



1EdTech Standards Updates

2023年12月25日

一般社団法人日本1EdTech協会

藤原 茂雄

LTI Workgroup Meeting

#FallTechnicalMeeting Nov 23



New LTI Services are coming...

<p>Dynamic Registration 1.0</p> <p>Public Candidate Final</p>	<p>Submission Review 1.0</p> <p>Public Candidate Final</p>	<p>Proctoring Service 1.0</p> <p>Public Candidate Final</p>	<p>Course Group Service 1.0</p> <p>Public Candidate Final</p>	<p>Caliper Analytics Connector 1.0</p> <p>Member Candidate Final</p>	<p>Course Nav Launch</p> <p>Draft</p>
<p>Data Privacy Launch 1.0</p> <p>Draft</p>	<p>Asset Processor</p> <p>Draft</p>	<p>Activity Item Profile</p> <p>Draft</p>	<p>Deep Linking Service</p> <p>Draft</p>	<p>Browser Messages + Storage</p> <p>Draft</p>	<p>LTI Platform Messages</p> <p>Draft</p>

Rubric Service

Dynamic Registration

Status: Public Candidate Final

A workflow that simplifies the LTI configuration process by automating the exchange of registration information between the tool and platform.

Adoption: Brightspace, Blackboard, Atomic Jolt, Turnitin (WIP), Moodle, Sakai, Canvas (wip), Cengage, ChemVantage.

Confirm use cases*

Dynamic
Registration 1.0

Public Candidate Final





Submission Review

Status: Public Candidate Final

Creates a direct link from a grade in a platform to the submission within the tool to complete evaluation and/or display provided feedback.

Adoption: Moodle, Cengage, Turnitin, Brightspace, 42lines, blackboard (WIP), eLearning (WIP),



Submission Review

Public Candidate Final



Proctoring Service

Status: Public Candidate Final

A workflow that allows a proctoring tool to trigger the start of proctoring, starting an assessment, and ending the assessment within a platform.


Adoption: Blackboard,

Might not meet the need* Needs More Work

Proctoring Service

Public Candidate Final





Course Group Service (A.K.A. Context Group Service)

Status: Public Candidate Final

Lets a platform tell tools about user groups created manually, outside of course enrollment.

Adoption: Blackboard, Turnitin, Moodle (WIP),



Course Group
Service

Public Candidate Final





Caliper Connector Service

Status: Member Candidate Final

Lets a platform tell a group of tools where they can all send their Caliper analytics data related to a user's activity within a course.

Plan to Adopt: Atomic Jolt (WIP), Blackboard (WIP)

Caliper Connector
Service

Member Candidate Final



Course Nav Launch

Status: Draft

Shows a link that is part of the Course level navigation. For example the link could be to show a tool's analytic dashboard.

Plan to Adopt: Moodle (WIP), TurnItin

Developed by: UCLA, Cengage

Course Nav Launch

Draft





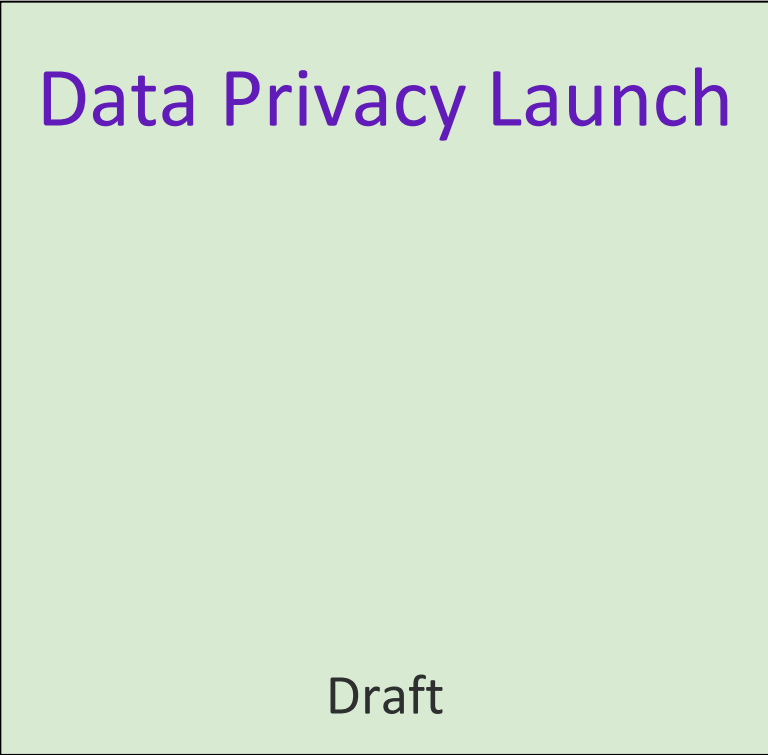
Data Privacy Launch

Status: Draft

Lets a platform open a tool UI for privacy-related workflows for a specified user.

Plan to Adopt: Sakai (WIP), 3input (WIP),

Developed by:



Data Privacy Launch

Draft



Asset Processor

Status: Draft

Lets a tool provide a processor that will take a platform submission and return a report (for example, doing an originality assessment of a submitted assignment).

Plan to Adopt: Turnitin, Moodle, Blackboard, Brightspace, carnegie learning

Developed by: Turnitin, Blackboard, Moodle, D2L

Asset Processor

Draft



Activity Item Profile

Status: Draft

Describes several enhancements to existing LTI services and messages to let a tool contribute a part of a platform-hosted activity (for example, a quiz question for a quiz).

Plan to Adopt: Brightspace, h5P

Developing: Brightspace

Activity Item Profile

Draft



Deep Linking (REST API) Service

Status: Draft

Gives tools a way to manage their links within a platform's course (create them, update them, delete them, etc).

Plan to Adopt: Cengage, Moodle, Atomic Jolt (WIP),

Developed by: Cengage

Deep Linking Service

Draft



Browser Messages + Storage (Cookie Solution)

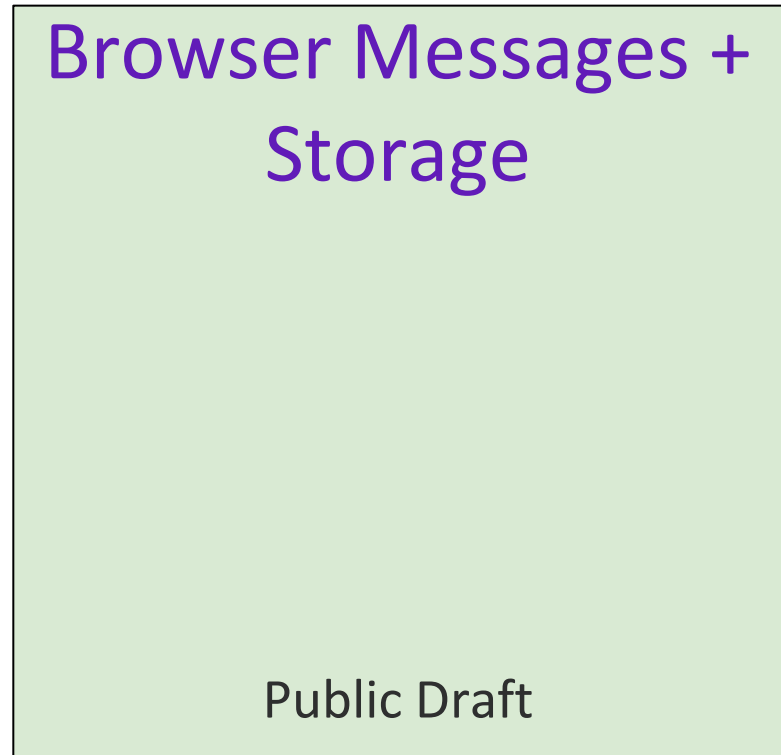
Status: Draft

Lets a tool and a platform exchange data with one another, purely within the user's browser, allowing for tool data to be persisted in the browser, even without access to cookies.

Let's a tool embed directly in a platform UI without needing to rely on web-browser cookies.

Plan to Adopt: Turnitin, Blackboard, Brightspace, Canvas, unicon, atomic jolt

Developed by: everybody!



LTI Platform Messages

Status: Draft

Lets a platform give tools a list of events for a course and subscribe to be notified when those events happen.

Plan to Adopt: (same as asset processor)

Drafted by: Brightspace, Turnitin





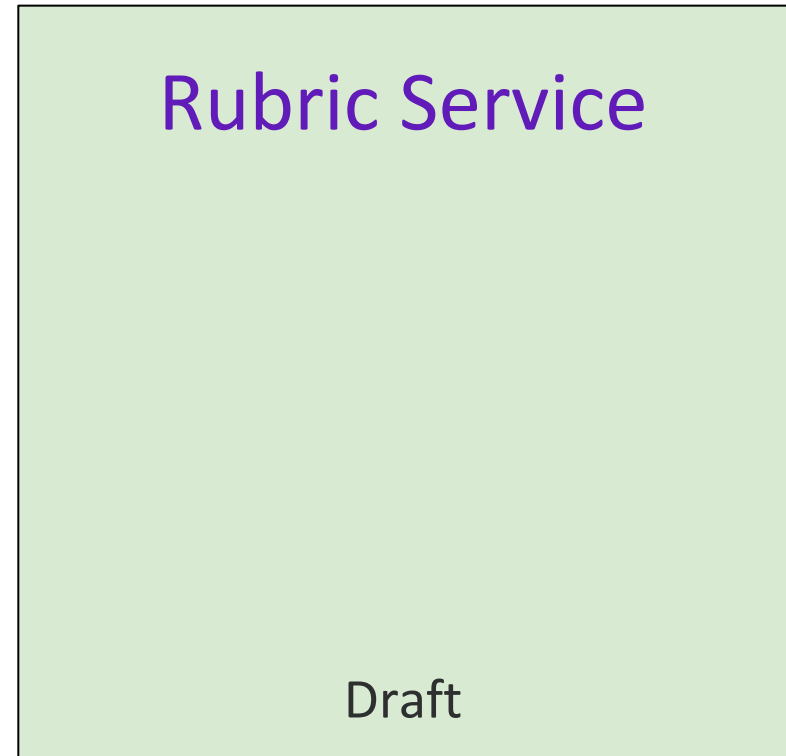
Rubric Service

Status: Draft

Lets a tool request and receive a copy of a Rubric from the Platform.

Plan to Adopt: Blackboard, Carnegie Learning (interested)

Developed by: 42lines, blackboard



Anonymous OneRoster

Safeguarding Student Data While Maintaining
Interoperability

Anonymous OneRoster & the 1EdTech Privacy Framework

Enabling student data protection
while maintaining interoperability

Topics

- Describing the problem
- Privacy Framework Overview
- Annotated OneRoster 1.2
- Applying the Framework to the OneRoster 1.2 Standard

Terminology

- ❖ Personal Data (PD)
 - As defined in GDPR Principles document
- ❖ Personally Identifiable Information (PII)
 - As defined in NIST-800-122

1EdTech consider PD equivalent to PII



1. There is a pressing market need for data minimization or anonymization to protect student data
2. Currently there is no machine readable to identify Privacy Sensitive data in a 1EdTech Specification
3. For 1EdTech specifications there are no agreed interoperable ways enable data anonymization or minimization

Why Now?

1EdTech Specification Suite

- [Accessibility / Access for All \(AfA\)](#)
- [Accessible Portable Item Protocol](#)
- [Caliper Analytics](#)
- [Competency Definitions](#)
- [Content Packaging](#)
- [Common Cartridge / Thin Common Cartridge](#)
- [Competencies & Academic Standards Exchange](#)
- [Comprehensive Learner Record](#)
- [Course Planning & Scheduling](#)
- [Digital Repositories](#)
- [Enterprise](#)
- [Enterprise Services](#)
- [ePortfolio](#)
- [General Web Services](#)
- [Interactive WhiteBoard/ Common File Format](#)

- [Learner Information](#)
- [Learning Design](#)
- [Learning Information Services](#)
- [Learning Object Discovery and Exchange](#)
- [Learning Tools Interoperability](#)
- [LTI Resource Search](#)
- [Meta-data](#)
- [OneRoster](#)
- [Open Badges](#)
- [Question and Test Interoperability](#)
- [Resource List Interoperability](#)
- [Shareable State Persistence](#)
- [Simple Sequencing](#)
- [Tools Interoperability](#)
- [Vocabulary Definition Exchange](#)

A wide range of specifications/versions published since 1999 (more than 100).

Many of the specifications exchange data that can have significant Privacy implications.



Solution Overview

2 pronged solution involves development of a 'Privacy Framework' and annotations of individual specifications

Specifications

- ❖ Specification data models are annotated at the attribute level with a 'privacy' annotation
- ❖ Specification service models are annotated with a 'confidentiality' level that describes the sensitivity of the combination of data

Framework:

- ❖ 1EdTech privacy framework defines patterns for specifications to make use of new features.



Privacy Annotation

Annotating the individual attributes with privacy sensitivity classification

- ❖ Accessibility
- ❖ Analytics
- ❖ Container
- ❖ Credentials
- ❖ CredentialsIdRef
- ❖ Demographics
- ❖ Extensions
- ❖ Financial
- ❖ Identifier
- ❖ IdentifierIdRef
- ❖ Insurance/Assurance
- ❖ Legal
- ❖ Medical/Healthcare
- ❖ N/A
- ❖ Other
- ❖ Personal
- ❖ Qualification/Certification
- ❖ SourcedId
- ❖ SourcedIdRef



Privacy Annotation in the Information Model

Annotating the individual attributes with privacy sensitivity classification

« Unordered »
Demographics
« Attributes »
[P] - sourcedId : SourcedId [1]
- status : BaseStatusEnum [1]
- dateLastModified : DateTime [1]
[P] - birthDate : Date [0..1]
[P] - sex : GenderEnumExt [0..1]
[P] - americanIndianOrAlaskaNative : TrueFalseEnum [0..1]
[P] - asian : TrueFalseEnum [0..1]
[P] - blackOrAfricanAmerican : TrueFalseEnum [0..1]
[P] - nativeHawaiianOrOtherPacificIslander : TrueFalseEnum [0..1]
[P] - white : TrueFalseEnum [0..1]
[P] - demographicRaceTwoOrMoreRaces : TrueFalseEnum [0..1]
[P] - hispanicOrLatinoEthnicity : TrueFalseEnum [0..1]
[P] - countryOfBirthCode : NormalizedString [0..1]
[P] - stateOfBirthAbbreviation : NormalizedString [0..1]
[P] - cityOfBirth : NormalizedString [0..1]
[P] - publicSchoolResidenceStatus : NormalizedString [0..1]
[P] - metadata : MetadataGeneral [0..1]

Attribute	Multiplicity	Data-type	Privacy Implication	Description
sourcedId	[1..1]	DT: SourcedId (PT: String)	SourcedId	This is the interoperability unique identifier, the sourcedId assigned to the user (for whom the interoperability information is supplied). This MUST not contain personally identifiable information.
status	[1..1]	Enumeration: BaseStatusEnum	N/A	N/A
dateLastModified	[1..1]	PT: DateTime	N/A	N/A
birthDate	[0..1]	PT: Date	Demographics	Date of birth information.
sex	[0..1]	Union: GenderEnumExt	Demographi	The privacy implications for the Demographics class ; the user. The value-space is an extensible enumerated vocabulary.
americanIndianOrAlaskaNative	[0..1]	Enumeration: TrueFalseEnum	Demographics	Ethnicity information.
asian	[0..1]	Enumeration: TrueFalseEnum	Demographics	Ethnicity information.
blackOrAfricanAmerican	[0..1]	Enumeration: TrueFalseEnum	Demographics	Ethnicity information.
nativeHawaiianOrOtherPacificIslander	[0..1]	Enumeration: TrueFalseEnum	Demographics	Ethnicity information.
white	[0..1]	Enumeration: TrueFalseEnum	Demographics	Ethnicity information.
demographicRaceTwoOrMoreRaces	[0..1]	Enumeration: TrueFalseEnum	Demographics	Ethnicity information.
hispanicOrLatinoEthnicity	[0..1]	Enumeration: TrueFalseEnum	Demographics	Ethnicity information.
countryOfBirthCode	[0..1]	PT: NormalizedString	Demographics	Place of birth information.
stateOfBirthAbbreviation	[0..1]	PT: NormalizedString	Demographics	Place of birth information.
cityOfBirth	[0..1]	PT: NormalizedString	Demographics	Place of birth information.
publicSchoolResidenceStatus	[0..1]	PT: NormalizedString	Demographics	Residency-related information.
metadata	[0..1]	Container: MetadataGeneral	Extension	This container supports proprietary extensions which MAY contain privacy or privacy-related information.

Binding for REST Endpoints

Classification of the Payloads for the Request/Response Messages

Service Call	HTTP Verb	Request Message		Response Message	
		Parameters	Classification	Parameters	Classification
getAllDemographics	GET	None.	"unrestricted"	• demographics : DemographicsSet	"veryrestricted"
getAllEnrollments	GET	None.	"unrestricted"	• enrollments : EnrollmentSet	"normal"
getAllGradingPeriods	GET	None.	"unrestricted"	• academicSessions : AcademicSessionSet	"unrestricted"
getAllOrgs	GET	None.	"unrestricted"	• orgs : OrgSet	"unrestricted"
getAllSchools	GET	None.	"unrestricted"	• orgs : OrgSet	"unrestricted"
getAllStudents	GET	None.	"unrestricted"	• users : UserSet	"restricted"
getAllTeachers	GET	None.	"unrestricted"	• users : UserSet	"restricted"
getAllTerms	GET	None.	"unrestricted"	• academicSessions : AcademicSessionSet	"unrestricted"
getAllUsers	GET	None.	"unrestricted"	• users : UserSet	"restricted"



Binding level mapping

DemographicsDType	Privacy Attribute Set:	<ul style="list-style-type: none"> • "sourcedId" • "birthDate" • "sex" • "americanIndianOrAlaskaNative" • "asian" • "blackOrAfricanAmerican" • "nativeHawaiianOrOtherPacificIslander" • "white" • "demographicRaceTwoOrMoreRaces" • "hispanicOrLatinoEthnicity" • "countryOfBirthCode" • "stateOfBirthAbbreviation" • "cityOfBirth" • "publicSchoolResidenceStatus" • "metadata"
	Confidentiality Classification:	veryrestrictive <small>The Set of Data Model Confidentiality Classifications</small>
	Attributes (Confidentiality-Normal):	<ul style="list-style-type: none"> • "sourcedId"
	Attributes (Confidentiality-Restricted):	None
	Attributes (Confidentiality-VeryRestricted):	<ul style="list-style-type: none"> • "birthDate" • "sex" • "americanIndianOrAlaskaNative" • "asian" • "blackOrAfricanAmerican" • "nativeHawaiianOrOtherPacificIslander" • "white" • "demographicRaceTwoOrMoreRaces" • "hispanicOrLatinoEthnicity" • "countryOfBirthCode" • "stateOfBirthAbbreviation" • "cityOfBirth" • "publicSchoolResidenceStatus"



Confidentiality Classification

Drawing inspiration from the work done by HL7 in the Healthcare field

<https://fhir-ru.github.io/v3/ConfidentialityClassification/vs.html>

- ❖ “unrestricted” – default no privacy sensitivity
- ❖ “low”
- ❖ “moderate”
- ❖ “normal” – default for privacy sensitive
- ❖ “restricted”
- ❖ “very restricted”

Indicated recommended initial adoption for 1EdTech Specs



OpenAPI Extension on Components

Providing a machine readable form of the confidentiality classification of the payload for data class

Privacy and Confidentiality	<p>Privacy Annotations</p> <ul style="list-style-type: none">• "x-1edtech-privacy" : ["sourcedId","birthDate","sex","americanIndianOrAlaskaNative","asian","blackOrAfricanAmerican","nativeHawaiianOrOtherPacificIslander","white","demogra <p>Confidentiality Classification</p> <ul style="list-style-type: none">• "x-1edtech-confidentiality" : "veryrestricted" <p>Confidentiality Assignments</p> <ul style="list-style-type: none">• "x-1edtech-confidentiality-normal" : ["sourcedId"]• "x-1edtech-confidentiality-veryrestricted" : ["birthDate","sex","americanIndianOrAlaskaNative","asian","blackOrAfricanAmerican","nativeHawaiianOrOtherPacificIslander","white",
------------------------------------	--

```
},  
  "required" : [ "sourcedId","status","dateLastModified" ],  
  "x-1edtech-privacy" : [ "sourcedId","birthDate","sex","americanIndianOrAlaskaNative","asian","blackOrAfricanAmerican","nativeHawaiianOrOtherPacificIslander","white","de  
  "x-1edtech-confidentiality" : "veryrestricted",  
  "x-1edtech-confidentiality-normal" : [ "sourcedId" ],  
  "x-1edtech-confidentiality-veryrestricted" : [ "birthDate","sex","americanIndianOrAlaskaNative","asian","blackOrAfricanAmerican","nativeHawaiianOrOtherPacificIslander",  
  "additionalProperties" : false
```



Privacy Realization Mechanisms

The privacy framework will define various scenarios for specifications to adopt

- ❖ Data Exchange Scenarios
 - Default (DEF) – no privacy sensitive data in the date-set
 - Minimization (MIN) – must send minimized data set
 - Exposure (EXP) – may send all information
- ❖ Use of OAuth 2 'scopes



Service Provider Support for the Privacy Framework

Service Provider Realization of the Privacy Framework

- ❖ Support for the appropriate OAuth 2 'scopes'
- ❖ Open Issue: Support PII/PD Query Parameters
- ❖ Control the data in the JSON payloads
 - Do not send sensitive data
 - Obfuscate the sensitive data
 - Anonymize/pseudo-anonymize the sensitive data



Consumer Perspective on Supporting the Framework

Consumer Realization of the Privacy Framework

- ❖ Support for the appropriate OAuth 2 'scopes'
- ❖ Open Issue: Support PII/PD Query Parameters
- ❖ Consumer has little control/influence over data received
- ❖ Control the write data in the JSON payloads
 - Do not send sensitive data
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Consumer Perspective on Supporting the Framework

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Documentation Set

The Documents for Review

- ❖ 1EdTech Privacy Framework 1.0 Candidate Final
- ❖ Revised 1EdTech OneRoster documentation (DRAFTS)
 - OneRoster 1.2 Rostering Service 2.0
 - OneRoster 1.2 Rostering Service REST/JSON Binding 2.0
 - OneRoster 1.2 Rostering OpenAPI (JSON/YAML) 2.0



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1EdTech Privacy Framework



Candidate Final Spec Version 1.0

Document Version:	1.0
Date Issued:	June 1st, 2023
Status:	This document is for review and adoption by the 1EdTech membership.
This version:	https://www.imsglobal.org/spec/privacyframework/v1p0/main/
Latest version:	https://www.imsglobal.org/spec/privacyframework/latest/main/
Errata:	https://www.imsglobal.org/spec/privacyframework/v1p0/errata/

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Next Steps

Progressing the Candidate Final Document to Final Release

- ❖ Final Release development under the responsibility of the OneRoster Working Group
- ❖ Completion of the OpenAPI realization
- ❖ Security & Privacy Committee will also be involved and become responsible once Final Release published



Privacy/Confidentiality Mapping

How to map from the privacy annotations to the Class/Payload confidentiality classification

Confidentiality	Privacy Annotation
“unrestricted”	No annotations.
“normal”	Identifier, IdentifierIdRef, Personal, Qualification/Certification, SourcedId, SourcedIdRef, Extension*
“restricted”	Analytics, Credentials, CredentialsIdRef, Insurance/Assurance
“veryrestricted”	Accessibility, Demographics, Medial. Healthcare, Financial, Legal



Privacy Framework / Anonymized OneRoster

Colin Smythe / Joshua McGhee

Design Goals

- Increased need to control the exchange of privacy-sensitive data
- Need to establish a common set of patterns for the identification of privacy-sensitive information in our specifications
- The patterns includes describing the types of privacy sensitivity in the machine readable artifacts created as part of the specification development process

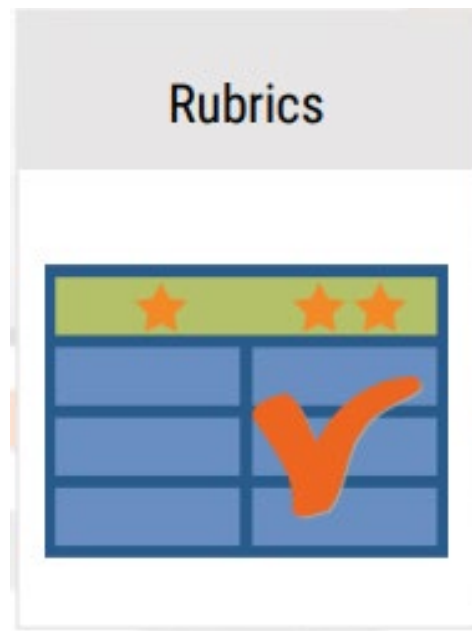
Status

- Prototyped a solution using the OneRoster 1.2 Rostering Service
- Solution can be retrospectively applied to specifications WITHOUT need to reversion the specification
- Worked now undertaken in the OneRoster Working Group
- Currently creating the Privacy Framework Candidate Final documents.



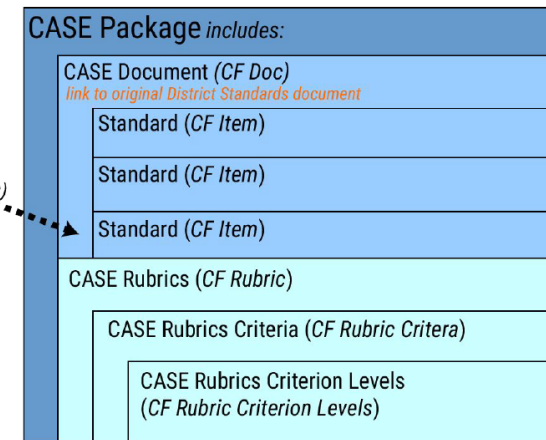
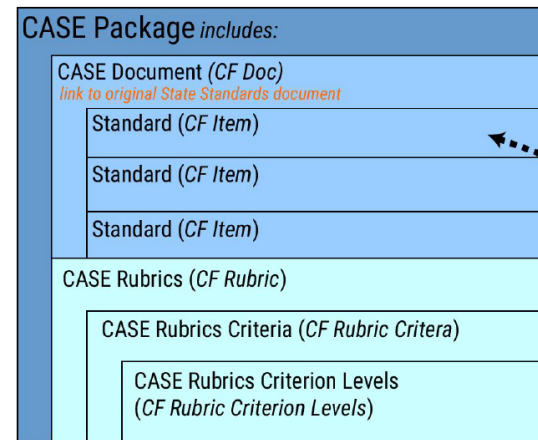
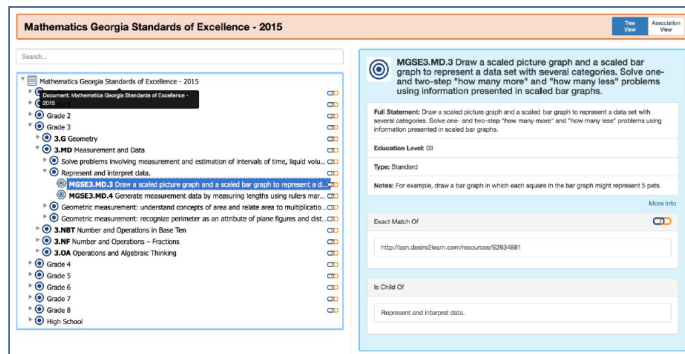
CASE、Common Cartridge

- システム間での学習・教育に関わる能力（Competency）の交換、ルーブリック、学習基準の記述に使用する技術標準。
- PDF等の文書で記載されていたカリキュラムや学修コース、ルーブリックの構成要素を記述するための、標準化したデータモデルと書式を定義している。



From Static PDF Format

To Dynamic Database Driven Format



Associations (CF Associations)

PDF文書を構造化したデータベースに変換し、APIでシステム・アプリケーションからの参照・検索を可能にする

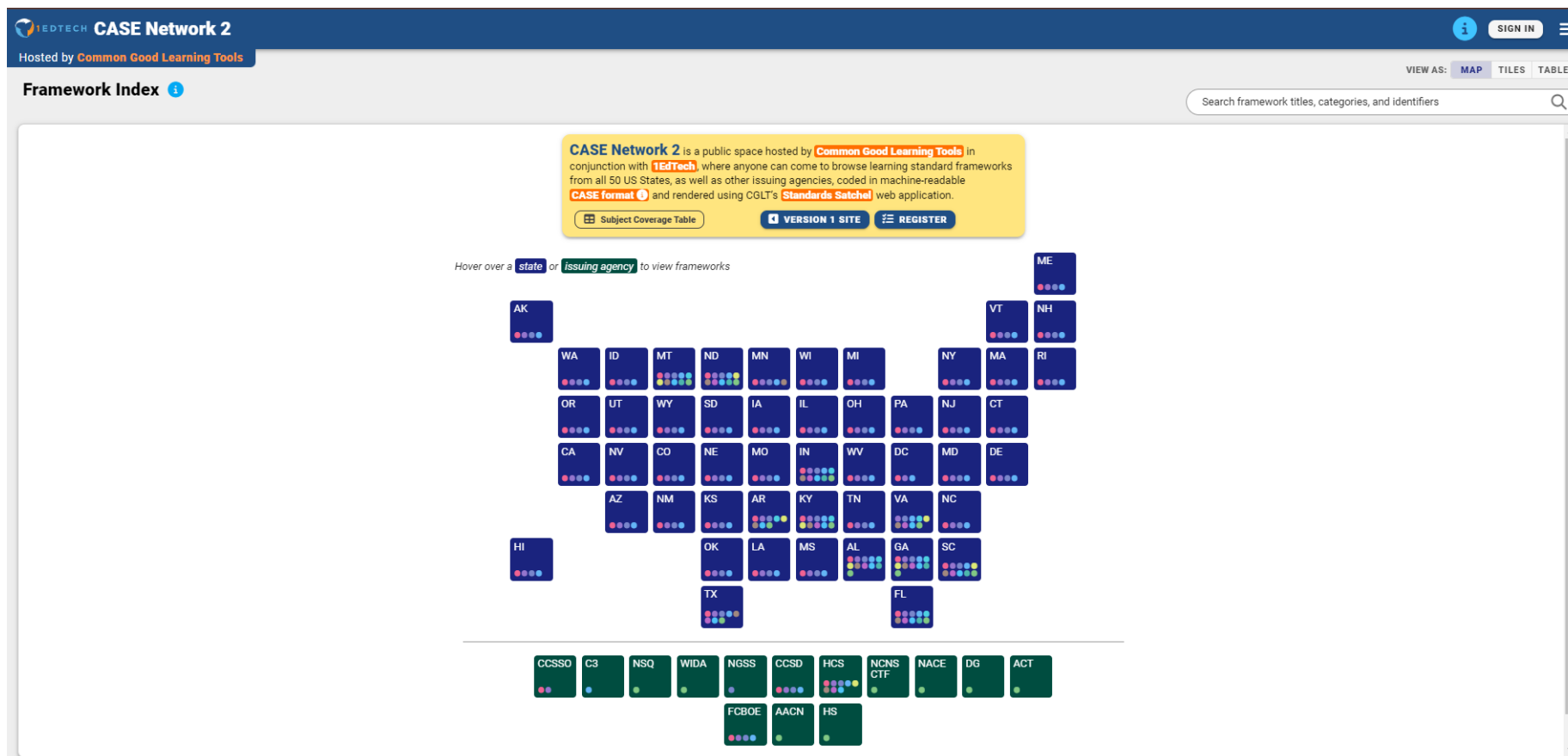
構成要素間の関係を定義できる。

- A is Child of B (AはBの子要素である)
- A is Part of B (AはBの一部である)
- A is Peer of B (AはBと同格である)
- A is Related to B (AはBに関連する)
- A Precedes B (「時間または順序的に」AはBより前にある)
- A is Replaced by B (AはBに置き換えられる)

CASE Network 2 (New)

学校やディストリクトがCASEによって記述された学習到達基準を公開。
自由に参照できる。

<https://casenetwork.1edtech.org/>



CASE Network 2 is a public space hosted by **Common Good Learning Tools** in conjunction with **1EdTech**, where anyone can come to browse learning standard frameworks from all 50 US States, as well as other issuing agencies, coded in machine-readable **CASE format** and rendered using CGLT's **Standards Satchel** web application.

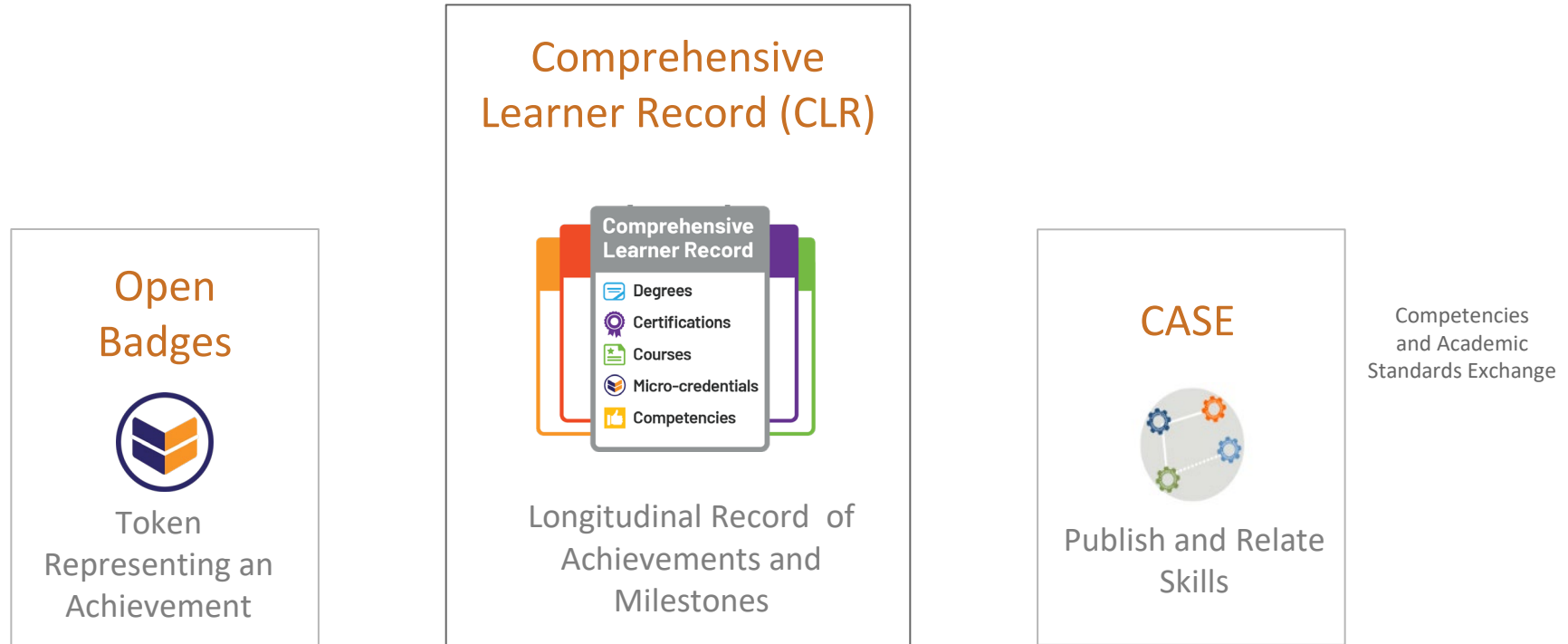
Subject Coverage Table VERSION 1 SITE REGISTER

Hover over a **state** or **issuing agency** to view frameworks

ME, NH, VT, RI, MA, NY, MI, WI, MN, ND, MT, ID, WA, AK, CT, NJ, PA, OH, IL, IA, SD, WY, UT, OR, CA, NV, CO, NE, MO, IN, WV, DC, MD, DE, AZ, NM, KS, AR, KY, TN, VA, NC, HI, OK, LA, MS, AL, GA, SC, TX, FL

CCSSO, C3, NSQ, WIDA, NGSS, CCSD, HCS, NCNS CTF, NACE, DG, ACT, FCBOE, AACN, HS

Foundations for Digital Credentials and Pathways



IMS Open Standards Enable an Interoperable Ecosystem



- 1EdTech Candidate Final
- New
 - Addition of new resource type: 'Open Video' for open video files.
 - Addition of new resource type: 'QTI 3.0' for QTI 3.0 zip files. This does not change the native support for QTI 1.2 assessments and question banks; it allows additional zip files to be included.
 - Added support for CASE links in the Curriculum Standards Metadata (CSM) specification.
 - Added ability to specify a Line Item associated with an LTI Link.
- K-12 Profile
 - Version 1.4 of both Common Cartridge and Thin Common Cartridge support a K-12 Profile, which requires additional metadata deemed necessary to support 21st Century learning models for K-12 students, such as mastery-based, individualized, differentiated or personalized instruction. The profile supports additional meta-tagging requirements (both required and optional) that address the need to access multiple and varied instructional resources for each lesson or topic from within a Learning Object Repository or a Learning Management System.

