

Designing and Testing xAPI Profiles Using the xAPI Profile Server and DATASIM

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Topics For Today

- Profiles and their importance
- xAPI Profile Server
 - Improvements
 - Best practices
 - Working groups
 - Demonstration
- DATASIM
 - What is DATASIM?
 - Why is DATASIM important?
 - Demonstration

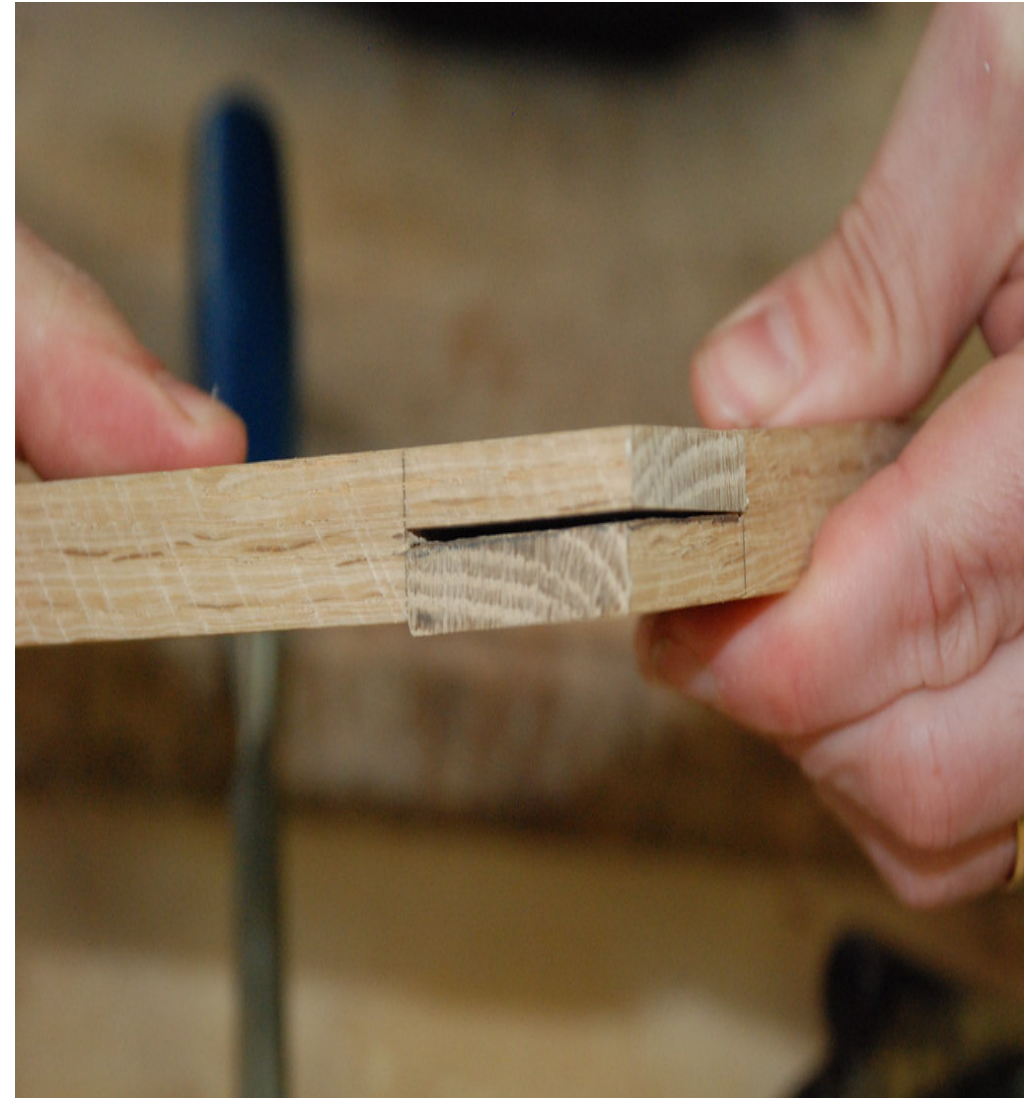
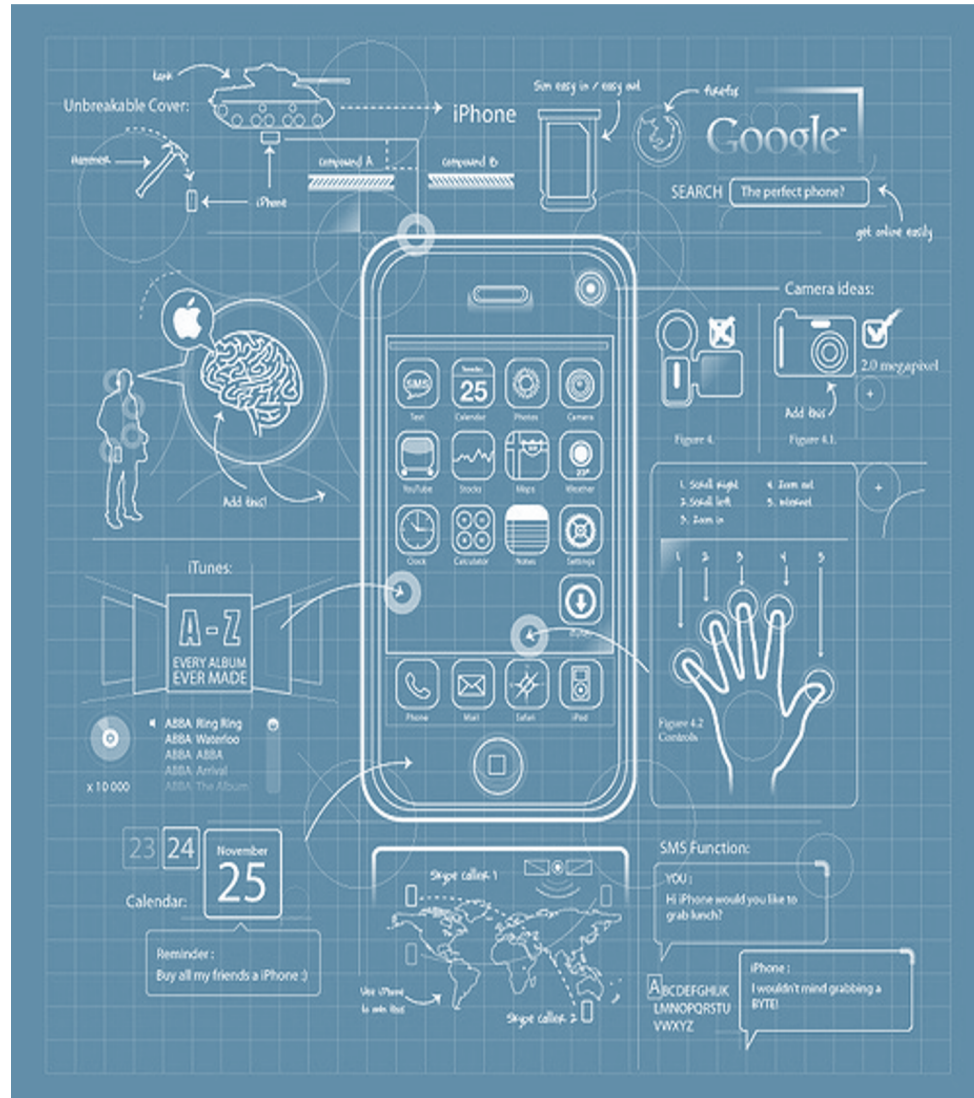
Un-Topics For Today

- Specific business processes around creating profiles
 - Why learning analytics are “stuck”
 - xAPI Profile Server background
 - Why use the Profile Server
 - Basic Profile Server demonstration
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- If you are interested in any of these topics, check out the previous Webinars from December 2020 and January 2021!

xAPI Output from Tools Varies Greatly

Authoring Solution	Started / Returned to Course	Completed Course with Test	Completed Course with no Test	Test Questions
Product A	Actor Launched [activity_id]	Actor Passed / Failed Course Name with score XX%	Actor Completed Course Name	Actor (in)correctly answered "question text" with response "answer"
Product B	Actor Launched [activity_id] Actor Attempted Course Name	Actor Passed / Failed Course Name with score XX%	Actor Passed / Failed Course Name	Actor (in)correctly answered "question text" with response "answer"
Product C	Actor Attempted Course Name Actor Launched (Activity ID URL)	Actor Passed / Failed (activity ID URL)	Actor Completed (activity ID URL)	None (feature coming soon)
Product D	Actor Attempted Course Name Actor Launched Course Name	Actor Passed / Failed with score XX%	Actor Completed the course.	Actor (in)correctly answered "question text" with response "answer"

The Solution is xAPI [Application] Profiles



xAPI Statement		Key
version: ##.#	required: mask_S0B601	##.# = Semantic
timestamp: mask_S0B601	ID: IRI	IRI = International Resource Identifier
authority	enum: enumerated data	enum = enumerated data
objectType: enum	enum: enumerated data	enum = enumerated data
account	enum: enumerated data	enum = enumerated data
homepage: URL	enum: enumerated data	enum = enumerated data
name: S	enum: enumerated data	enum = enumerated data
actor	enum: enumerated data	enum = enumerated data
name: S	enum: enumerated data	enum = enumerated data
objectType: enum	enum: enumerated data	enum = enumerated data
account	enum: enumerated data	enum = enumerated data
homepage: URL	enum: enumerated data	enum = enumerated data
name: S	enum: enumerated data	enum = enumerated data
verb	enum: enumerated data	enum = enumerated data
id: URL	enum: enumerated data	enum = enumerated data
display	enum: enumerated data	enum = enumerated data
en-US: S	enum: enumerated data	enum = enumerated data
object	enum: enumerated data	enum = enumerated data
id: URL	enum: enumerated data	enum = enumerated data
objectType: enum	enum: enumerated data	enum = enumerated data
definition	enum: enumerated data	enum = enumerated data
display	enum: enumerated data	enum = enumerated data
en-US: S	enum: enumerated data	enum = enumerated data
result	enum: enumerated data	enum = enumerated data
success: BOOL	enum: enumerated data	enum = enumerated data
completion: BOOL	enum: enumerated data	enum = enumerated data
response: S	enum: enumerated data	enum = enumerated data
duration: mask_S0B601	enum: enumerated data	enum = enumerated data
score	enum: enumerated data	enum = enumerated data
scaled: -1 - 1	enum: enumerated data	enum = enumerated data
min: - max	enum: enumerated data	enum = enumerated data
max: > min	enum: enumerated data	enum = enumerated data
raw: min - max	enum: enumerated data	enum = enumerated data
context	enum: enumerated data	enum = enumerated data
registration: UUID	enum: enumerated data	enum = enumerated data
instructor: Agent	enum: enumerated data	enum = enumerated data
team: Group	enum: enumerated data	enum = enumerated data
revision: S	enum: enumerated data	enum = enumerated data
platform: S	enum: enumerated data	enum = enumerated data
language: enum	enum: enumerated data	enum = enumerated data
statement: StatementReference	enum: enumerated data	enum = enumerated data
ContextActivities	enum: enumerated data	enum = enumerated data
parent	enum: enumerated data	enum = enumerated data
id: URL	enum: enumerated data	enum = enumerated data
objectType: enum	enum: enumerated data	enum = enumerated data
grouping	enum: enumerated data	enum = enumerated data
id: URL	enum: enumerated data	enum = enumerated data
category	enum: enumerated data	enum = enumerated data
id: URL	enum: enumerated data	enum = enumerated data
other	enum: enumerated data	enum = enumerated data
id: URL	enum: enumerated data	enum = enumerated data
objectType: object	enum: enumerated data	enum = enumerated data
definition	enum: enumerated data	enum = enumerated data
display	enum: enumerated data	enum = enumerated data
en-US: S	enum: enumerated data	enum = enumerated data
description	enum: enumerated data	enum = enumerated data
en-US: S	enum: enumerated data	enum = enumerated data

What xAPI actually is

What people think xAPI is



xAPI Profiles

The language and purpose of your project

xAPI Profile

@context: Internationalized Resource ID
id: Internationalized Resource ID
prefLabel: Profile Title
definition: Purpose of the Profile
versions: Version history
author: Authoring agent / Organization information

Concepts

type: Enumeration of concepts
id: Internationalized Resource ID
inScheme: Internationalized Resource ID
prefLabel: Title of concept
definition: Definition of concept

Templates

type: Enumeration of template types
id: Internationalized Resource ID
inScheme: Internationalized Resource ID
prefLabel: Name of template
definition: Definition of template
rules: Array of data to include and exclude

Patterns

type: Enumeration of pattern types
id: Internationalized Resource ID
inScheme: Internationalized Resource ID
prefLabel: Short description of the pattern
sequence: List of template IDs in the order they should appear

Profile Information

The *Who, What, When, and Why* of the xAPI Profile

Sentences

An array of possible statements, and the information they should hold

Tom learned about xAPI

Words

An array words and extensions that are unique to the profile

Learned

Paragraphs

An array of expected template flows

Tom inspected the poster. Then Tom learned about xAPI.

xAPI Profiles

- Separate from the xAPI specification
- Promote data interoperability
- Define the expected data

xAPI Profile Specification



IEEE 9274.2.1
Working Group

The
“blueprint”
for xAPI
Profiles

Project
Authorization
Request (PAR)
approved

Working
Group
formed

First the xAPI
Profile
specification,
then individual
profiles

Creating a Profile for the Total Learning Architecture

LMS Content Management (cmi5)

Competencies

Career States

Learning Activity Post Processing (Evidence)



xAPI Profile Server

- <https://profiles.usalearning.net/>
- Repository of public published xAPI Profiles
- Authoring and Validation tools

xAPI Profile Server Demonstration

Activities Firefox Web Browser Jul 6 11:00


ADL xAPI Profile Server localhost

xAPI Profile Server

Profiles Working Groups API Info Getting Started FAQs Sign in

xAPI profiles make learning design, development, and analytics better.

A profile is a collection of statement templates and patterns. Each xAPI statement will have a statement template to describe when it will be used and what data is required. Relationships between xAPI statements can be described with patterns



xAPI PROFILE GUIDELINES

- 1 DEFINE USE CASES**

First identify the specific requirements you're trying to satisfy with xAPI such as improving learning, human performance, or even business processes.
- 2 AUTHOR & REUSE**

The Profile Server has a built in search feature when adding new profiles. Always search on existing vocabulary concepts, profiles, and statement templates before defining your own.
- 3 PROTOTYPE & REFINE**

Create functional examples and send statements to an LRS. Query the LRS and visualize the data to help inform any changes or refinements to your profile.
- 4 PUBLISH & SHARE**

Publish new profiles based on the [Profile Spec](#). The profiles and vocabulary concepts are curated by the xAPI community and shared on this site for reuse.

I WANT
IT
NOW!



Credit: Warner Bros. &
Genius.com

What is DATASIM?

- **D**ata and **T**raining **A**nalytics **S**imulated **I**nput **M**odeler
- Tailorable xAPI data streams based on candidate specifications
- Generates realistic data without expensive exercises or interruptive training events
- Allows testing of tools, technologies, processes, and technical standards at scale
- Simulates various types of data for interoperability across the enterprise

Why DATASIM?

- Large, realistic, publicly available xAPI data sets are scarce
- Organizations need access to large data sets for testing and evaluation
- Reduces need for human subjects
 - Time
 - Money
 - Ethical concerns
 - Security and privacy for PII/PPI

Why DATASIM?

- Creating the data needed to test next-generation tools costs a lot of time and money
- Test data usually comes from one of three sources:
 - Generated from live sessions that do not approach the scale needed for real-world longitudinal testing
 - Generated by hand (very costly)
 - Generated as meaningless dummy data that does not resemble real human behavior

Using
DATASIM To
Test Your
Strategy
Profiles

xAPI Profiles

Can include multiple profiles

Will run validation against the xAPI
Profile Specification

Using
DATASIM To
Test Your
Strategy
Personae

The “Agents” of the simulation

Defined as an “Actor” is the xAPI

Broken in “Groups” for collective behavior

Using
DATASIM To
Test Your
Strategy
Alignments

Actor behavior

Augments patterns defined in Profile

Can affect single actor, or groups

Using
DATASIM To
Test Your
Strategy
Parameters

World State

Limit amount of statements

Includes seed for simulation replication

DATASIM Demonstration

DATASIM

Contribute on GitHub

Import from URL

Import File

Export File



Run

Profiles

Import from URL

Import File

Export File



<> CMIS PROFILE X

```
1 {
2   "@context": "https://w3id.org/xapi/profiles/context",
3   "id": "https://w3id.org/xapi/cmi5",
4   "type": "Profile",
5   "conformsTo": "https://w3id.org/xapi/profiles#1.0",
6   "prefLabel": {
7     "en": "cmi5 Profile"
8   },
9   "definition": {
10    "en": "This specification describes interoperable runtime communication between Learning Management Systems (LMS) and Assignable Units (AU).\n\nThe runtime communication and behavior of all parts of the system are carefully described in the full specification, which can be found at https://github.com/AICC/ONE-5_Spec_Current/blob/quartz/cmi5_spec.md . This is a structured representation of cmi5 concepts, statement structure, and statement communications patterns that the additional rules in the full specification build upon and provide the definitive interpretation of."
11  },
12  "seeAlso": "https://github.com/AICC/ONE-5_Spec_Current/blob/quartz/cmi5_spec.md",
13  "versions": [
14    {
15      "id": "https://w3id.org/xapi/cmi5/v1.0",
16      "generatedAtTime": "2017-03-27T12:30:00-07:00",
```

Personae

Import from URL

Import File

Export File



BASIC

<> ADVANCED

Name

trainees

Type

Group

Members

Member Name

Bob Fakename

Role (optional)

Lead Navalner

Alignments

Import from URL

Import File

Export File



BASIC

<> ADVANCED

Alignment Type

Agent

Agent

mbox::mailto:bobfake@example.org

Parameters

Import from URL

Import File

Export File



BASIC

<> ADVANCED

Start Date

2019-11-18T11:38:39.000Z

End Date



[DATASIM Backend Services](#)



[DATASIM UI](#)



Questions?

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