

AICC Deep Dive

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Agenda



What is AICC?



AICC Administration



Architecture and Flows



Links



Q & A

What is AICC?

What is a AICC?

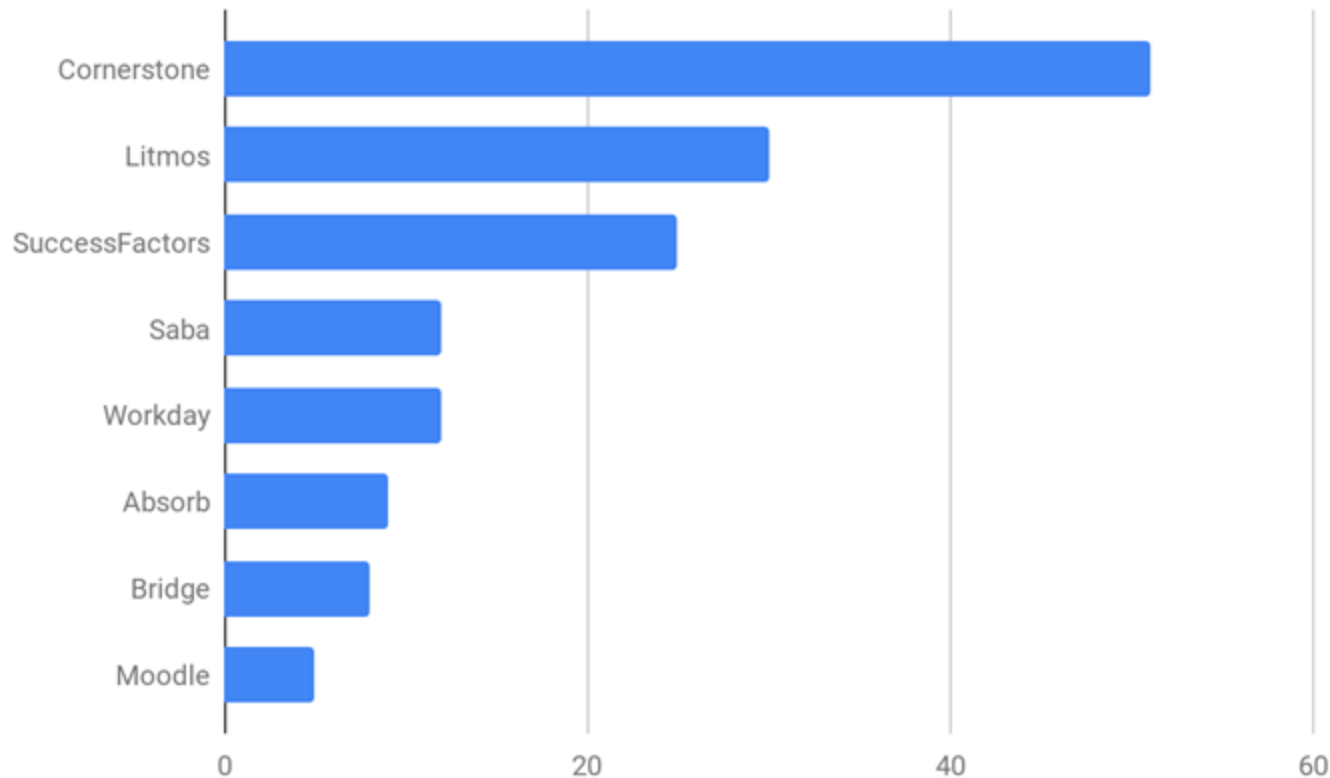


- AICC defines a packaging format for course metadata, communication for content launch, and an API for a course provider to report progress back to a Learning Management System.
- **Aviation Industry Computer-Based Training Committee (AICC)** existed from 1988 to 2014. It created popular learning technology specifications.
- Popular because of adoption by LMS companies and https support.
- Newer standards like CMI-5 and xAPI build on top of AICC. There are also alternatives like SCORM for packaging.
- LMSes may have their own proprietary APIs (SuccessFactors, Saba).
- Some LMSes support xAPI for reporting and call our APIs for content (CSOD).
- Lynda.com had AICC. It was heavily used, so it was the first LMS Integration for LIL.

Gratuitous somewhat relevant Dilbert



How many customers use AICC?



Based on a Hive query in prod of current customers' AICC settings.

There's also a long tail of LMS providers.

AICC Comparison



Feature	AICC	SuccessFactors OCN	xAPI	(LTI1.1)
Content Import	Manual .zip files	Automatic. We push content deltas to SuccessFactors	Can be used with AICC or others. CSOD uses /learningAssets.	Can be used with AICC or others.
Progress Reporting	Yes	No, Only Completion	Possibly. CMI-5 doesn't define.	Yes
Report progress for content watched outside of LMS	No	Yes	Yes	Not unless initially started in LMS
Report other activity	No	No	Yes	No

Other e-learning standards...

HOW STANDARDS PROLIFERATE:
(SEE: A/C CHARGERS, CHARACTER ENCODINGS, INSTANT MESSAGING, ETC)



AICC Administration



AICC Setup

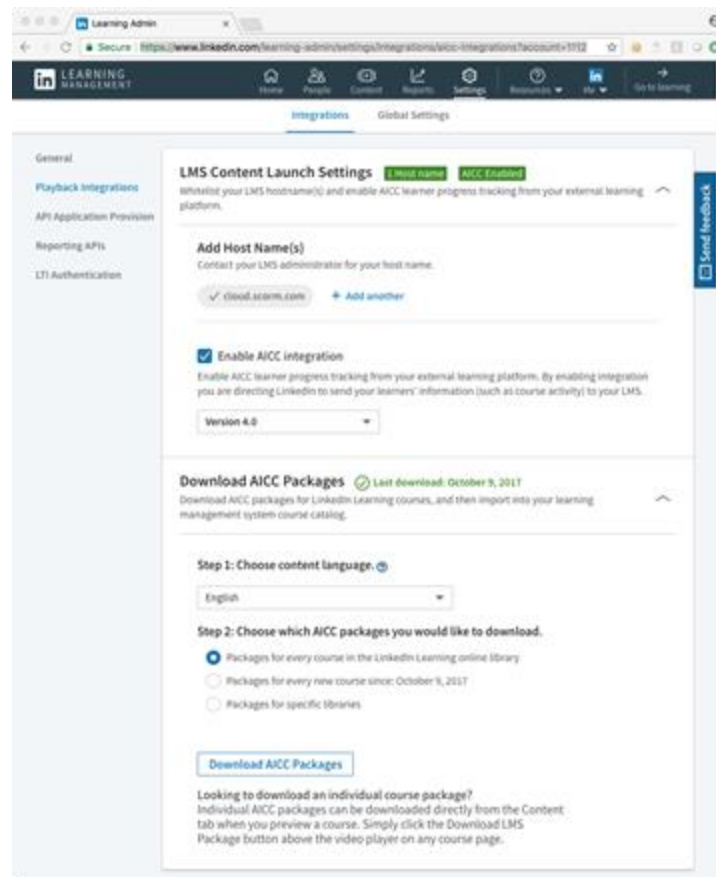
A Technical Consultant in Mike Maloco's team typically helps an account configure SSO and AICC.

Admin user configures AICC in Settings:

- Whether AICC is enabled
- Whitelist of LMS hostnames

Admin user can also download AICC packages here.

These courses are manually uploaded into the LMS, then possibly staged and assigned.

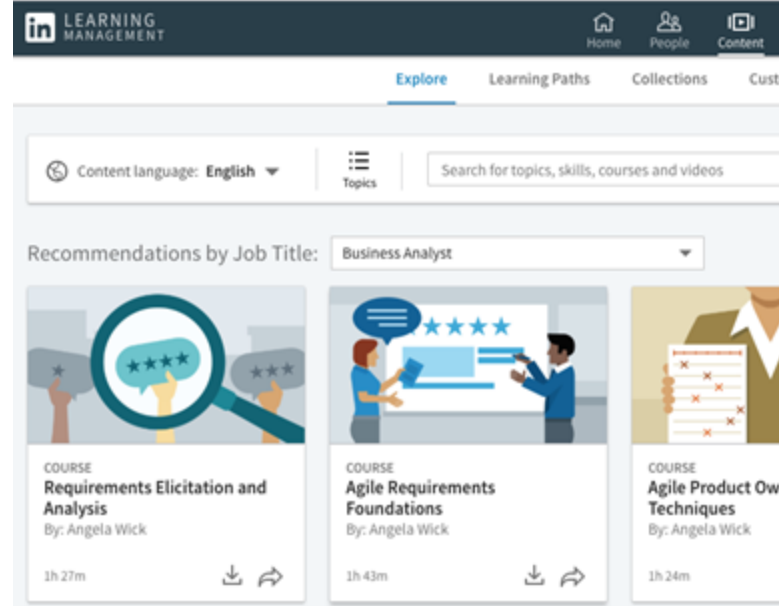


AICC Content Metadata Export

The Admin can also download an AICC package for a specific course.

An AICC package is a .zip containing 4 text files:

- .au -- Provides the launch link for the Assignable Unit
- .des -- describes the Assignable Unit's id, title, description
- .crs -- Provides course metadata (level, title, description, creator)
- .cst -- Describes Course Structure but N/A for our courses as we only give info on the course not the videos within it



<https://www.linkedin.com/learning/aicc?account=applInstanceUrn&content=contentUrn>

Architecture and Flows

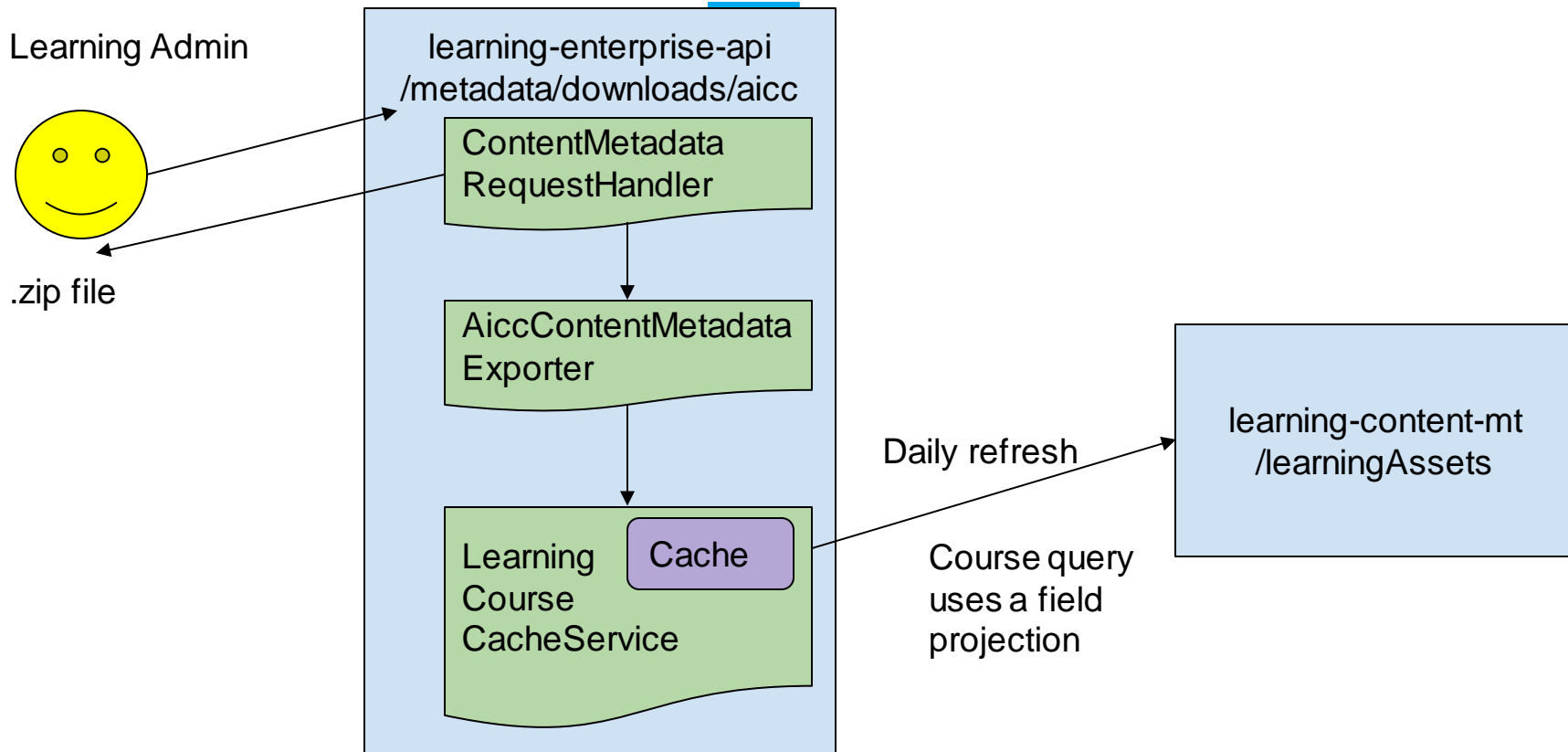


AICC Architecture Components

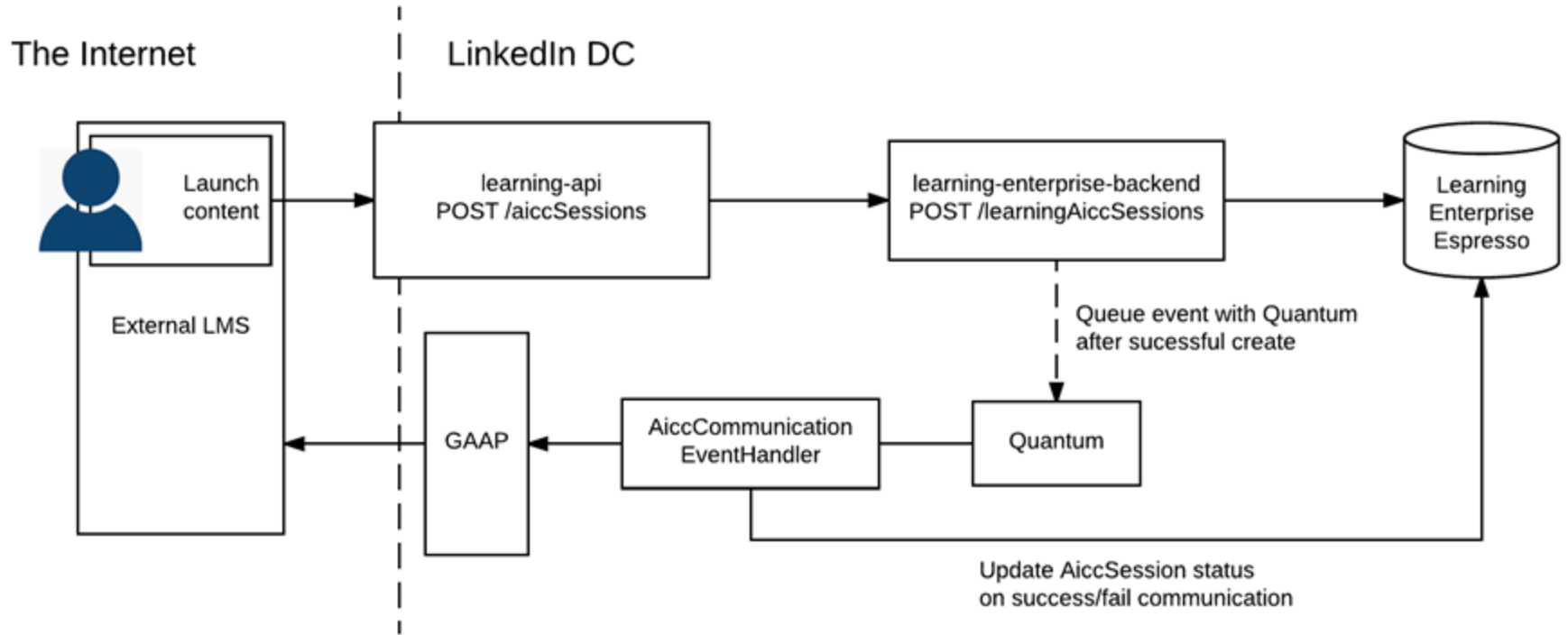


Component	Responsibility
learning-web	handling for /aicc routes and iframe support
learning-enterprise-web	aicc settings and aicc package export UI for Admins
learning-page-renderer	checks LMS domain against whitelist and sets CSP headers
learning-api	calls learning-enterprise-be to create AiccSession on launch
learning-enterprise-api	Aicc package export, course cache
learning-backend	sends kafka LearningContentCompleted on status updates
learning-enterprise-be	kafka/quantum event handling, AiccSession, AiccCommunication creation, invokes GAAP script
learningEnterprise-aicc	script in GAAP to communicate to the LMS

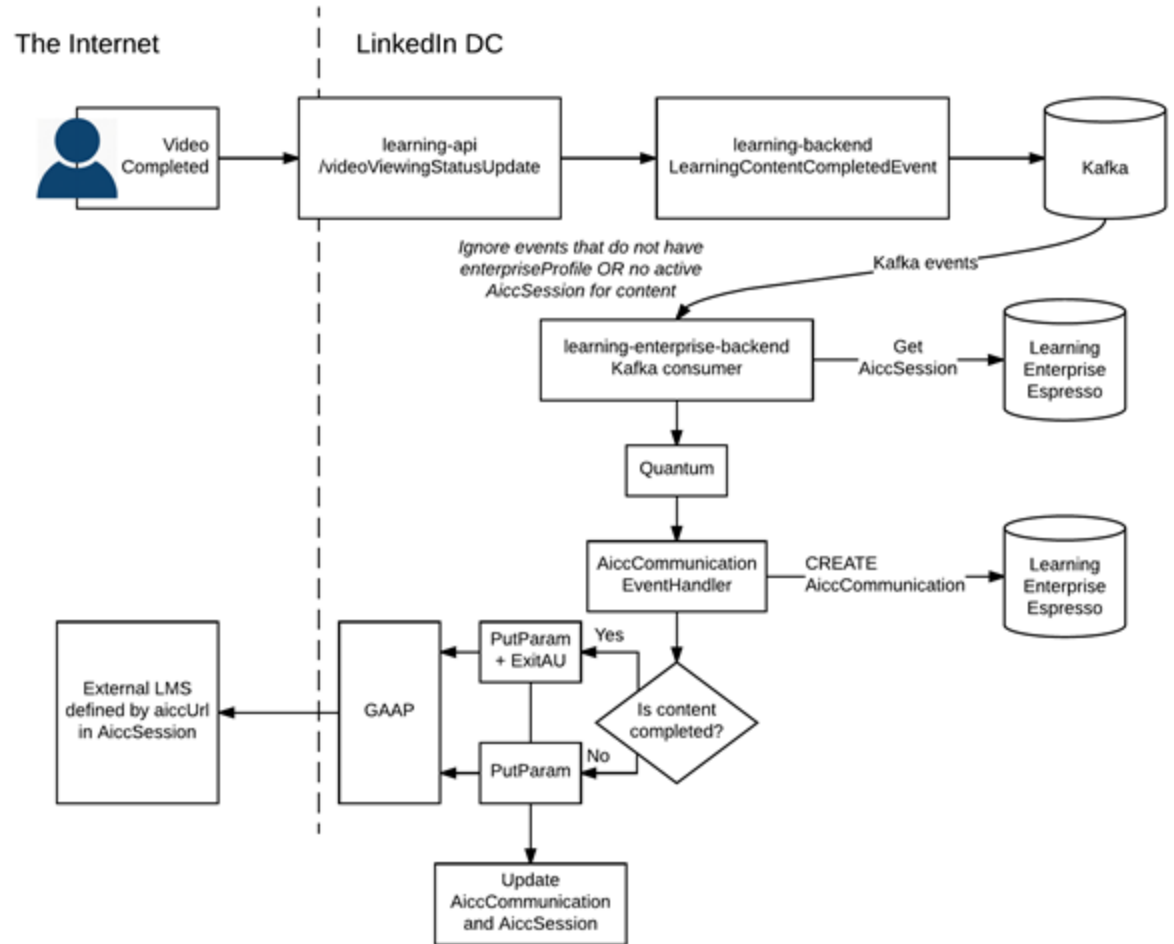
AICC Package Export Flow



AICC Launch Flow



AICC Progress Flow



Persistence



- Learning-enterprise-be stores AiccSession and AiccCommunciation information. Chimera is used to store these objects to LearningEnterpriseDB in Espresso.
- AiccSession maps the EnterpriseProfileUrn and ContentUrn to a document containing
 - AICC session status (not started, in progress, done, etc.)
 - Session ID
 - ExternalSessionURL to report back to
- AiccCommunication tracks each communication attempt related to an AiccSessionUrn.
 - The AICC command (GET_PARAM, PUT_PARAM, EXIT_AU)
 - AICC version
 - AICC Data related to the PUT_PARAM command (learner progress, etc.)

AICC GAAP Script



- “Gateway As a Platform” -- separate repo for groovy scripts using the Kumade DSL to specify how to make requests to external sites.
- Learning-enterprise-be calls GAAP and sends an input payload containing the data to send to the LMS.
- The script formats a request to the LMS, and formats the response to give to l-e-b.
- Normally GAAP uses a domain whitelist to restrict gaap scripts -- we use a wildcard *
- Script uses the HTTP-based AICC/CMI Protocol (HACP) protocol to send three types of messages:
 - GET_PARAM -- we started the content for the given aicc session
 - PUT_PARAM -- progress updates for the aicc session.
 - EXIT_AU -- terminate the aicc session (sent when content is completed)

Links



Additional Links



- See **go/aicc** for the original wiki by Wes
- See **go/test-aicc** for great runbook by Ashley on how to test AICC
- Can use cloud.scorm.com for dev/EI testing (we also have some demo CSOD, and Bridge accounts but contact Drew in Partner Eng)
- Gaap script ingraphs and deployment at: **go/aicc-gaap**
- No kibana for GAAP, but typically GAAP errors will get back to l-e-b and show up in **go/learning-kibana**
- AICC dashboard in kibana: **go/aicc-kibana**

Next Steps(?)



- Better alerting/monitoring for AICC errors
- Possibly separate gaap scripts for exit, put, get for better monitoring
- Live integration tests against sandboxes for big LMSes
- Some solution to fixing different tweaks for particular LMSes (no Lix support in GAAP)

Q & A

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