

IMS LTI Bootcamp

Thanks Claude for the pretty slides!

LTI™ 1.3 Advantage primer
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Schedule

Thursday

12:30-13:00 - Introductions

14:00-15:30 - LTI Advantage Overview

16:00-17:30 - LTI Reference Implementation & Running Example Tool

Friday

9:30-11:05 - LTI Libraries, working on implementations

11:35-12:40 - Working on implementations

13:40-14:10 -

Introductions!

- Name
- Where do you work? (School, Company, etc.)
- How familiar are you with LTI already?
- What do you hope to learn today?
- What programming language(s) will you use to implement LTI Advantage?

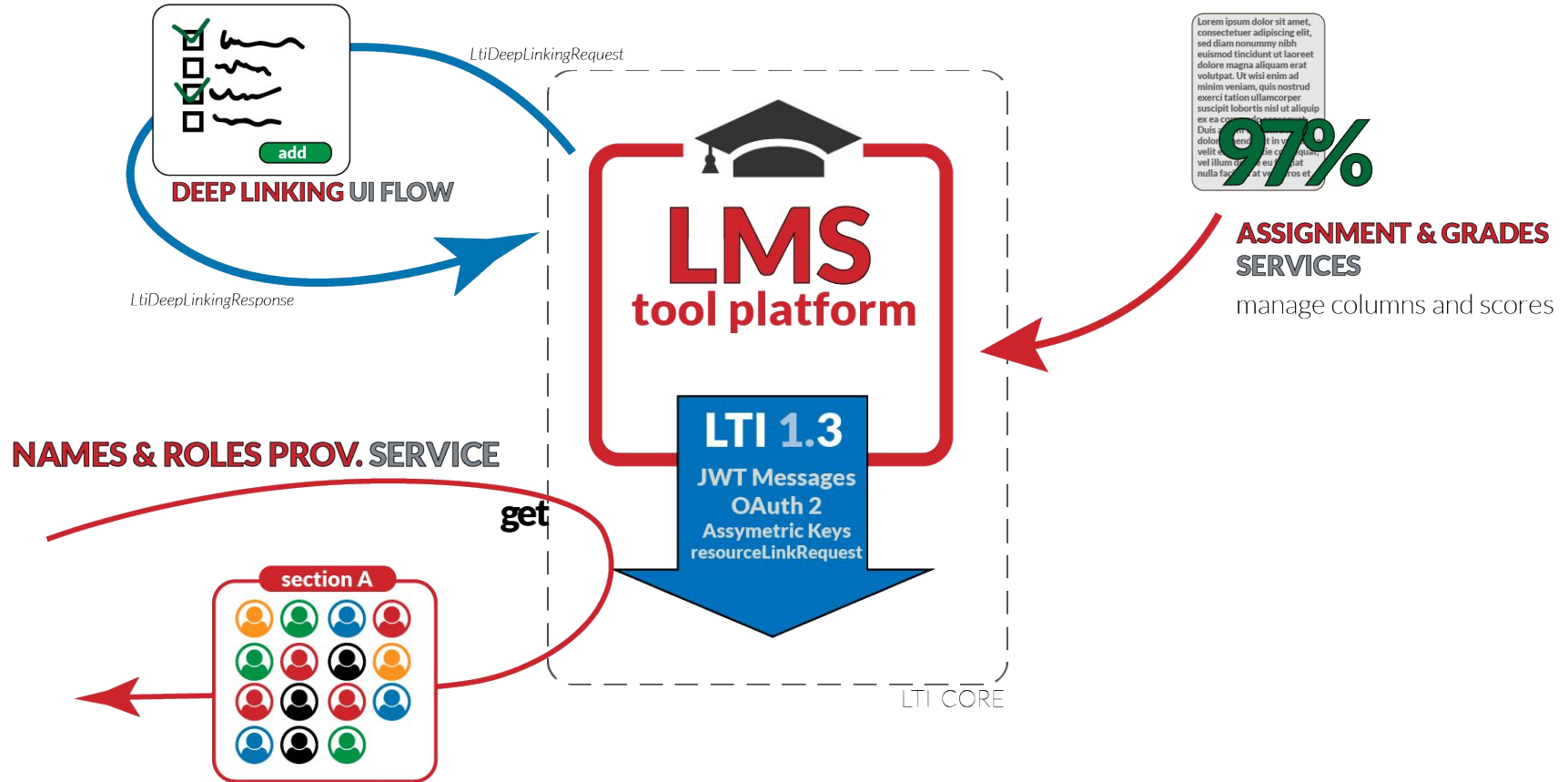
What you should learn today

- What LTI 1.3 “core” is
 - And how it compares to LTI 1.1
- What LTI Services are
- What LTI Advantage is
- How LTI and LTI services work
 - OpenId Connect
 - OAuth 2 services
- What resources are available to help implement LTI Advantage
 - How to use the available resources
 - Documentation
 - Code libraries and reference implementation code
 - Other learning content from the LTI community
- Where to get help when you need it

What is LTI?

- How education tools integrate with each other
- Goal: Provide *seamless* UI experience for Teachers and Students
- Vocabulary:
 - Tool - assessment engines, content, courseware, subject-specific tools
 - Platform - Usually an LMS. Place where external tool can embed

LTI Advantage = LTI 1.3 + 3 services



Demo

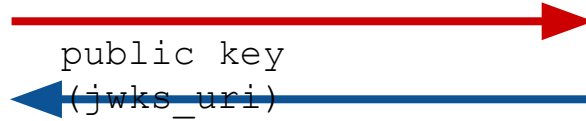
An example of what LTI Advantage makes possible

LTI 1.3 Core

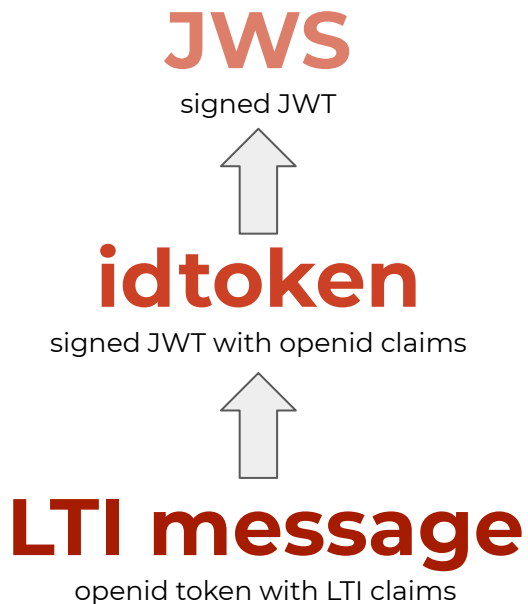
JSON Web Tokens (JWT) for Launch Data

```
{  
  
  "https://purl.imsglobal.org/spec/lti/claim/message_type": "LtiResourceLinkRequest",  
  "given_name": "Dr.",  
  "family_name": "Daugherty",  
  "middle_name": "Korey",  
  "picture": "http://example.org/Dr..jpg",  
  "email": "Dr..Daugherty@example.org",  
  "name": "Dr. Korey Daugherty",  
  "https://purl.imsglobal.org/spec/lti/claim/roles": [  
    "http://purl.imsglobal.org/vocab/lis/v2/institution/person#Instructor",  
  ],  
  "https://purl.imsglobal.org/spec/lti/claim/role_scope_mentor": ["a62c52c02ba262003f5e"],  
  "https://purl.imsglobal.org/spec/lti/claim/resource_link": {  
    "id": "4969",  
    "title": "Course ABC",  
    "description": "Resource Link ABC"  
  },  
}
```

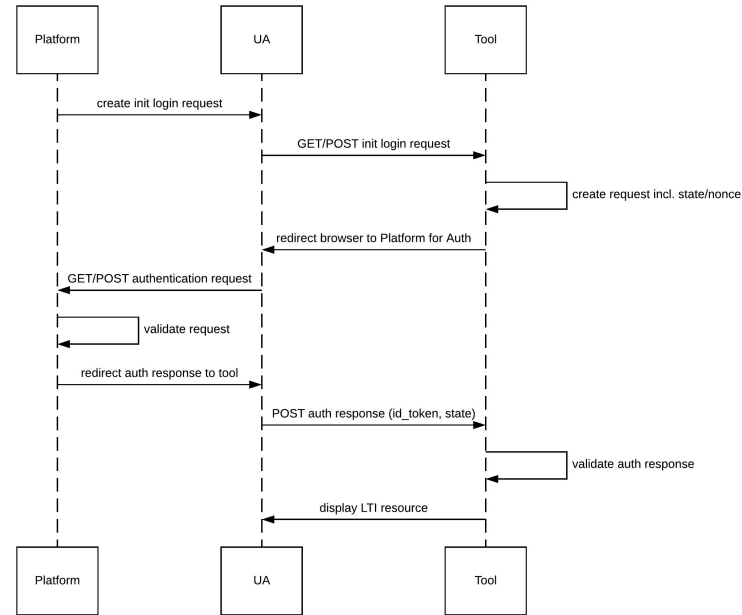
lti13 uses **a**symmetric keys



lti13 messages are **OpenId** idtoken



lti13 launches are **OpenId** authentication



lti13 is **multi-tenant**



CapricaU

registered



deployed
(~~deployment_id~~)



CapricaU account

LTI REST Services

All services will follow same Oauth 2 flow and permissions framework

lti13 services uses **Oauth2** client credentials



get access token



lti13 services define **scopes**



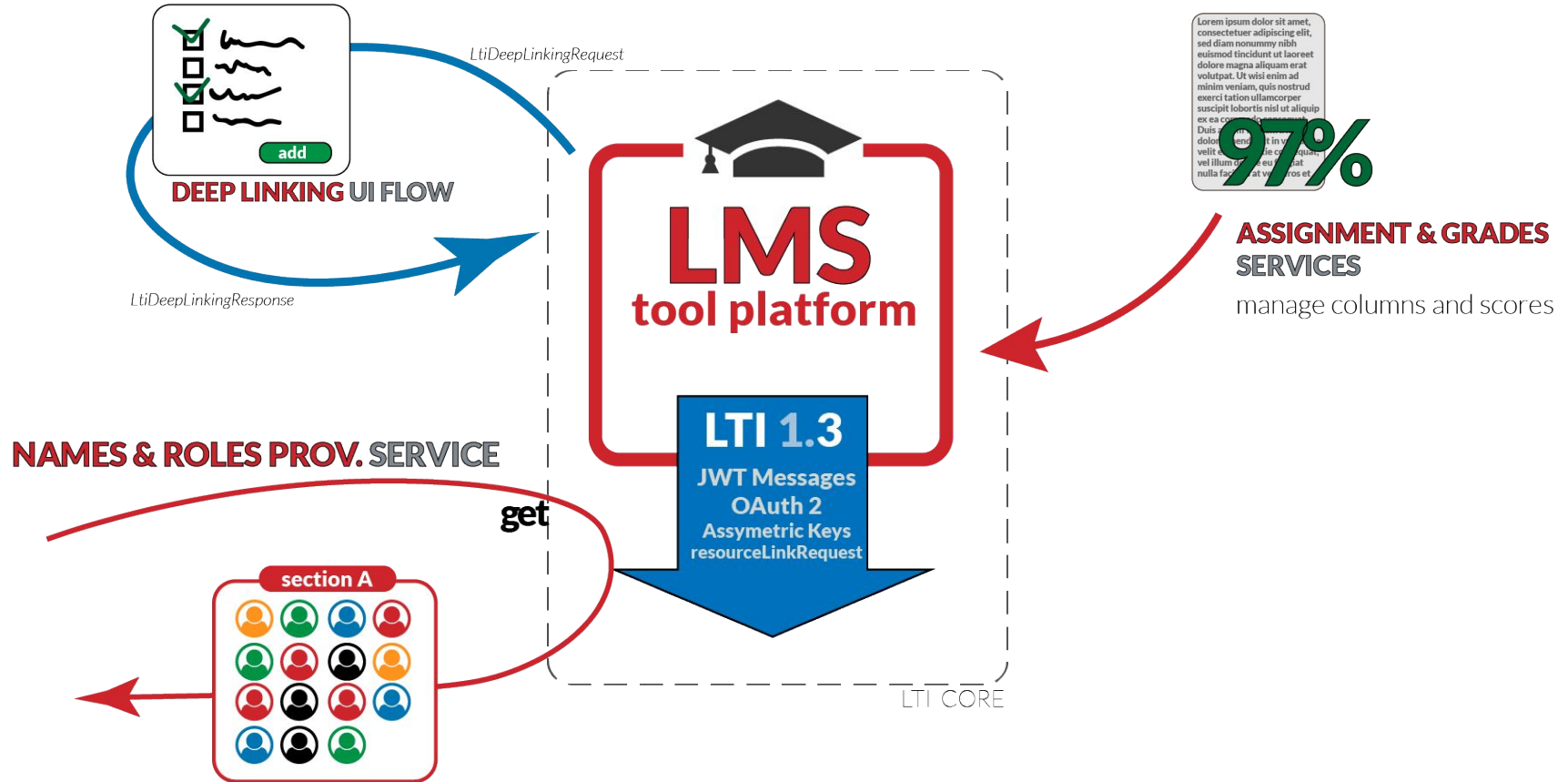
access tokens must always be scoped

Service claims come in every launch

```
{  
  "https://purl.imsglobal.org/spec/lti-aggs/claim/endpoint": {  
    "scope": [  
      "https://purl.imsglobal.org/spec/lti-aggs/scope/lineitem",  
      "https://purl.imsglobal.org/spec/lti-aggs/scope/result.readonly",  
      "https://purl.imsglobal.org/spec/lti-aggs/scope/score"  
    ],  
    "lineitems": "https://www.myuniv.edu/2344/lineitems/",  
    "lineitem": "https://www.myuniv.edu/2344/lineitems/1234/lineitem"  
  }  
}
```

the
lti advantage
services

LTI Advantage = LTI 1.3 + 3 services

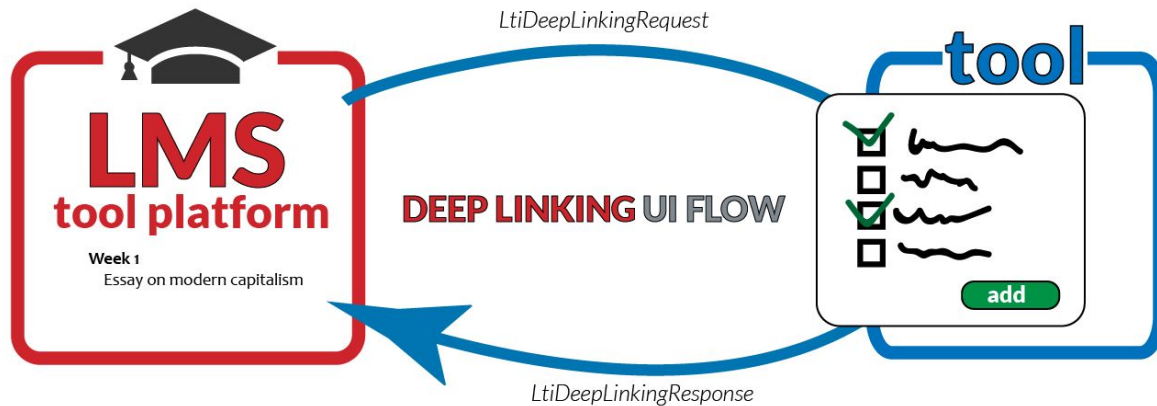


Deep Linking, the LTI advantage flow

"The very first launch is always a deep linking request"



Deep Linking, (pick, search, create) and add



Deep Linking, not just deep links...

```
"https://purl.imsglobal.org/spec/lti/claim/message_type": "LTIDeepLinkingRequest",  
"https://purl.imsglobal.org/spec/lti-dl/claim/deep_linking_settings": {  
  "accept_types": ["link", "file", "html", "LtiLink", "image"],  
  "accept_media_types": "image/*,text/html",  
  "accept_presentation_document_targets": ["iframe", "window", "embed"],  
  "accept_multiple": true,  
  "auto_create": true,  
  "title": "This is the default title",  
  "text": "This is the default text",  
  "data": "Some random opaque data that MUST be sent back"  
}
```

not just lti links...

→ "accept_types": ["link", "file", "html", "LtiLink", "image"],

"accept_media_types": "image/*,text/html",

"accept_presentation_document_targets": ["iframe", "window", "embed"],

Supported rendering options

one item at a time?

→ "accept_multiple": true,

"auto_create": true,

User prompted on return to validate?

"title": "This is the default title",

"text": "This is the default text",

"data": "Some random opaque data that MUST be sent back"

}

Deep Linking, not just deep links...

```
"https://purl.imsglobal.org/spec/lti/claim/message_type": "LTIDeepLinkingResponse",
"https://purl.imsglobal.org/spec/lti-dl/claim/data": "Some random opaque data that MUST be sent back",
"https://purl.imsglobal.org/spec/lti-dl/claim/content_items": [{
  "type": "LtiLink",
  "title": "A title",
  "text": "This is a link to an activity that will be graded",
  "url": "https://lti.example.com/launchMe",
  "lineItem": {
    "scoreMaximum": 87,
    "resourceId": "xyzpdq1234",
    "tag": "originality"
  },
  "custom": {
    "quiz_id": "az-123"
  },
  "window": {"targetName": "examplePublisherContent"},
  "iframe": {"height": 890}
},
```

Declarative creation of line item (gradebook column)

Assignment and

Grades

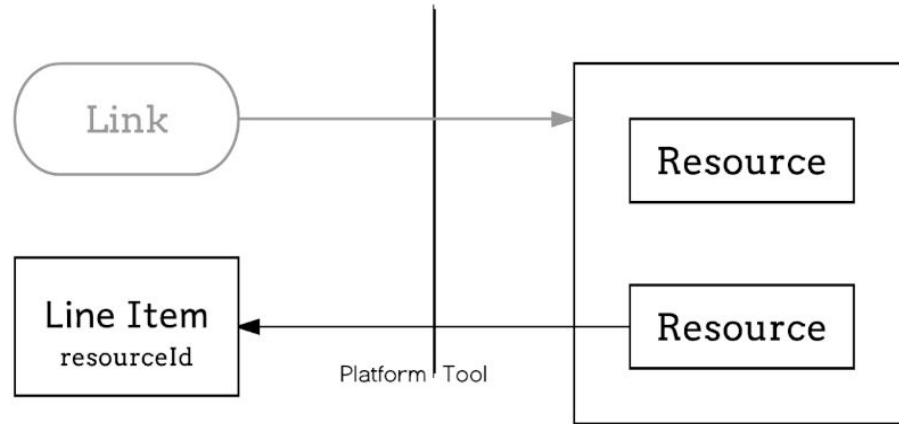
Services

AGS allows a **sandboxed** columns management

Quiz on C...	Quiz 1	Cyl Quiz
points	20 points	16 points



AGS allows columns **without** links



decoupled

AGS allows to **post** and **get** scores

Quiz on C...	Quiz 1	Cyl Quiz
points	20 points	10 points
		8.8 Good job!
		! needs grading
		▲ 9.2



AGS endpoints are in each LTI launch

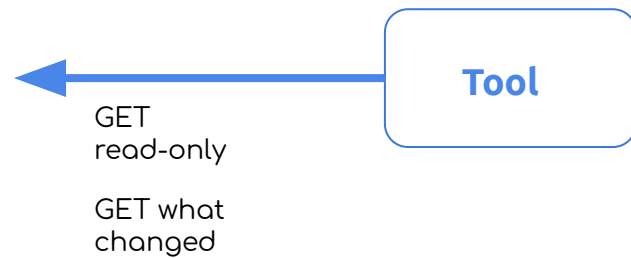
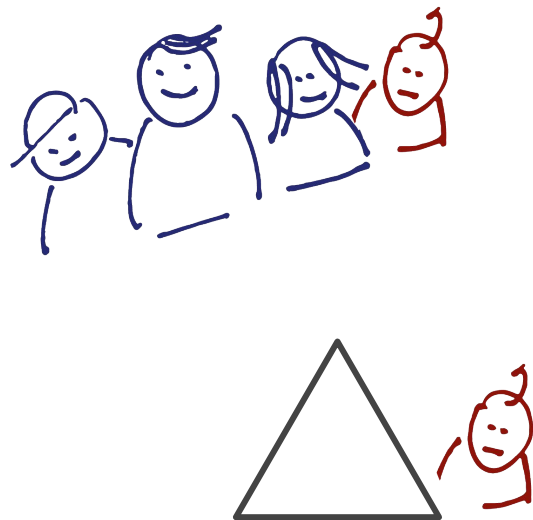
```
{  
  "https://purl.imsglobal.org/spec/lti-ag/claim/endpoint": {  
    "scope": [  
      "https://purl.imsglobal.org/spec/lti-ag/scope/lineitem",  
      "https://purl.imsglobal.org/spec/lti-ag/scope/result.readonly",  
      "https://purl.imsglobal.org/spec/lti-ag/scope/score"  
    ],  
    "lineitems": "https://www.myuniv.edu/2344/lineitems/",  
    "lineitem": "https://www.myuniv.edu/2344/lineitems/1234/lineitem"  
  }  
}
```

Names and

Roles

Service

NRS means discover users **before** they launch



NRS **endpoint** is in each LTI launch

```
"https://purl.imsglobal.org/spec/lti-nrps/claim/roleservice": {  
  "context_memberships_url": "https://www.myuniv.example.com/2344/memberships"  
}
```

lti advantage is **extensible**

submission review launch
context groups
resource link service
tool manifest
discovery, registration and activation
navigation launch

caliper integration
common cartridge

....