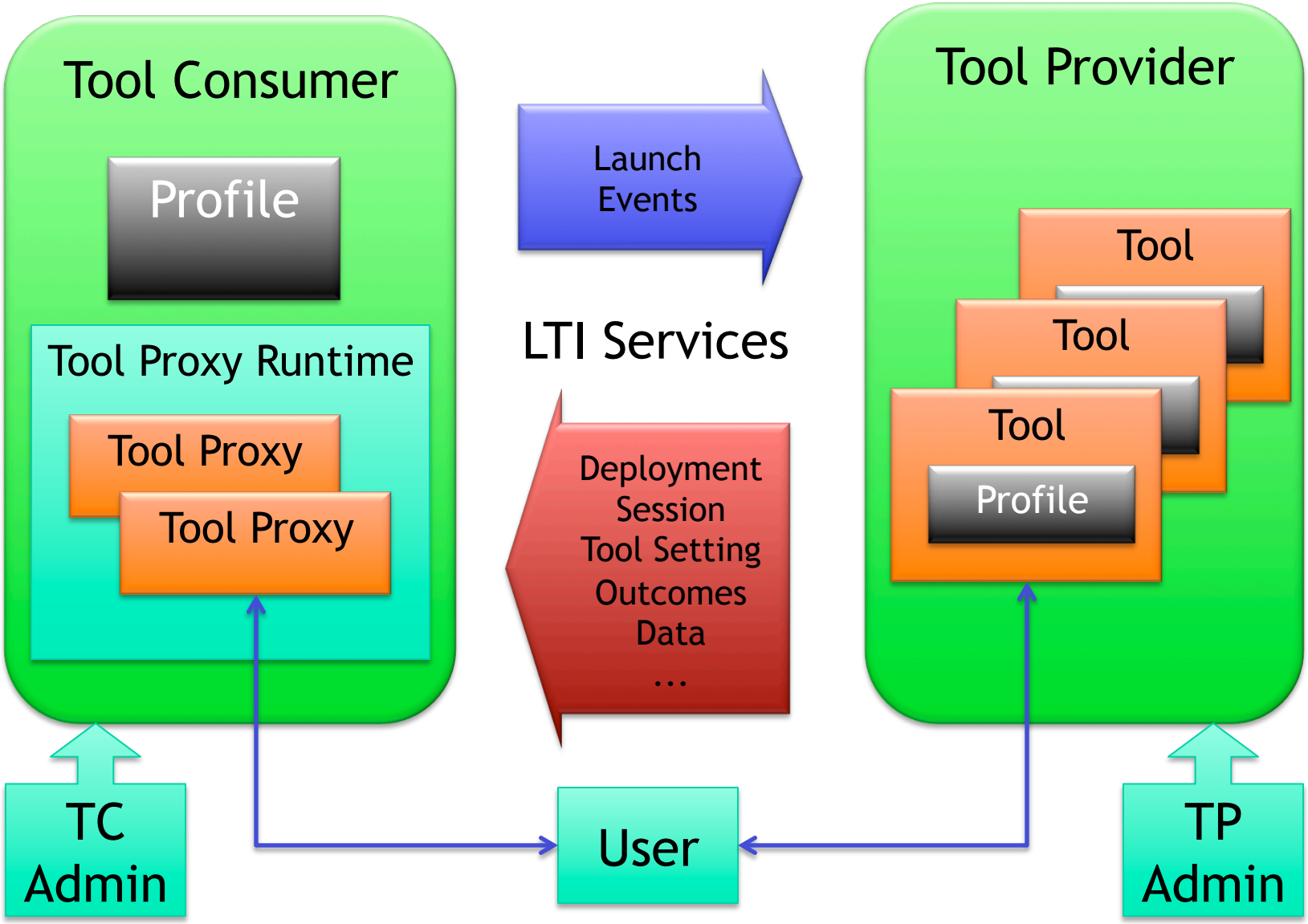

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Basic Learning Tools Interoperability (BLTI)

Seamlessly connect to learning

IMS Learning Tools Interoperability (LTI)

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Basic LTI Goals

- We decided to roll out Learning Tools Interoperability in a phased series of releases
  - These specifications are pretty detailed so we want to get them right
  - We want to engineer reference implementations along the way
- Basic LTI: "The smallest useful subset of LTI"

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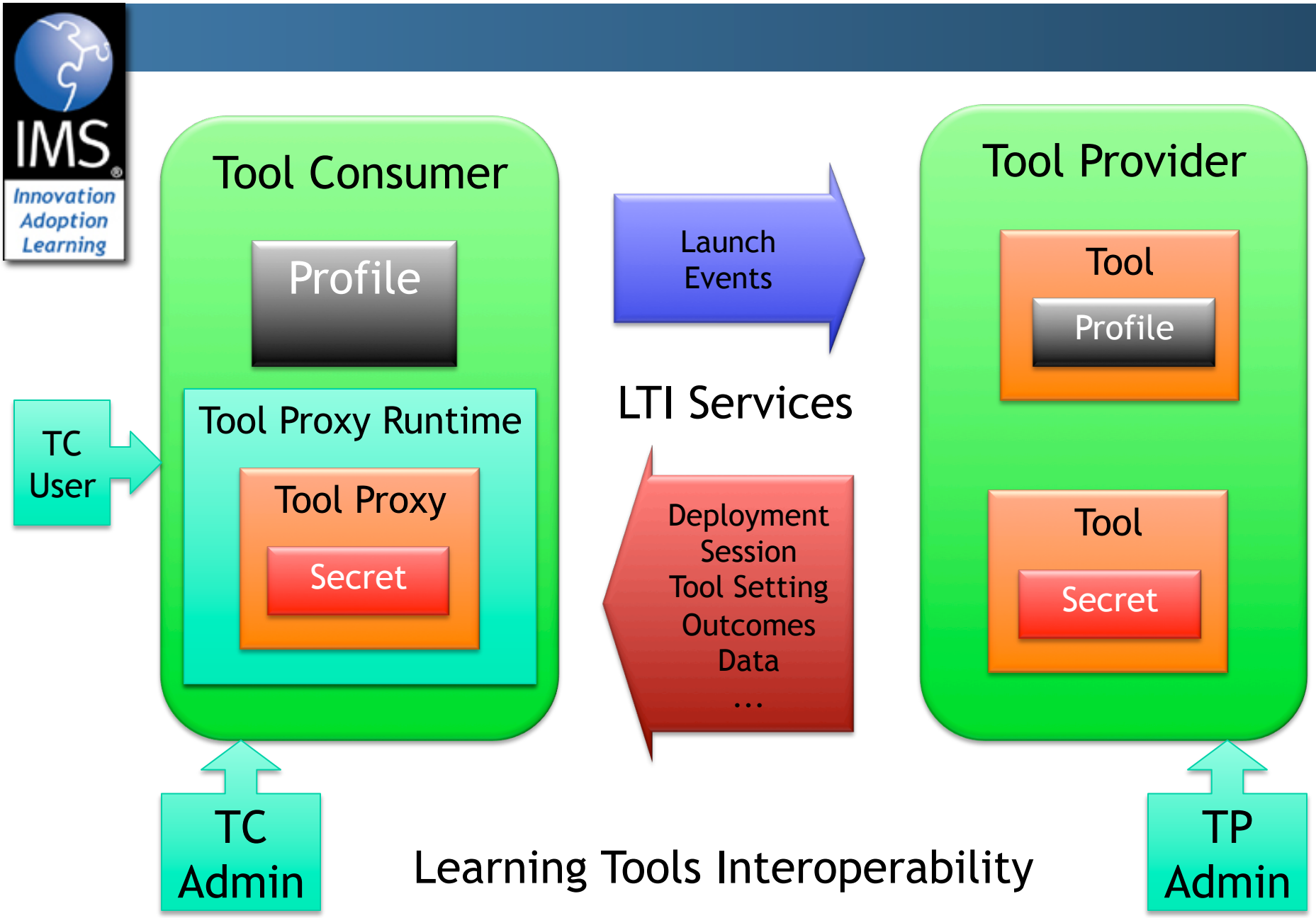

Learning Tools Interoperability

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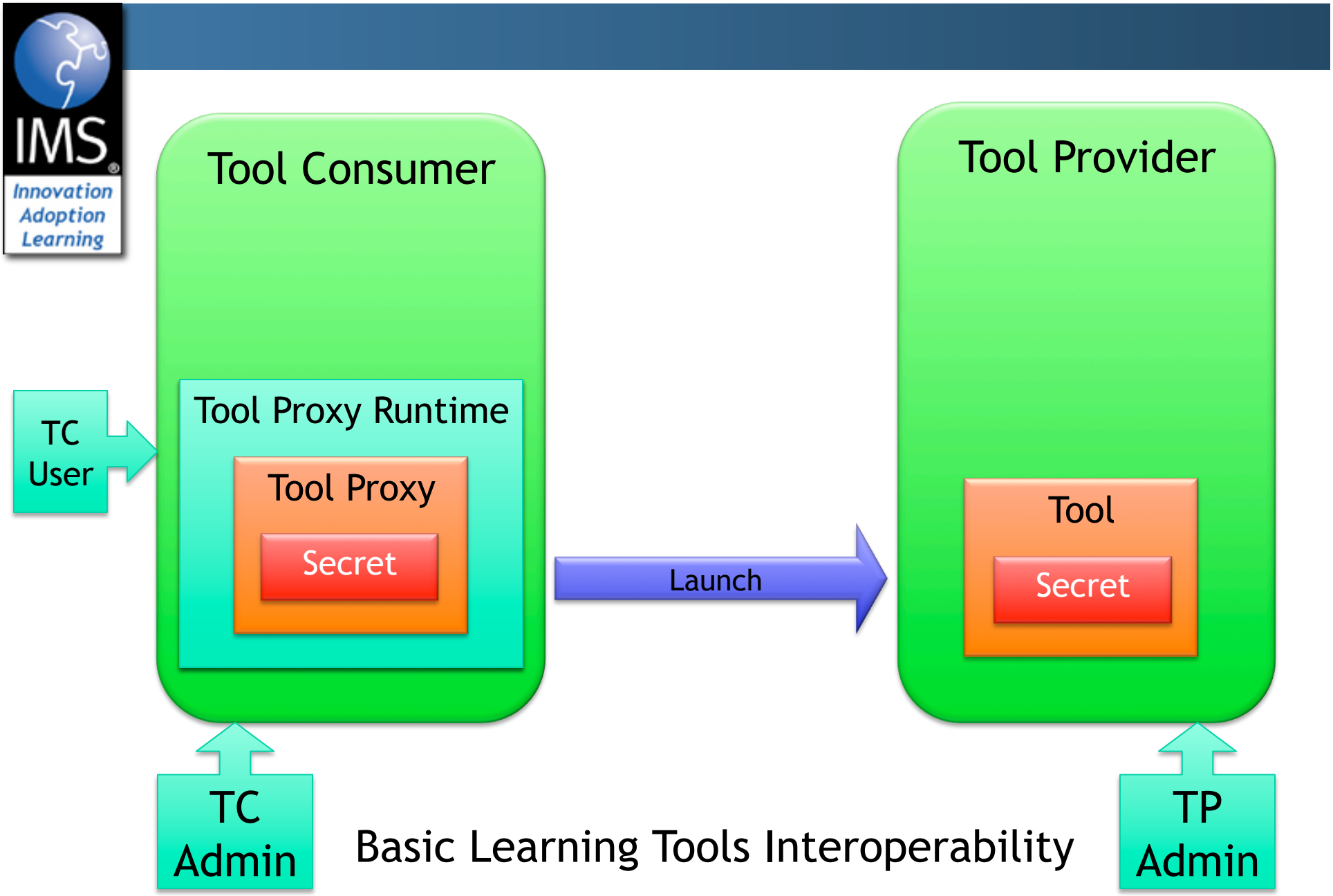

Basic Learning Tools Interoperability

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Basic LTI

- Removes Consumer and Provider Profiles, Removes Tool Registration, Removes SOAP Run-Time Services (outcomes, etc.)
- Launch URL, key, secret – transported out of band
- Provides user, context information on launch to allow "lazy" roster transfer

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IMS Learning Tools Interoperability Technical Overview

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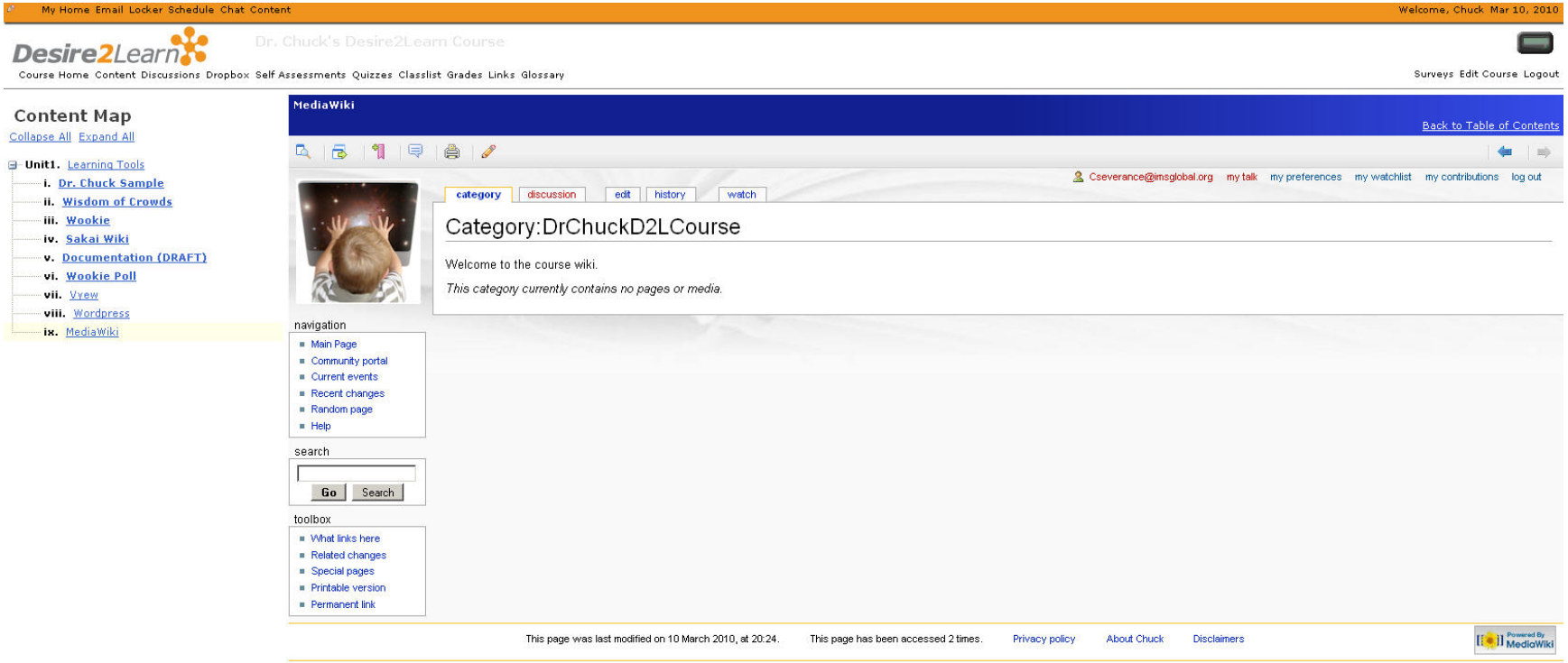

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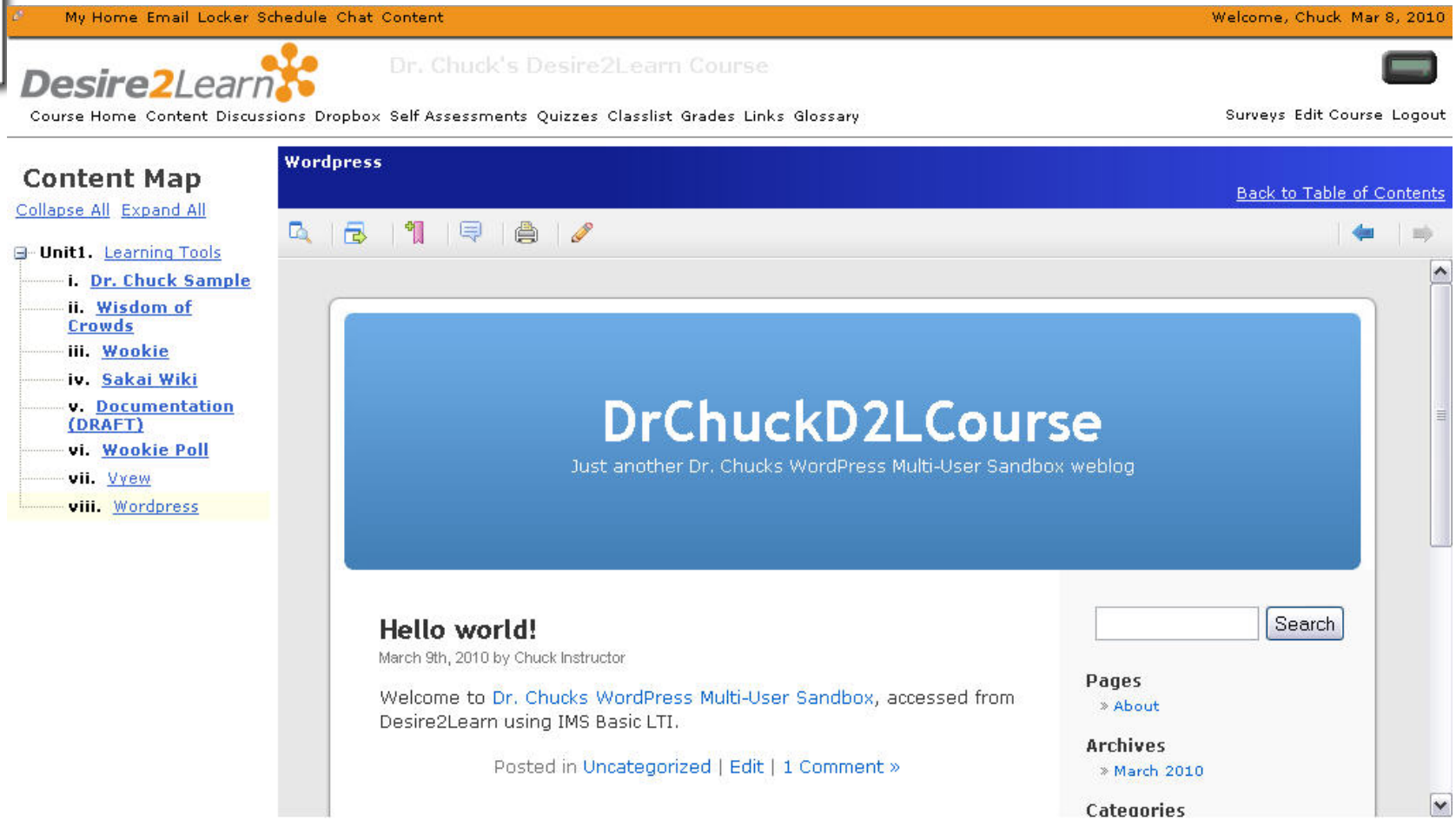

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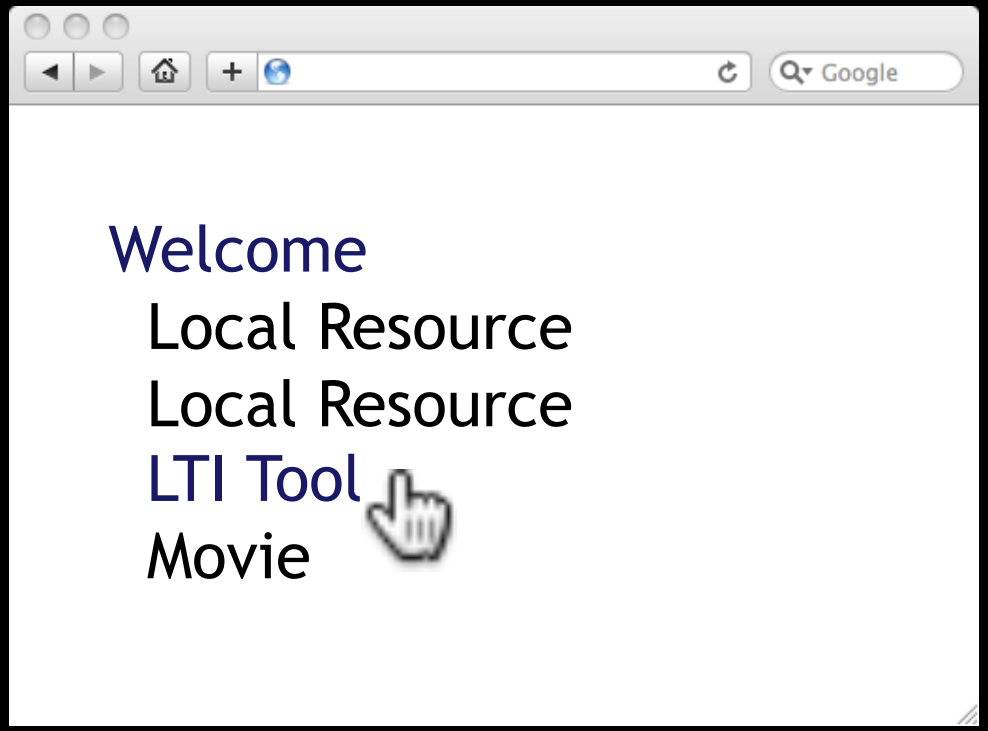
Integrated User Experience



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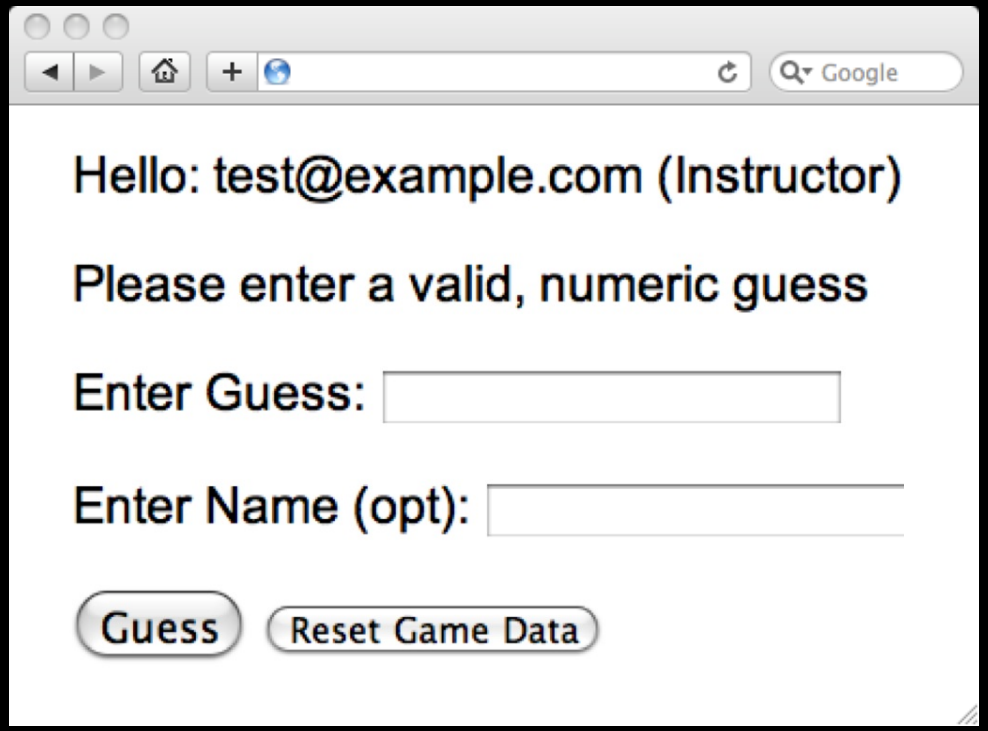
User Experience



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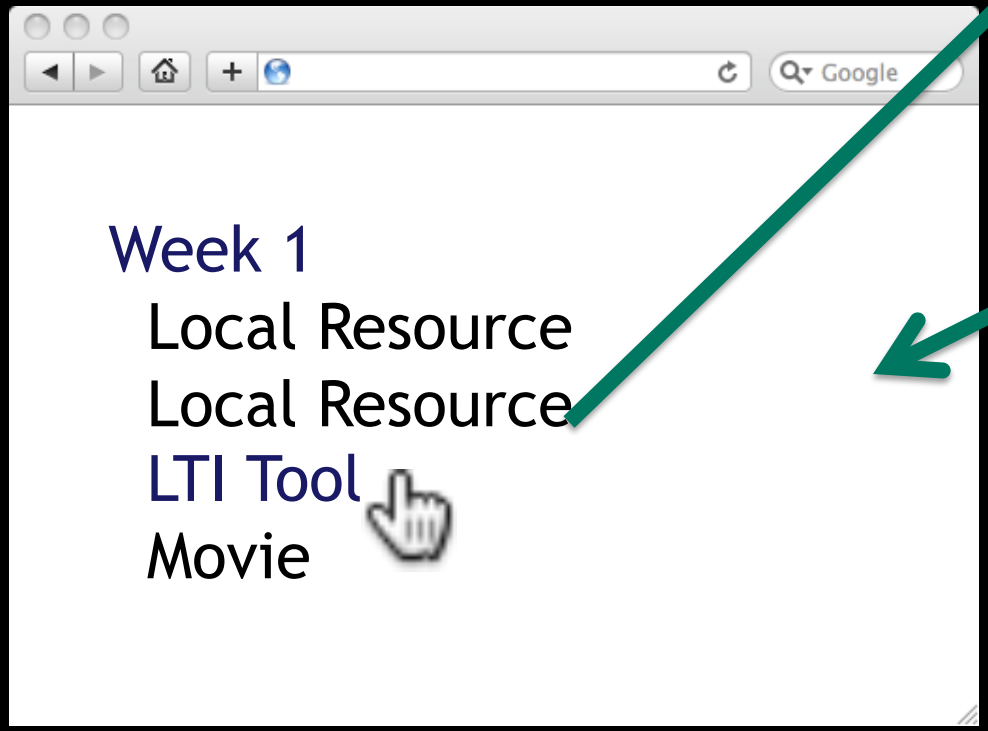
Again in slow motion…



LMS (LTI Consumer)

LMS Looks up User and Course Information.

Information is signed using secret and OAuth

Form data sent to Browser

Tool (LTI Provider)

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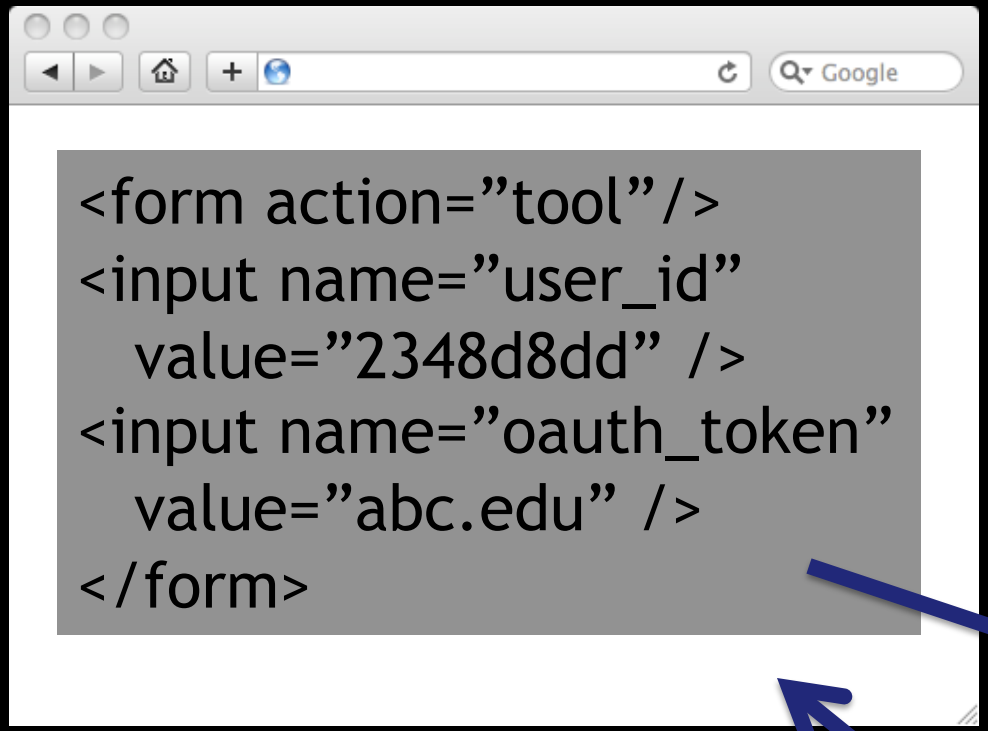
Form is immediately auto-submitted using JavaScript.



LMS (LTI Consumer)

Tool (LTI Provider)

Tool looks up secret and validates signature.

Tool provisions user, course, and session.

Tool sends redirect

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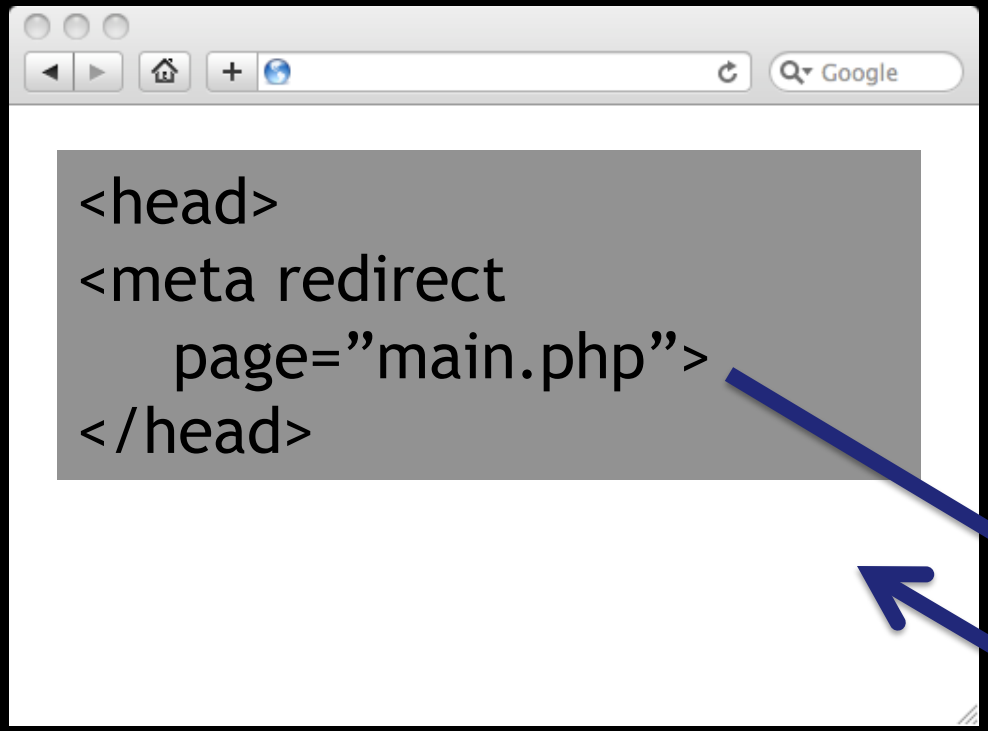
Browser follows redirect…



LMS (LTI Consumer)

Tool (LTI Provider)

Tool produces first page.

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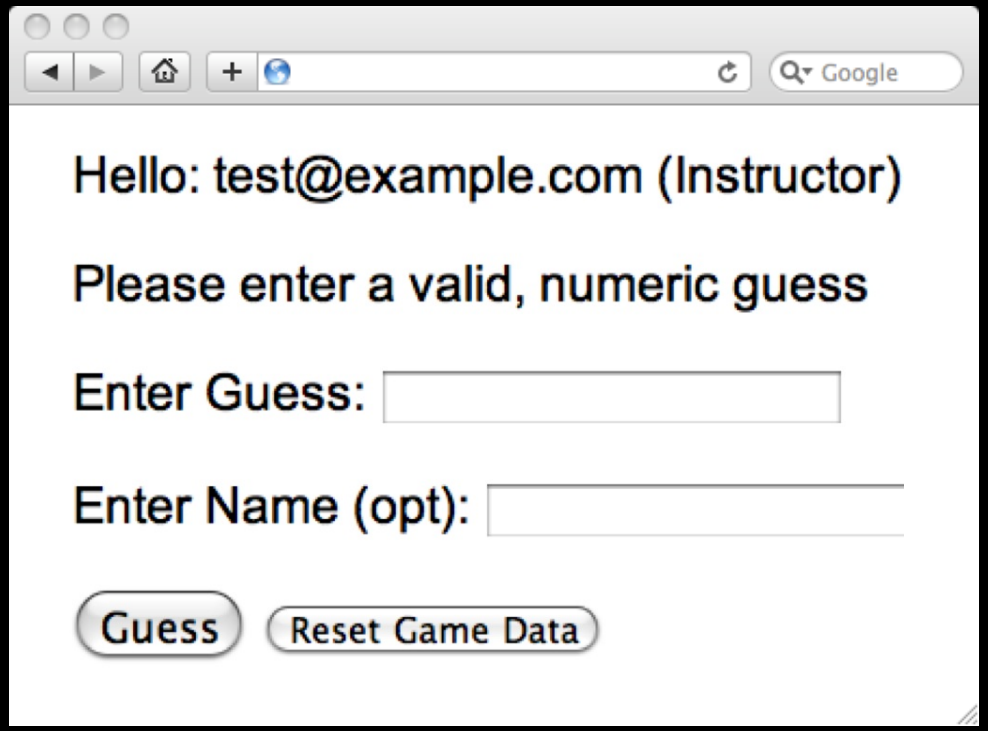
LMS (LTI Consumer)



Tool (LTI Provider)

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Basic LTI Sample Launch Data

lti_version=LTI-1p0
lti_message_type=basic-lti-launch-request
oauth_consumer_key=lmsng.school.edu
resource_link_id=120988f929-274612
user_id=292832126
roles=Instructor
lis_person_name_full=Charles R. Severance
lis_person_contact_email_primary = csev@umich.edu
context_id=456434513
context_title=SI301 – PHP
tool_consumer_instance_description=University of School

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OAUTH

About Advisories Documentation Code Blog Community

An **open protocol** to allow **secure API authorization** in a **simple** and **standard** method from desktop and web applications.

Read on »

For Consumer developers...

If you're building...

- desktop applications
- dashboard widgets or gadgets
- Javascript or browser-based apps
- webpage widgets

OAuth is a simple way to publish and interact with protected data. It's also a safer and more secure way for people to give you access. We've kept it simple to save you time.

For Service Provider developers...

If you're supporting...

- web applications
- server-side APIs
- mashups

If you're storing protected data on your users' behalf, they shouldn't be spreading their passwords around the web to get access to it. Use OAuth to give your users access to their data while protecting their account credentials.

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Basic LTI and IMS Common Cartridge

- Common Cartridge 1.1 will include the ability to define a Basic LTI resource and include that resource in course organizational structures

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Pushing Basic LTI Adoption

- Sample Java + PHP Basic LTI implementations at
  - http://code.google.com/p/ims-dev/
- Use/include sample code from oauth.net
- Both structured to provide reusable code
  - org.imsglobalorg.basiclti.BasicLTIUtil.java
  - blti_util.php
- Copyright IMS, Apache 2 – Usable anywhere

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Classified Ad Application

- Simple Sample Application
  - Key / Secret administration
  - Example use of the Basic LTI utility code
  - Multi-tenancy examples including AuthZ
  - System-scoped versus course scoped keys
  - Code plus simple database schema patterns to support Basic LTI in a tool

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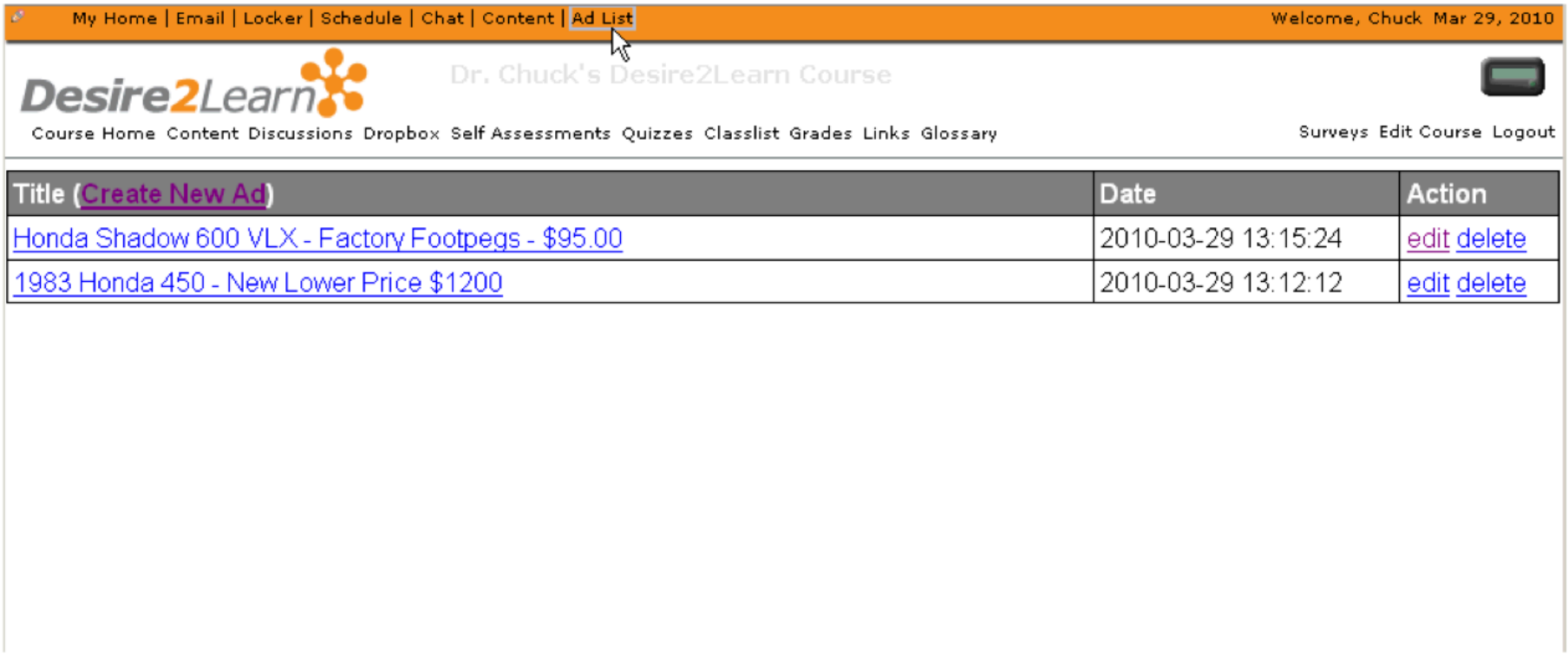
A Sample Tool – Classified Ads



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My Next Steps for LTI

- Promote Basic LTI – Focus on tool writers
  - Webinar offer / conference talk
- Building PHP, Java, C# Reference Implementations for Full LTI (incl. IMS General Web Services)
  - Provisioning, Registration, Launch, Outcomes
- Would love to have outcomes working for an Educause Demo (October 12-15, Anaheim, CA)

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Questions

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