

Creating and Cross-Walking Competencies Using Case and OpenSALT

Mr. Joshua Marks
Public Consulting Group



Creating and Crosswalking Competencies Using CASE and OpenSALT

Leveraging IMS Global CASE and OpenSALT to solve significant challenges in developing meaningful pathways and portfolios

Joshua Marks

Sr. Advisor and Solutions Architect

IMS GLobal CASE Co-chair

PCG | *Education*



Agenda

1. Introduction
2. What is IMS Global CASE?
3. What is OpenSALT?
4. What is a “Crosswalk” and why should you care?
5. Using OpenSALT and CASE to create a crosswalk between two similar frameworks
6. Developing competency pathways



Introductions



Joshua Marks
Solution Architect
Sr. Advisor

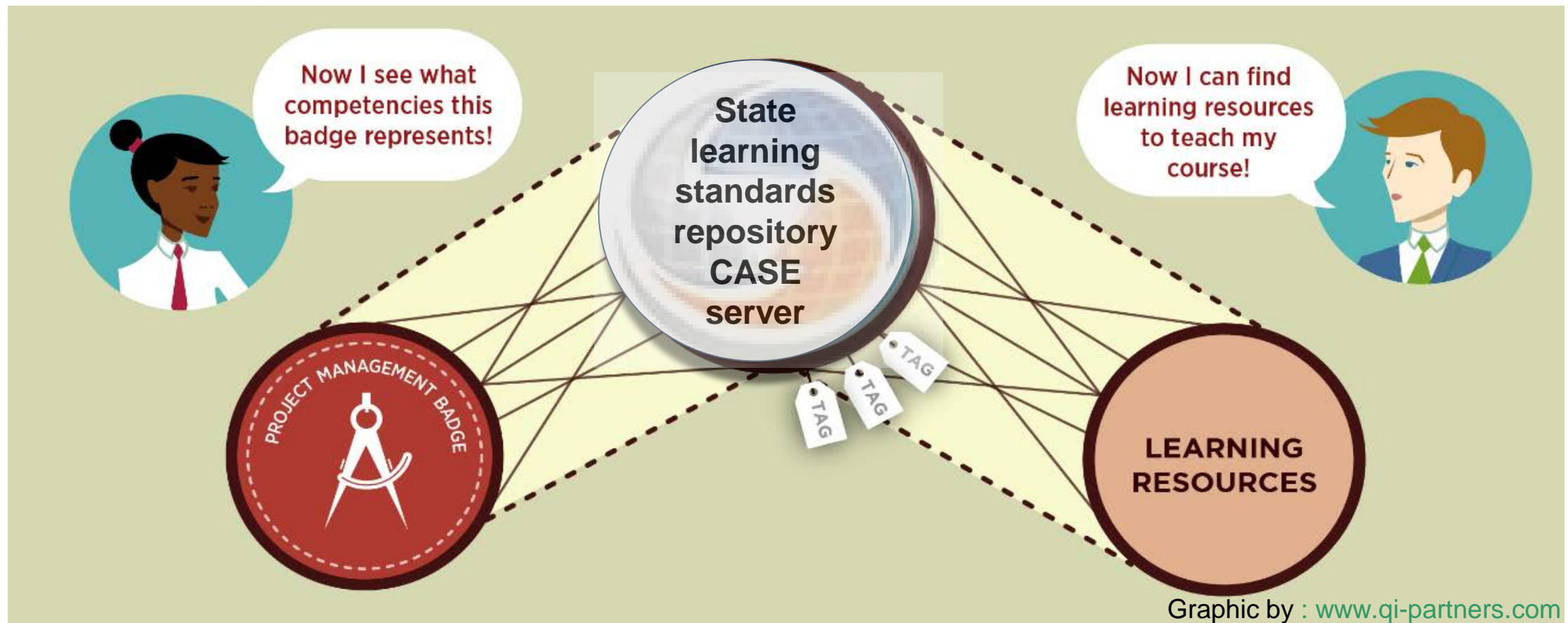
- Open Source Project Director
OpenSALT.org
- Co-Chair IMS Global CASE taskforce
- Contributing Member to many other IMS
Specs
- LRMI Technical Working Group co-founder
- Founding CTO of Curriki.org
- Lots of other things



What is IMS Global and CASE?

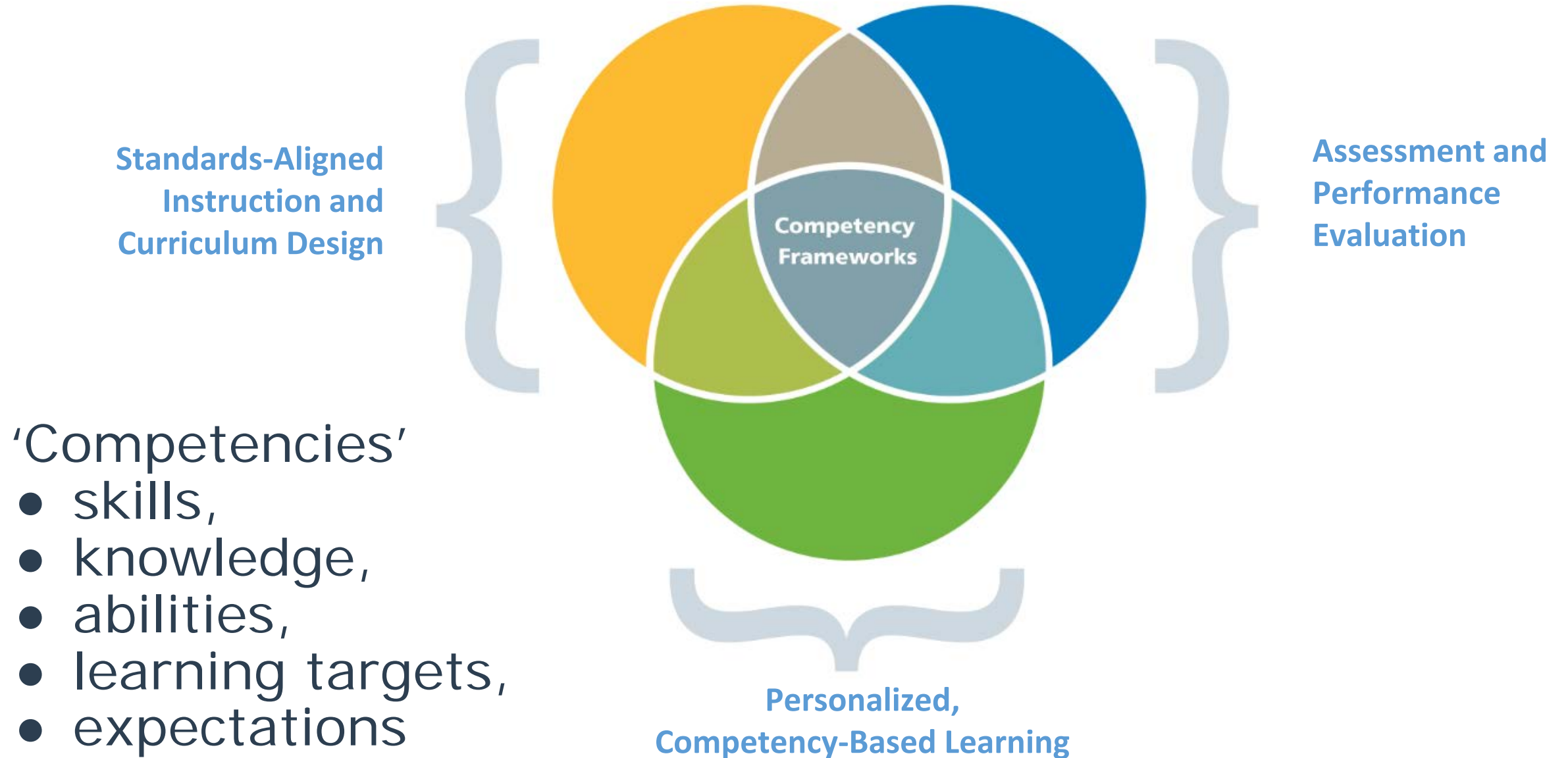
IMS Global: Industry standards organization focused on learning systems and content interoperability

CASE: Competencies and Academic Standards Exchange



Graphic by : www.qi-partners.com

Competencies are at the Center



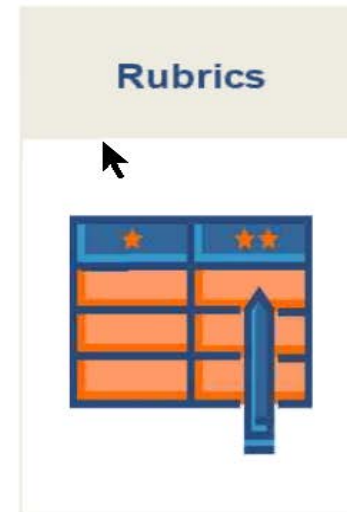
IMS Global Releases CASE 1.0

Competency and Academic Standards Exchange



- Industry standard developed with participation of LEAs, SEAs, ed tech and content vendors
- Includes K-12, higher ed and corporate training stakeholders
- Data format and “API” for a “CASE provider” app
- Provides a way for systems and content to use the same “Tags”
- Enables “Crosswalking” between frameworks

Competencies and Academic Standards Exchange™ (CASE™)



The CASE standard has three components



IMS Global Learning Consortium Announces Free 50-State Digital K-12 Academic Standards Registry

[Printer-friendly version](#)

IMS Global Learning Consortium Announces Free 50-State Digital K-12 Academic Standards Registry

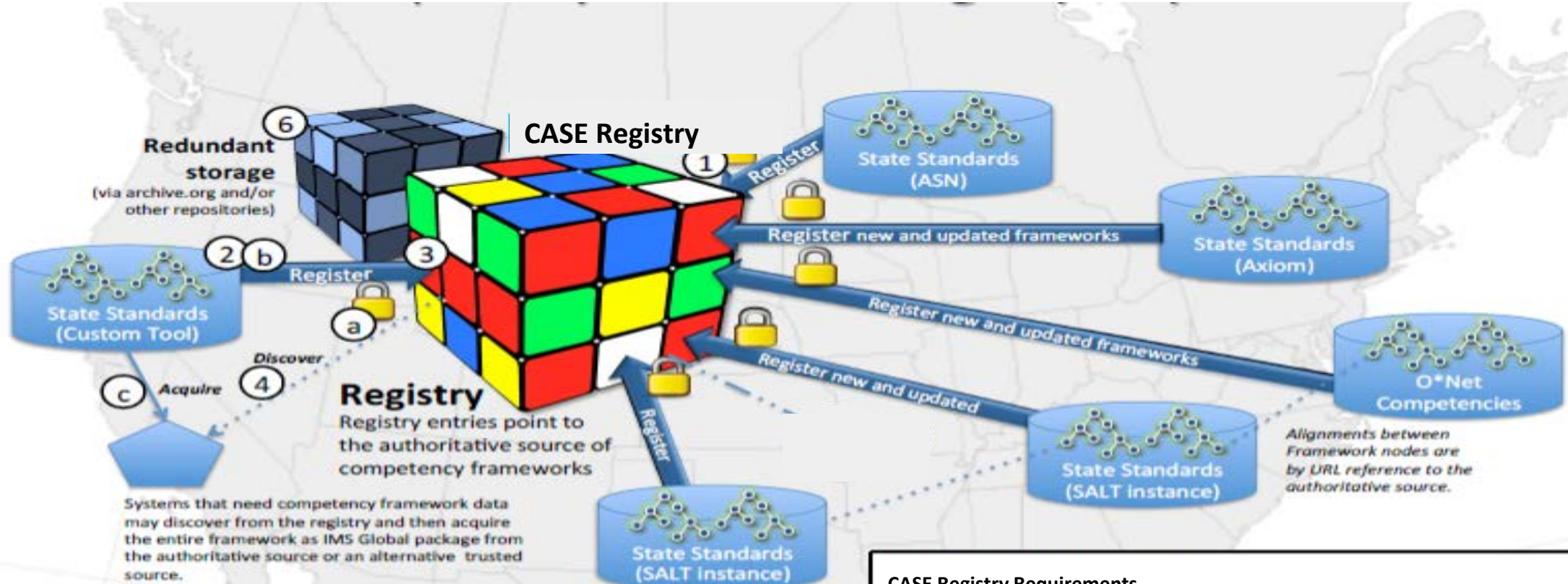
The IMS CASE Registry Will Make it Easier for Digital Learning Products to Align to State Learning Standards and Other Competency Frameworks

LAKE MARY, Florida, 21 May 2018 — [IMS Global Learning Consortium](#) (IMS Global/IMS), the world-leading non-profit collaborative advancing educational technology innovation, impact, and interoperability announced a new collaboration among IMS member organizations to launch a free digital registry of state K-12 academic standards. The IMS CASE® Registry will be based on the new [Competency and Academic Standards Exchange](#)® (CASE) open standard from IMS Global. The registry is expected to be fully operational September 2018, and will include standards for all 50 U.S. states.

“The use of technology and technology-based applications in the classroom continues to grow increasing the need and importance of interoperability related standards and solutions. The IMS CASE standard and registry solution will help to fill a critical gap in the education technology ecosystem.”

—Brent Engelman, Director of Education Data & Information Systems, CCSSO.

IMS Global CASE Registry as a network of CASE servers



CASE Server Test Requirements

1. IMS Global CASE certified
2. Verified agent of the Registry

CASE Registry Requirements

1. CCSO helps designate an official contact for each SEA
2. SEA contact designates official state Framework CASE publisher
3. Each state CASE publisher creates official CASE Frameworks
4. CASE Registry mirrors each official CASE Framework and maintains a free trusted data service

Framework Management and Standards **AL**ignment Tool

- Create and update Competency Frameworks and “crosswalks”
- PCG’s hosted service is CASE certified by IMS Global ([GA](#), [SBAC](#))
- Development Collaboration between PCG, [ACT](#), School City and others
- PCG Provides both commercial support and customization/Integration of OpenSALT in addition to managed hosting
- Built to help organizations, publishers and systems vendors implement CASE
- <https://opensalt.org>
- <https://opensalt.net>



Mathematics Florida Standards (MAFS)

Tree View

Association View

Draft

Search...

- Mathematics Florida Standards (MAFS)
 - Standards for Mathematical Practice
 - Standards for Math Content
 - Standards for High School Math Content
 - Numbers and Quantity
 - Algebra
 - Seeing Structure in Expressions
 - MAFS.912.A-SSE.1** Interpret the structure of expressions
 - MAFS.912.A-SSE.1.1** Interpret expressions that represent a quantity in terms ...
 - MAFS.912.A-SSE.1.2** Use the structure of an expres
 - MAFS.912.A-SSE.2** Write expressions in equivalent for
 - Arithmetic with Polynomials & Rational Expressions
 - Creating Equations
 - Reasoning with Equations & Inequalities
 - Functions
 - Geometry
 - Statistics & Probability



Mathematics Florida Standards (MAFS)

Official URL: <http://www.fldoe.org/academics/standards/subject-areas/math-science/mathematics>

CASE Framework URL: <https://opensalt.net/uri/ec59c836-98b6-11e7-94ca-c60f91d591e4>

Creator: Florida Department Of Education

Language: en

Adoption Status: Draft

- Open Source (opensalt.org)
- CASE Provider and Consumer Certified
- Create and publish frameworks
- Create associations within and across frameworks
- Provide for multiple organizations and editors



Types of Competency Framework

- K-12 Learning Standards (Common Core, TEKS, etc.)
- Assessment blueprints and specifications
- College course and program requirements (Capella University, WGU, etc.)
- Military job classification and training requirements (DOD)
- Professional Certification Agencies (PMP, MS Certified, Bar Exam, Cosmetology, etc.)
- Corporate job classifications and levels ([PCG Competencies](#))

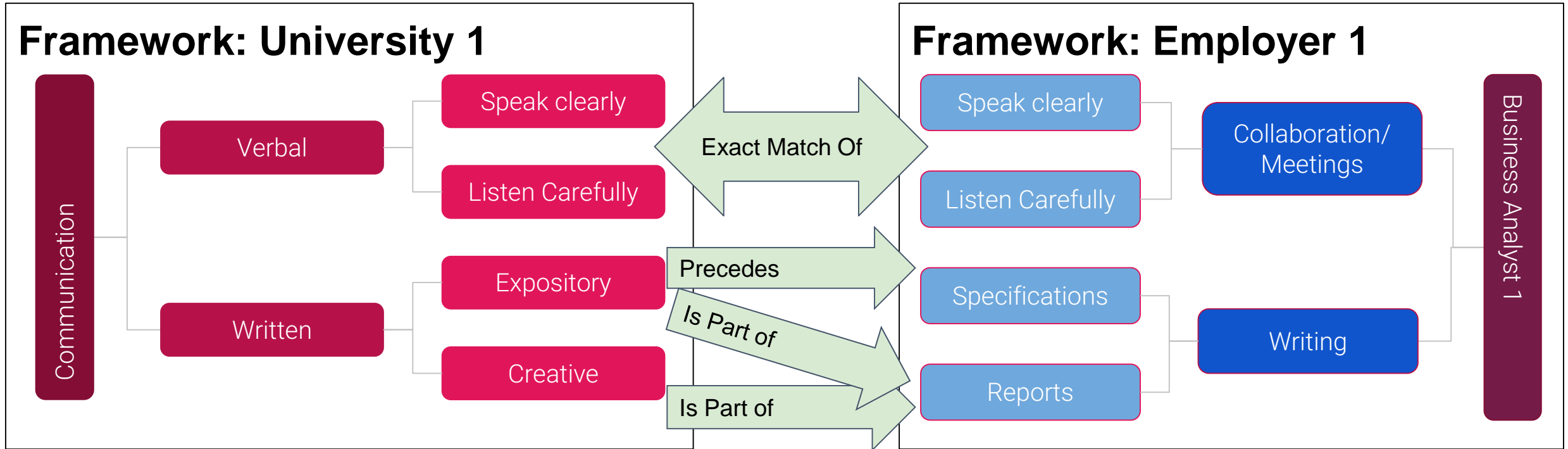


Uses for CASE and OpenSALT

- Content management and aligning resources
- Assessment/performance review
- Job descriptions
- Candidate review
- Personal and professional development (personalized learning pathways)
- Certification and badging (awarding skill attainment)
- Organizational resource planning (What skills are needed?)
- Building communities of practices and connecting staff to mentors around competencies



What is a Crosswalk? Why?



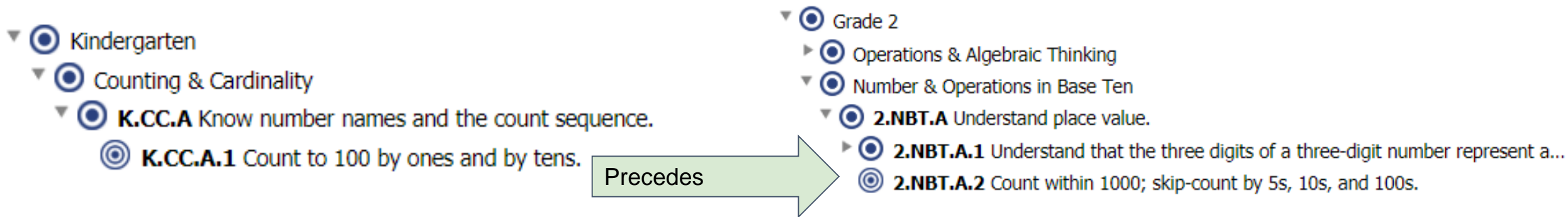
- Connect job requirements and skills to educational goals
- Connect certifications and credentials across organizations
- Build skill and competency pathways from primary to secondary, post-secondary and through to career and workforce development



What is a “Competency Pathway”

3 kids of ‘Pathways’

1. Credential or “Badge” Pathway - You need a highschool diploma before you can start a BA program, and a BA before an MA
2. Learning Pathway - I want to teach this unit or skill before I teach that one
3. Competency Pathway - A student must master these skills before they can learn those (e.g. subtraction before long division)

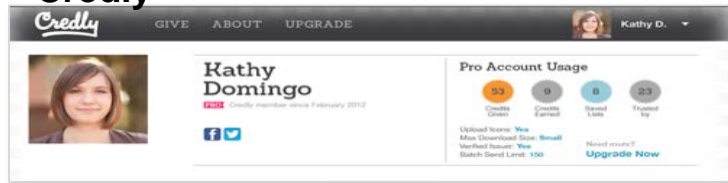




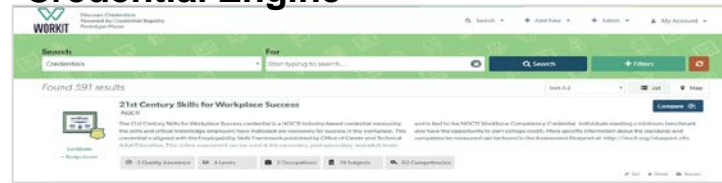
Competencies connect instruction and assessment

- Content is aligned to competencies
- Learner profiles and growth are defined in terms of competencies
- Assessments determine proficiency levels in terms of competencies
- Instructional and credential pathways are connected set of leveled competencies (Elementary > Middle School > High School > AA > BA > MA > PhD)

Credly



Credential Engine



Badgr



Open Badge Initiative (OBI)

I,



AGENT

claim that



SUBJECT

possesses

COMPETENCY

at

LEVEL

with

EVIDENCE

and

CONFIDENCE [0,1]

made at

TIMESTAMP

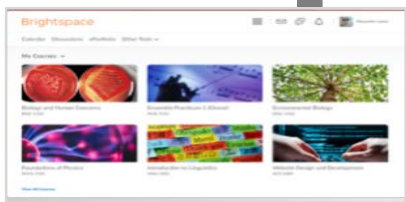
expiring at

TIMESTAMP

*Competency Assertion model by EduWorks and CaSS

CASS xAPI Competency Assertion

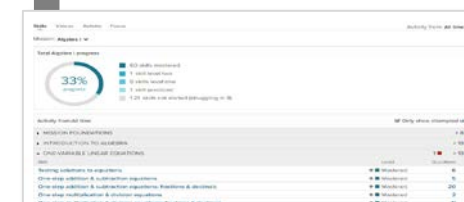
GA Virtual



Code.Org



Harvard CS50 EdX



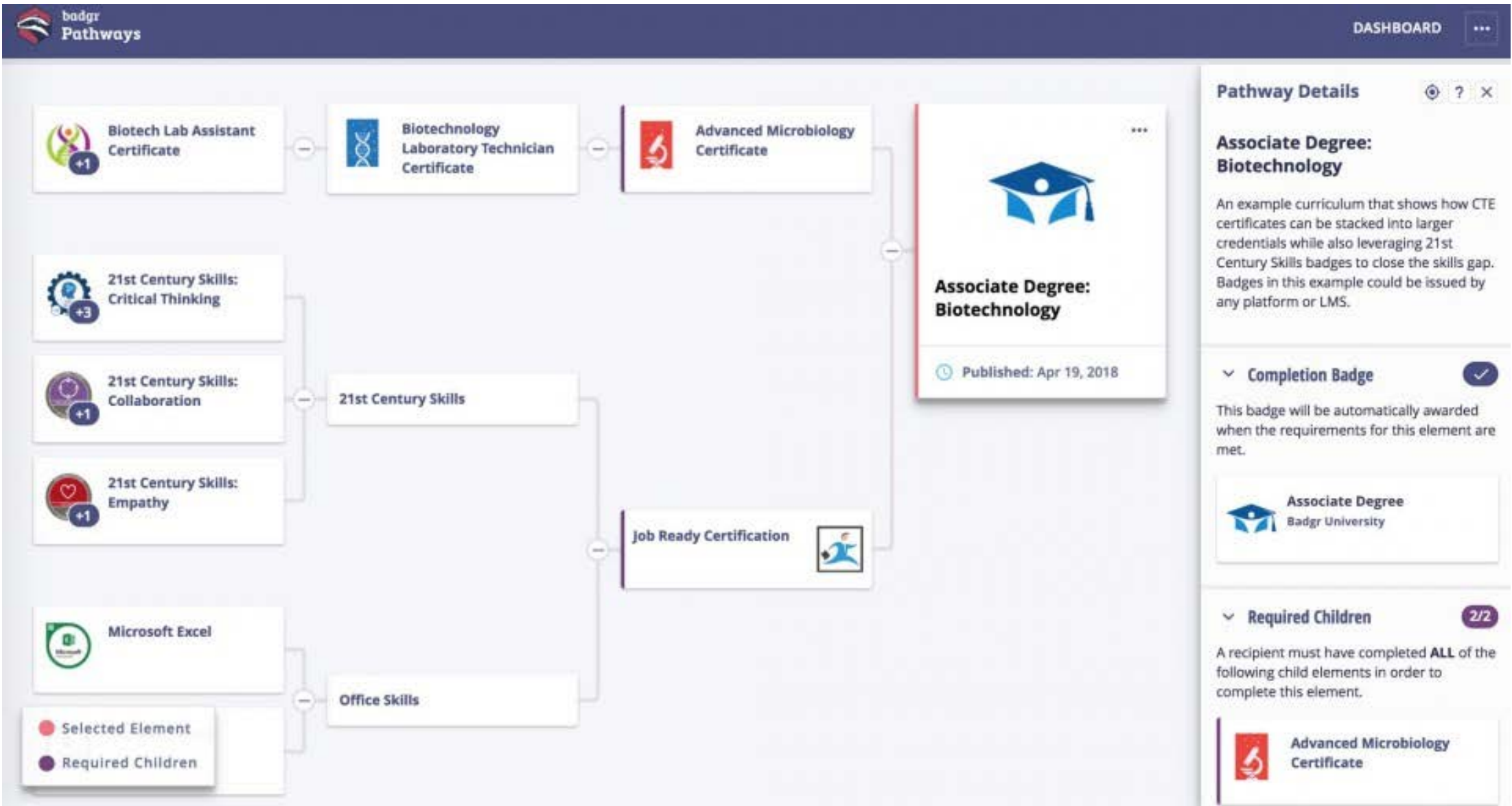
I did it!





Open Badge Pathway

Open Badges 2.0



Questions? Comments?

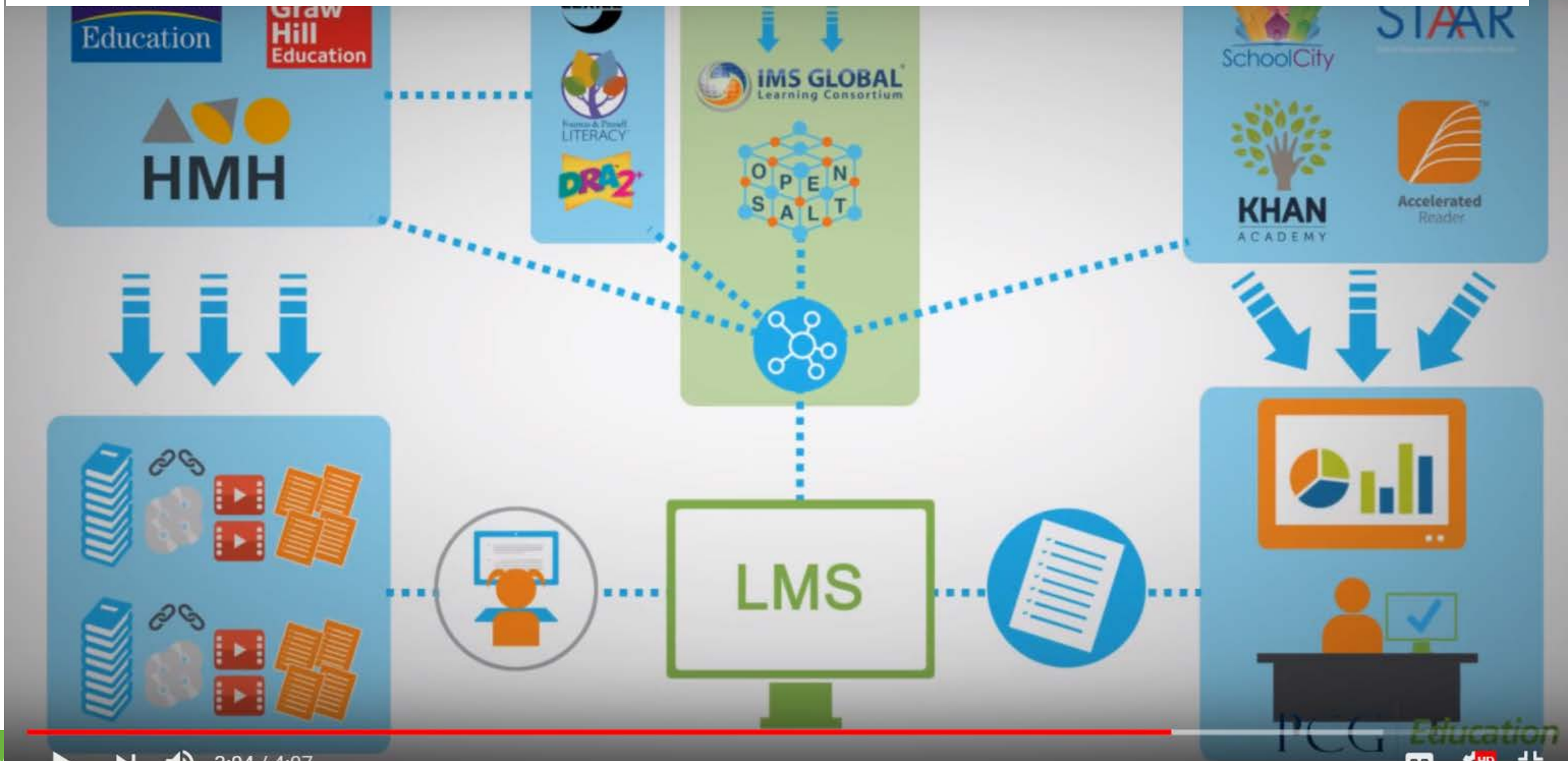




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CASE connects assessment and instruction



OpenSALT Demo Case Server



Signed in as jmarks@pcgus.com

Grade 3 Mathematics Item Specification C1 TD

Tree View

Association View

Log View

Draft

Browse, edit, reorder, and create new items here.

Change Document

☐ Enable drag-and-drop reordering

Search...

Grade 3 Mathematics Item Specification C1 TD

Clarifications

M.G3.C1OA.TD Target D

Item Writing and Scoring Guidelines

Task Models

Task Model 1a

Task Description

Stimulus

Examples

Example 1

Accessibility Note

Allowable Tools

Task Model 1b

Task Model 1c

Task Model 1d

Task Model 1e

Task Model 1i

Task Model 1j

Task Model 2a

Task Model 2b

Item Details

Copy Items

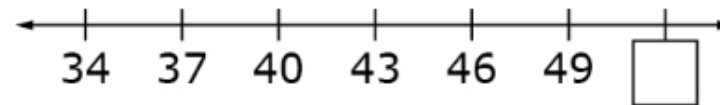
Create Associations



Example 1

Full Statement:

Example Stem: Enter the number that belongs in the box on the number line.



Rubric: (1 point) The student enters the correct number for the pattern (e.g., 52).

Education Level: 03

Type: Example

More Info

Edit

Delete

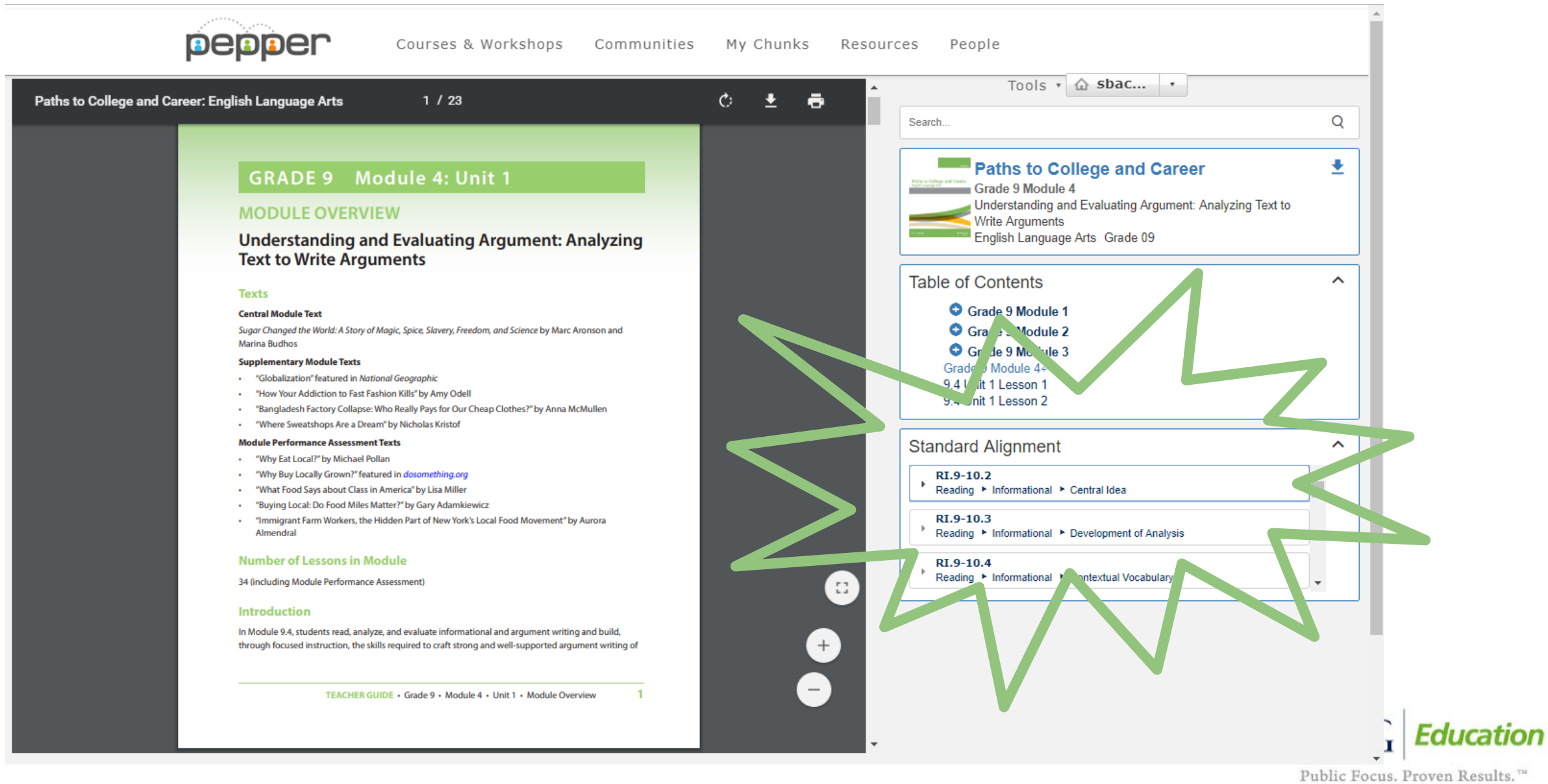
Make This Item a Parent

Add an Exemplar

Is Child Of

Examples





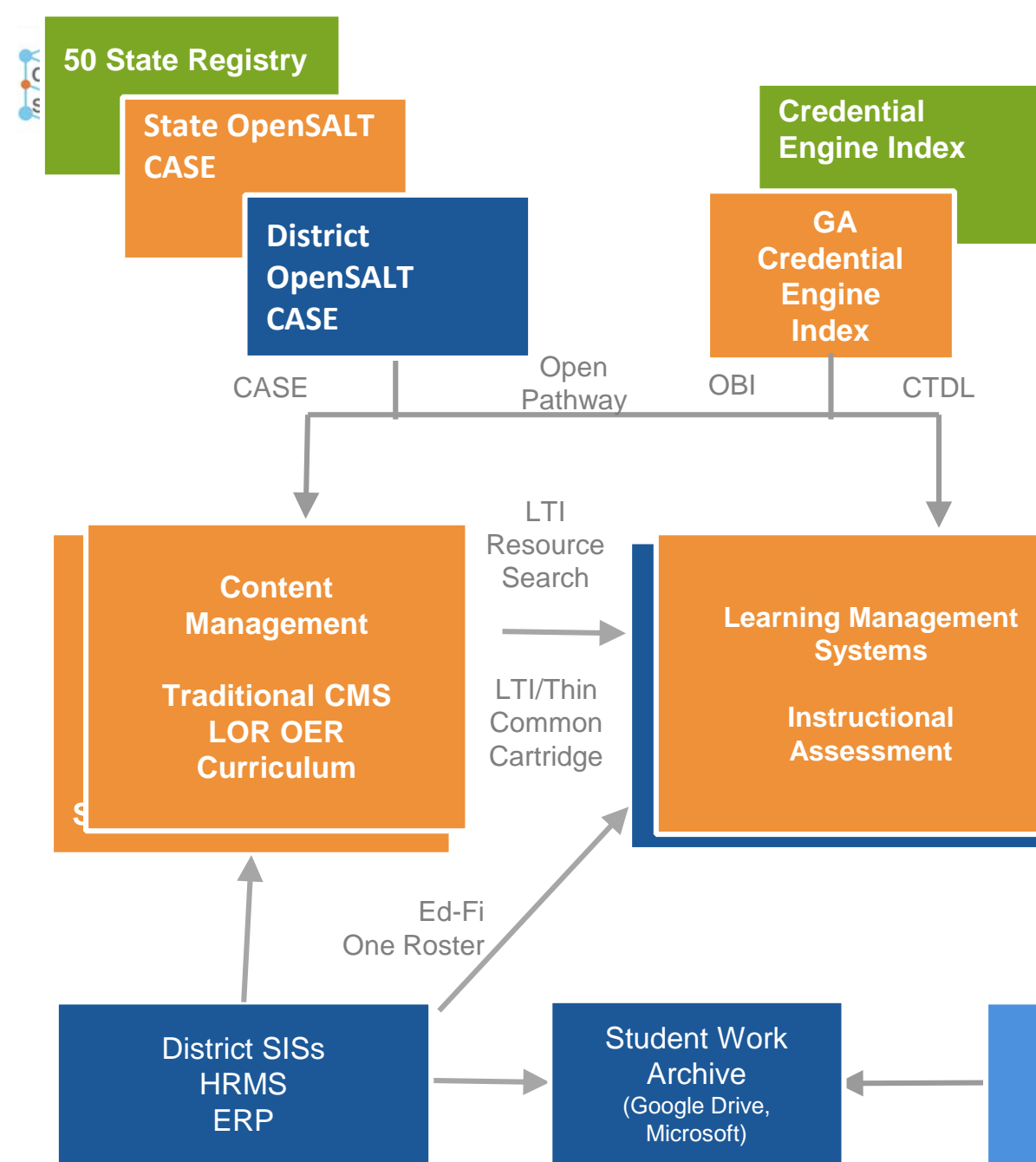
The screenshot displays the PCGCMS Demo- CASE Clinet interface. The main content area shows the "Paths to College and Career: English Language Arts" course, specifically "GRADE 9 Module 4: Unit 1". The module overview is titled "Understanding and Evaluating Argument: Analyzing Text to Write Arguments". It lists "Texts" including "Central Module Text" (Sugar Changed the World) and "Supplementary Module Texts" (Globalization, How Your Addiction to Fast Fashion Kills, Bangladesh Factory Collapse, Where Sweatshops Are a Dream). It also lists "Module Performance Assessment Texts" (Why Eat Local?, Why Buy Locally Grown?, What Food Says about Class in America, Buying Local: Do Food Miles Matter?, Immigrant Farm Workers). The "Number of Lessons in Module" is 34 (including Module Performance Assessment). The "Introduction" states that in Module 9.4, students read, analyze, and evaluate informational and argument writing and build, through focused instruction, the skills required to craft strong and well-supported argument writing of.

The sidebar on the right contains a search bar, a "Tools" dropdown, and a "sbac..." dropdown. Below these are sections for "Paths to College and Career", "Table of Contents", and "Standard Alignment". The "Table of Contents" section lists "Grade 9 Module 1", "Grade 9 Module 2", "Grade 9 Module 3", "Grade 9 Module 4", "9.4 Unit 1 Lesson 1", and "9.4 Unit 1 Lesson 2". The "Standard Alignment" section lists "RI.9-10.2", "RI.9-10.3", and "RI.9-10.4".

Navigation icons at the bottom of the main content area include a refresh icon, a download icon, a print icon, a full-screen icon, a plus icon, and a minus icon.

TEACHER GUIDE • Grade 9 • Module 4 • Unit 1 • Module Overview 1

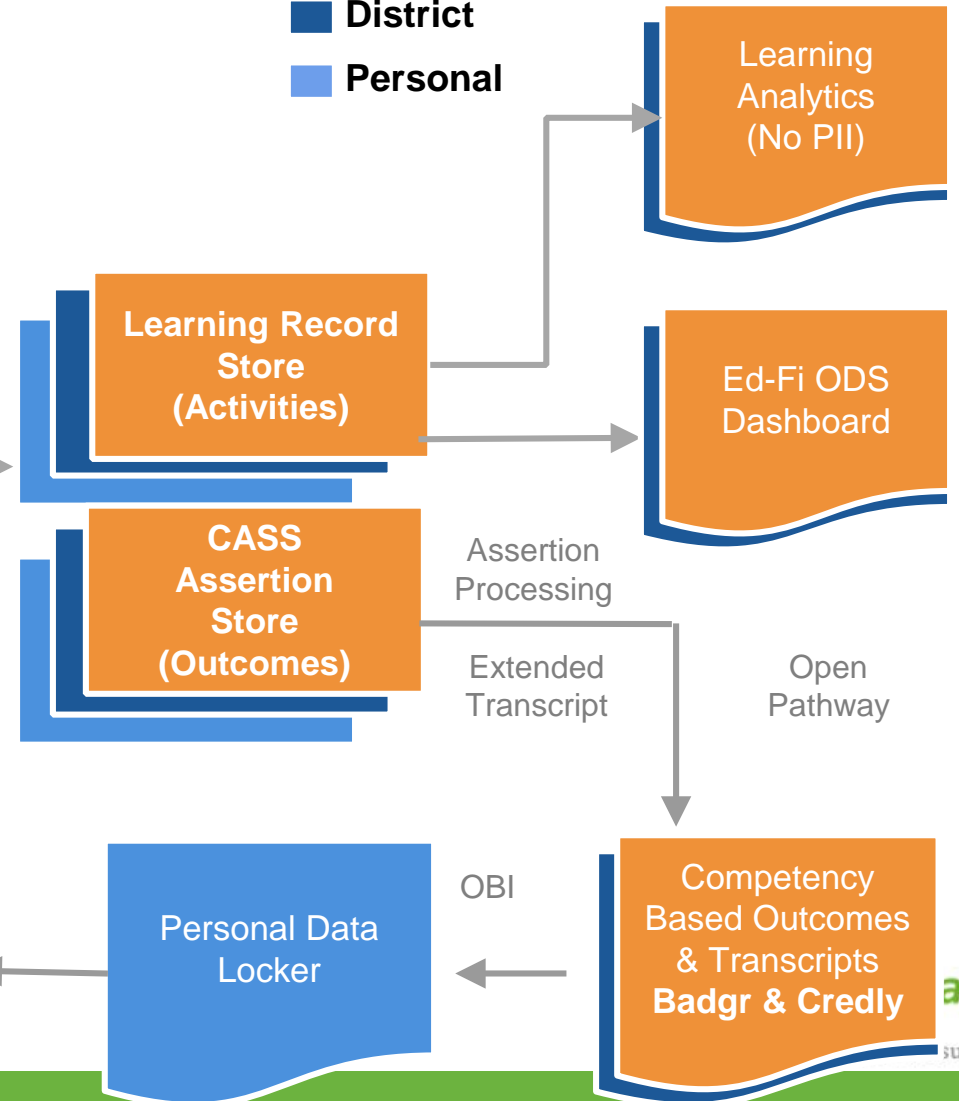
Education
Public Focus. Proven Results.™



Total Learning Architecture

Secure Personalized and Integrated Content Ecosystem (SPICE)

- National/Global**
- State**
- District**
- Personal**



Frameworks can include evaluation rubrics

Levels					
Criteria	Weight	4 Points	3 Points	2 Points	1 Point
Has a plan for Investigation The student turns in a written plan for investigation.	1	The plan is thorough	The plan is a few details		
Use of Materials The student manages materials responsibly.	.5	manages all materials responsibly	Uses the materials responsibly most of the time	Mishandles some of the materials	Does not use materials properly
Collects the Data The student collects a sufficient number of data points to support the investigation and accurately records the data points.				Major portions of the data are missing	The data collection consists of a few points

Rubric Criterion Title

Rubric Criterion Level Score

Rubric Criterion Weight

Rubric Criterion Level

Rubric Criterion Description



Capella University and CASE

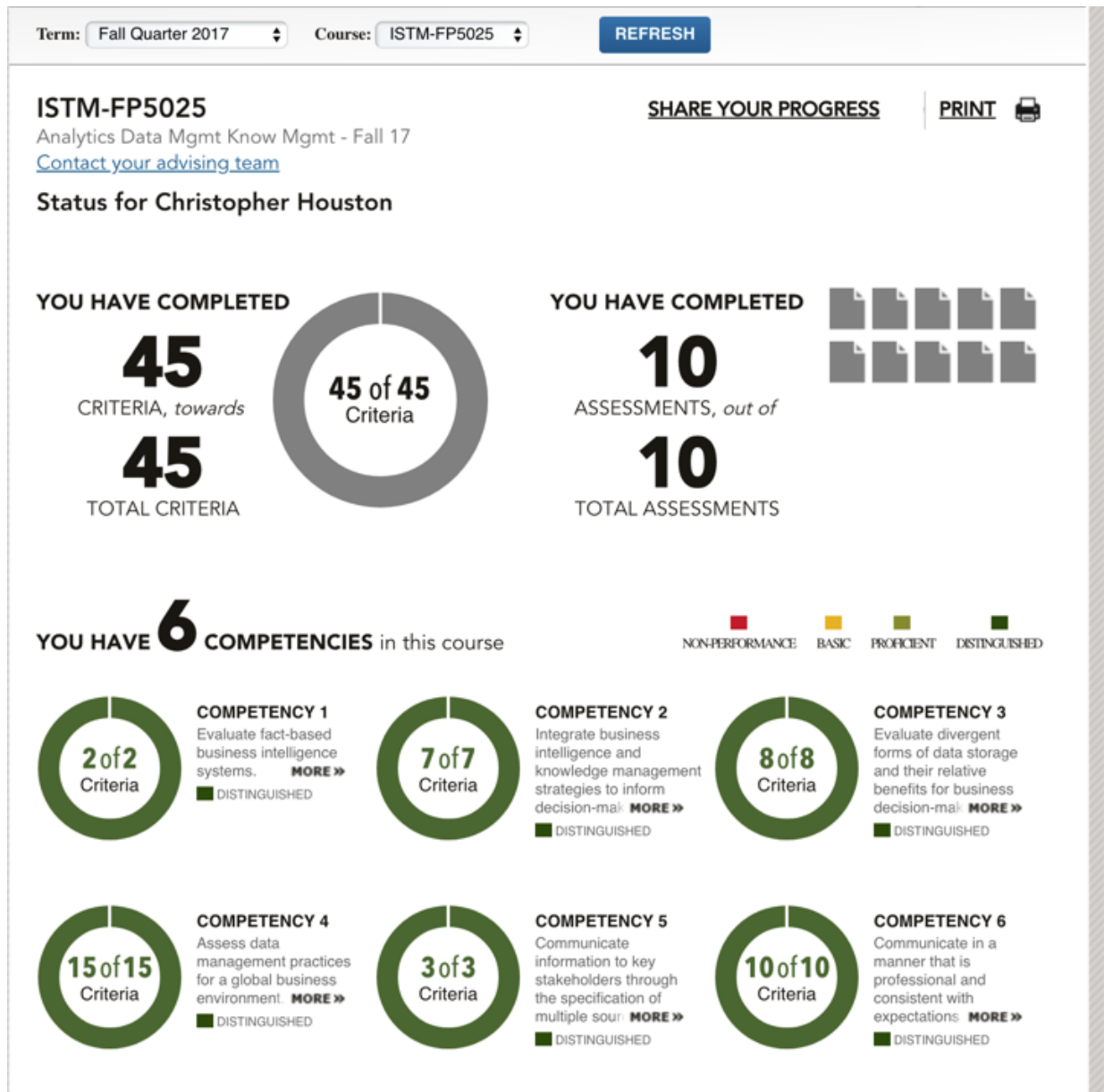
Why are Competencies, CBE, and CASE important to Capella?

Capella serves mid-career working professionals who care most about learning relevant skills and competencies so that they can perform at the top of their progression.

- Capella lives this philosophy in many ways through our curriculum, assessment practices, **backwards-design**, badging program, and our internal IT investments.
- **Explicit about the outcomes and learning objectives** within our Programs, Courses, and Assessments
- Capella has **had to build proprietary software and tools to manage our CBE infrastructure** including a curriculum authoring system, a rubric application, and a competency map.
- Capella is not new to Competency-based education (CBE) and the **data structures required for higher ed CBE are supported by the CASE** specification.
- Capella's strategic plan is to **ensure our proprietary CBE tools align to the CASE specification.**

Rubric Example

CRITERION	NON-PERFORMANCE	BASIC	PROFICIENT	DISTINGUISHED
CRITERION 1 Evaluate how a unit-level customer relationship management system can integrate with other data sources to support the core business processes of a multinational organization. COMPETENCY ~	<input type="checkbox"/> NON-PERFORMANCE Does not analyze how a unit-level customer relationship management system can integrate with other data sources to support the core business processes of a multinational organization.	<input type="checkbox"/> BASIC Analyzes but does not evaluate how a unit-level customer relationship management system can integrate with other data sources to support the core business processes of a multinational organization.	<input type="checkbox"/> PROFICIENT Evaluates how a unit-level customer relationship management system can integrate with other data sources to support the core business processes of a multinational organization.	<input type="checkbox"/> DISTINGUISHED Evaluates how a unit-level customer relationship management system can integrate with other data sources to provide strategic support to the core business processes of a multinational organization.
CRITERION 2 Evaluate how a unit-level business process management system can integrate with other data sources to support the core business processes of a multinational organization. COMPETENCY ~	<input type="checkbox"/> NON-PERFORMANCE Does not analyze how a unit-level business process management system can integrate with other data sources to support the core business processes of a multinational organization.	<input type="checkbox"/> BASIC Analyzes but does not evaluate how a unit-level business process management system can integrate with other data sources to support the core business processes of a multinational organization.	<input type="checkbox"/> PROFICIENT Evaluates how a unit-level business process management system can integrate with other data sources to support the core business processes of a multinational organization.	<input type="checkbox"/> DISTINGUISHED Evaluates how a unit-level business process management system can integrate with other data sources to provide strategic support to the core business processes of a multinational organization.
CRITERION 3 Evaluate the potential risks or challenges associated with the use of integrated or consolidated data sources to support the core business processes of a multinational organization. COMPETENCY ~	<input type="checkbox"/> NON-PERFORMANCE Does not analyze the potential risks or challenges associated with the use of integrated or consolidated data sources to support the core business processes of a multinational organization.	<input type="checkbox"/> BASIC Analyzes but does not evaluate the potential risks or challenges associated with the use of integrated or consolidated data sources to support the core business processes of a multinational organization.	<input type="checkbox"/> PROFICIENT Evaluates the potential risks or challenges associated with the use of integrated or consolidated data sources to support the core business processes of a multinational organization.	<input type="checkbox"/> DISTINGUISHED Evaluates the potential risks or challenges associated with the use of integrated or consolidated data sources to provide strategic support to the core business processes of a multinational organization.



Competency Map

ISTM-FP5025: Analytics Data Mgmt Know Mgmt

COMPETENCY 2

Integrate business intelligence and knowledge management strategies to inform decision-making.

Current Status: Distinguished

(7 out of 7 criteria completed)

Criterion - Complete ■ Distinguished

Evaluate how a unit-level customer relationship management system can integrate with other data sources to support the core business processes of a multinational organization.

u04a1: Integrating Data

Criterion - Complete ■ Distinguished

Compare and contrast the logical and physical application and data components of a technological architecture.

u09a1: Merged Environment

Criterion - Complete ■ Distinguished

Evaluate how a unit-level business process management system can integrate with other data sources to support the core business processes of a multinational organization.

u04a1: Integrating Data

Criterion - Complete ■ Distinguished

Analyze the potential benefits and challenges associated with implementing a selected architectural alternative.

u09a1: Merged Environment

Criterion - Complete ■ Distinguished

■ NON-PERFORMANCE ■ BASIC ■ PROFICIENT ■ DISTINGUISHED

OpenSALT and Competency Framework

Alignr

ISTM5025 - Analytics Data Management

Browse, edit, reorder, and create new items here.
☐ Enable drag-and-drop reordering

☐ Search...

ISTM5025 - Analytics Data Management

- ⊙ Evaluate fact-based business intelligence systems.
- ⊙ Integrate business intelligence and knowledge management strategies.
- ⊙ Evaluate divergent forms of data storage and their relative benefits.
- ⊙ Assess data management practices for a global business environment.
- ⊙ Communicate information to key stakeholders through the specification of data.
- ⊙ Communicate in a manner that is professional and consistent with organizational standards.

▼ Lominger Competencies

- ⊙ Action Orientated
- ⊙ Dealing With Ambiguity
- ⊙ Approachability
- ⊙ Boss Relationships
- ⊙ Business Acumen
- ⊙ Career Ambition
- ⊙ Caring About Direct Reports
- ⊙ Comfort Around Higher Management
- ⊙ Command Skills
- ⊙ Compassion
- ⊙ Functional/Technical Skills

There are 67 Lominger competencies. These abilities and skills serve to measure a person's effectiveness in business.

LTI Resource Search leveraging CASE

- Uses CASE URIs to enable searching for content about any skill across multiple repositories
- Demonstrated working integrations at IMS LILI
- Final candidate specification ready for validation tests to be complete
- Supported by ACT, Knowvation, Safari MONTAGE, Instructure, D2L, Its Learning, School City, etc.
- First new spec of a set of specs to directly integrate CASE.
 - One Roster,
 - QTI,
 - Caliper,
 - LTI 1.3,
 - Open Badges 2.0,
 - and others are either directly integrating or profiling as best practices the use of case URIs to identify alignments (CC and TCC etc.)



Credential Registry



Through an increasing array of credentials – degrees, certificates, industry certifications, licenses, badges, apprenticeships, and micro-credentials – job seekers, students, and workers have more options than ever to help them get ahead. But there has been no practical way to obtain relevant and comparable information about these diverse credentials. This information is of great interest to stakeholders in the credentialing marketplace.

Credential Registry/Engine

- Lumina Foundation Funding
- Searchable index of all credentials
- Includes “Credential Transparency Description Language” (CTDL)
- Credentials defined in part by their alignment to competencies
- Cross all levels: Primary, Secondary, Military, and Corporate/Professional
- Participation by all relevant organizations: PESC, HR Open Standard, MedBiquitous, IMS Global, Dublin Core, IEEE, ADL, and others
- OpenSALT is the tool used for editing, maintaining and publishing competencies into the the CTDL

Employer Use Cases

- Signaling
- Recruitment
- Application, Screening and Verification
- On-Boarding and Development
- Performance Analytics

Learner (Student & Worker) Use Cases

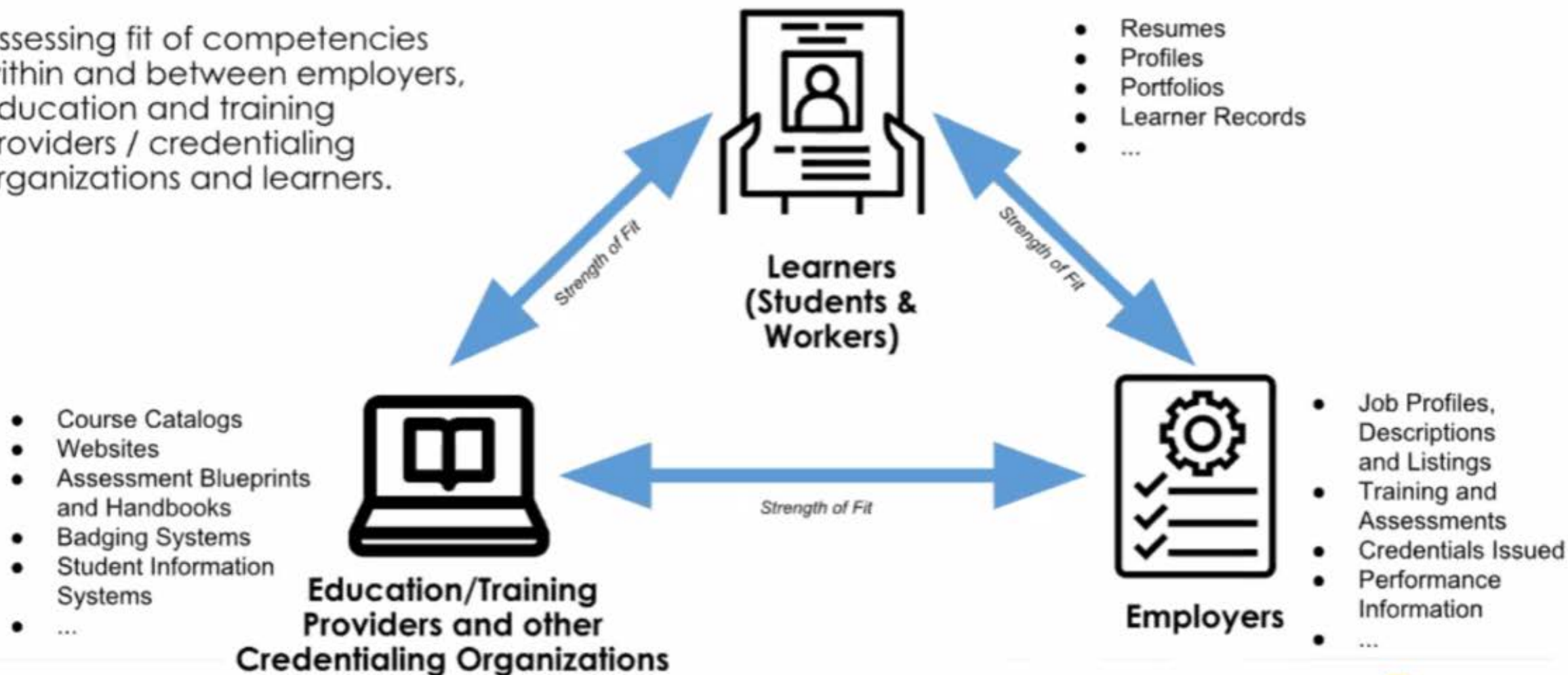
- Signaling
- Career and Education Opportunity Search and Discovery
- Application, Screening, and Verification
- Participation and Transitioning
- Performance Analytics

Education and Training Provider Use Cases

- Signaling
- Search and Discovery
- Learner Services
- Aligning Programs/Credentials and Learner Records
- Performance Analytics

Competency Development & Translation Challenge

Assessing fit of competencies within and between employers, education and training providers / credentialing organizations and learners.



CASE Logical Model

CF Doc, CF Item, CF Association and CF Rubric

