Bringing Credential Transparency and Literacy to the Marketplace
The Problem – Lack of Understanding for All Credentials

The Marketplace of Credentials Is Confusing and Complex:

- Many different types of credentials with variation in content, quality and value.
- The market is expanding - over 330,000 confirmed in the U.S. alone.
- No common language to describe or compare credentials
- Misalignment between industry needs and educational offerings
- No mechanism for stacking credentials based on “competencies.”
How We do it: Transparency Through Technology

Credential Transparency Description Language (CTDL) – Common language that describes key features of credentials, credentialing organizations, and quality assurance bodies. Common descriptors will allow for better apples-to-apples comparison between credentials.

Publishing – After creating a user account, organizations use the API, Registry Publisher, bulk upload, or-in the future-harvest structured data to convert organization, credential and quality assurance information to the common language and publish to the registry. Organizations will have a suite of options to add information to the registry.

Credential Engine Registry – houses information described by the common language and supports an open applications marketplace. Developers will create specialized applications for different types of users, like employers, military veterans, and students.

Credential Finder Prototype Application – Basic search to view information in the registry. The public will use Credential Finder to see all information in the registry.

Community – Receives technical assistance and other services to consume from and publish to the registry. Credentialing organizations, developers, and other users will have access to resources like best practices, user guides, and staff support.
## A Common Language Captures & Structures Credential Data

<table>
<thead>
<tr>
<th>CREDENTIAL</th>
<th>ORGANIZATION</th>
<th>COST</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type</strong></td>
<td><strong>Name / Parent Organization</strong></td>
<td><strong>Price</strong></td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td><strong>Type</strong></td>
<td><strong>Cost Types</strong></td>
</tr>
<tr>
<td><strong>Competencies</strong></td>
<td><strong>Description</strong></td>
<td><strong>Payment Information</strong></td>
</tr>
<tr>
<td><strong>Owned/Offered By</strong></td>
<td><strong>External Quality Assurance</strong></td>
<td><strong>Residency</strong></td>
</tr>
<tr>
<td><strong>External Quality Assurance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Renewal/Revocation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Connected Credentials</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Jurisdiction</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ASSESSMENT</th>
<th>LEARNING OPPORTUNITY</th>
<th>IN DEVELOPMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Name</strong></td>
<td><strong>Types</strong></td>
<td><strong>Labor Market Value</strong></td>
</tr>
<tr>
<td><strong>Competencies</strong></td>
<td><strong>Competencies</strong></td>
<td><strong>Employer Requirements, Preferences, or Recognition</strong></td>
</tr>
<tr>
<td><strong>Assessment Type</strong></td>
<td><strong>Delivery</strong></td>
<td><strong>Career Pathways</strong></td>
</tr>
<tr>
<td><strong>Delivery Type</strong></td>
<td><strong>Requirements, Duration, and Location</strong></td>
<td><strong>Credential Holder Profiles</strong></td>
</tr>
<tr>
<td><strong>Requirements, Duration, and Location</strong></td>
<td></td>
<td><strong>Military-specific descriptors</strong></td>
</tr>
</tbody>
</table>

*For CTDL’s full vocabulary of 300+ terms, visit www.credreg.net*
Updates October 2018
Current State Partnerships

- **Indiana** — The Indiana Commission for Higher Education has worked with Indiana’s credential providers to publish 1,000+ healthcare credentials – and has plans to publish more from other key sectors.

- **New Jersey** — The New Jersey Department of Labor and Workforce Development is working to bring credential clarity and transparency to New Jersey as part of the state's effort to ensure that at least 65 percent of its workforce has at least one post-secondary credential by 2025.

- **Michigan** — The Talent Investment Agency will focus on publishing credentials related to healthcare, information technology and computer science, advanced manufacturing, business and other professional trades to support the Governor’s Marshall Plan for Talent.

- **Kansas** — The Board of Regents will publish all active degrees, certificates, and short-term technical programs offered by the public postsecondary schools in the state to increase visibility and comparison across state lines.

- **Ohio** — The Department of Higher Education will focus on the information technology and cybersecurity sectors to reveal the labor market value of credential options, strengthen pathways, and inform policy.
HVCNE will provide individuals, institutions, state policy leaders and employers the tools to:

- Develop a common language to describe credentials
- Evaluate and communicate the value of credentials
- Identify critical education and employment pipelines
- Understand the skills and competencies obtained in earning a credential

This project will initially focus on credentials from growth-oriented industry sectors including:

- Healthcare, life and bio-sciences, information technology (IT) and business and financial operations.
USDOE Ecosystem Challenge
Sustainability and Training Object Reference Model (STORM Conformant)

- **Supportability Standards**: Products/Engineered Systems: Operation, Troubleshooting and Maintenance
- **Competency Standards**: Competency Frameworks
- **Course Standards**: Competency-based Courses
- **Credential Standards**: Credentials (Military and Commercial)
- **Performance Data Standards**: Analytics (System and Learning)
- **Occupation/Task Standards**: Navy Personnel

Flowchart showing relationships between the standards and systems.
THE DEGREE QUALIFICATIONS PROFILE

A learning-centered framework for what college graduates should know and be able to do to earn the associate, bachelor’s or master’s degree
CTDL-ASN is made up of two fundamental entities:

1. Standards Document—a competency framework as a whole, and
2. Statement—the individual assertions of knowledge, skill, and abilities of which a Standards Document is comprised. These two entities—documents and statements—are modeled in terms of an entity-relationship model (ER) and embodied as a directed graph using W3C's Resource Description Language (RDF).

The diagram below illustrates the use of the Standards Document and Statement entities using an example encoding of a competency in the Degree Qualification Profile (DPQ).
Competency Data is Supported with Credential Registry Services

- Competency Frameworks
- Credentials
- Credentials with Competencies
- Learning Opportunities with Competencies
- Assessments with Competencies
Open Infrastructure

Vision

Comprehensive registry of relevant frameworks.
The Credential Finder pulls data from the Credential Registry and shows competencies with credentials, learning opportunities, and assessments. Soon a search of frameworks will also be available.

http://credentialfinder.org
Rosetta Stone
Hieroglyphic
Demotic
Ancient Greek
Cross Framework Connections

Because every ASN Standards Document resource and every ASN Statement resource is identified by URI, competency frameworks and their individual competencies can be mapped to each other regardless of where the Frameworks are located on the open Web.
Credentials and Competencies

The graph of credentials, assessments, learning opportunities, competency frameworks, competencies, and the ties between them can be very deep and detailed.

The Credential Engine leverages CTDL, CTDL-ASN, and CASS to enable these data to be put together, housed, and searched even if it is owned and provided by a variety of sources.
CTDL: Pathway Work Group

Pathways Definition
“In the context of Credential Engine, a pathway is comprised of structured sets of objectives and qualifying conditions defining points along a route to fulfillment of a job, occupation or career. Qualifying conditions include sets of prescribed, preferred or recommended evidentiary artifacts such as competencies attained (knowledge, skills, abilities), relevant awards and other forms of recognition, credentials earned and relevant experience.”
National Security

Other pathways with related occupations:
• Emergency and Fire Management Services
• Law Enforcement Services

High School Diploma or GED
• Air Crew Members
• Infantry Members
• Radio Operators
• See Other Careers

Bachelor's Degree (4 Years)
• Air Crew Officers
• Infantry Officers
• Systems Software Developers
• See Other Careers

Less Than 1 Year
• Artillery and Missile Crew Members
• Radar and Sonar Technicians
• See Other Careers

1-3 Years
• Air Crew Members Supervisors
• Detectives and Criminal Investigators
• Special Forces Members
• See Other Careers

Advanced Degree (4+ Years)
• Emergency Management Directors
• See Other Careers

CTE
Learning that works for Minnesota
Human Services

The Human Services Career Cluster prepares you for jobs that relate to families and human needs. Whether you want to be a social worker, a childcare provider or a hairdresser, you will be addressing human needs.

This career cluster is organized into seven career pathways:

- Consumer services
- Counseling and mental health services
- Early childhood development and services
- Family and community services
- Personal care services

Note: The other two pathways are Culinary Arts and ProStart. We have chosen to include information about these pathways and anything related to food service, including becoming a chef or baker, on the Hospitality and Tourism Career Cluster page.

Consumer Services – CIP Code 19.0401

+Check Prerequisite **Articulated Credit ***FHTC

INTRODUCTORY LEVEL

TECHNICAL LEVEL

APPLICATION LEVEL

CAREER CONNECTIONS**

(Gr 11,12) (One Trimester, ½ credit) – may be repeated for credit

Prerequisite: Any trimester PCS course

Written Application MUST be completed PRIOR to enrollment.

Career Connections provides human services/family and consumer sciences related work-based learning experiences (paid or unpaid) outside the traditional classroom. Learning goals are set by the student, teacher and employer/adult mentor to create field experiences and/or discussions related to human services/family and consumer sciences occupational technical skills. Students are required and responsible for their own transportation to assigned locations. If student does not have transportation, he/she may not enroll in this course.
Bakersfield College: AS for transfer (Computer Science)


➢ https://github.com/CredentialEngine/vocabularies/blob/master/Pathway-Examples/Bakersfield_AS_CS_pathway-CSU_transfer.json
➢ https://github.com/CredentialEngine/vocabularies/blob/master/Pathway-Examples/Bakersfield_AS_CS_pathway-UC_transfer.json
Concepts – Pathway Components
Concepts – Rule set
Draft Pathway Domain Model: Object properties
### Draft Pathway Classes

<table>
<thead>
<tr>
<th>Classes</th>
<th>Draft Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pathway</td>
<td>Entity comprised of structured sets of objectives and qualifying conditions defining points along a route to fulfillment of a job, occupation or career. The entity represents a pathway as a whole including a reference to an instance of PathwayComponent that serves as the root or destination node of the pathway.</td>
</tr>
<tr>
<td>PathwayComponent</td>
<td>Entity that serves as a defined point along the route of a Pathway. A PathwayComponent describes an objective and its completion requirements through reference to one or more instances of ComponentCondition.</td>
</tr>
<tr>
<td>ComponentCondition</td>
<td>Entity that describes what must be done to complete one PathwayComponent [or part thereof] as determined by the issuer of the Pathway. A ComponentCondition is comprised of one or more instances of the RuleSet entity.</td>
</tr>
<tr>
<td>RuleSet</td>
<td>Entity that identifies the rules by which other PathwayComponent instances satisfy a PathwayComponent objective.††</td>
</tr>
</tbody>
</table>

†† In order to meet varying circumstances, there will likely be more than one recognized RuleSet. All machine actionable?
Multi-rule set component condition
Co-Curricular by definition means outside activity in support of a curriculum. Shouldn’t this accommodate a broader range of relevant experience that has not been acknowledged by other means/types like work history (job), credential, assessment etc.? E.g., apprenticeship, internship.

Start “slim” and add properties only with demonstrated need

https://github.com/CredentialEngine/vocabularies/issues/546
Pathway - Comprehensive Learner Record
Comprehensive Learner Record (CLR)
Learners of the Future Need Control of their Data

Learners currently do not have control over their learning or how information about them from education, training, employment, or other sources is made available to them or how this information is shared.
Information About Credentialing and Employer Preferences and Requirements is Disconnected

Credentialing and employment information is not connected causing mixed signals in the talent marketplace including misalignment of training to competencies employers require or prefer.
Harmonizing Data Standards Enables Learner-Centered Tools

- Access 4 Learning (A4L): SIF
- Advanced Distributed Learning Initiative (ADL): Competency & Skills System (CaSS), Experience API (xAPI)
- Credential Engine: Credential Transparency Description Language (CTDL), CTDL-Competency Framework, Credential Registry
- Common Education Data Standards (CEDS): Elements and Data Model
- Ed-Fi Alliance: Ed-Fi Data Standard
- HR Open Standards: Assessments, Interviewing, Recruiting and Screening
- IMS Global: Caliper, Competencies & Academic Standards Exchange (CASE), Learning Tools Interoperability (LTI), OneRoster, Open Badges, Question & Test Interoperability (QTI)
- Postsecondary Electronic Standards Council (PESC): Standardization of Postsecondary Electronic Data Exchange (SPEEDE)
- US Chamber of Commerce: Job Data Exchange (JDX)
- Other domain-specific specifications such as competencies, maintenance task analysis, occupations…

See #EDU2030 proposal https://goo.gl/yvqH9D
Q&A
About Credential Engine
For more information

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