Credential Engine

Innovating Technology for the Emerging Digital Marketplace

PESC
Spring 2017 Data Summit
May 4, 2017

Credential Engine

opics

Credential Engine Background
Credentialing Partners
Credential Engine Technologies
Credential Transparency Description Language
Credential Registry & CTDL Editor
Workit™ Search App Prototype
Q & A

Credential Engine Background

ransitioning to Scale

edential Transparency Initiative (CTI) was a pilot project to engage key stakeholders in signing, developing, and piloting a Credential Registry, common terms (CTDL), and protot plication (Workit™)—and evaluating the potential for scaling the initiative under non-profit nagement.

edential Engine (CE) is a 501(c)(3) non-profit organization whose mission is to improve nsparency in the credentialing marketplace, building on the CTI pilot. Credential Engine w rsue this mission by (1) scaling the web-based, open-licensed Credential Registry (CR), (intaining the Credential Transparency Description Language (CTDL), (3) maintaining Wo prototype open-source credential search app to demonstrate the power of the registry, a promoting an open applications marketplace.

Three years of funding have been secured and planning is underway for long-term sustainability.
Sponsors are Lumina Foundation and JP Morgan Chase & Co.

- Key metrics and outcomes through 2020 have been identified.

Board and Advisory Groups

Credential Engine Board of Directors
(11 Members)

Business Advisory Group
(13 Members)

Certification and Licensure Advisory Group
(20 Members)

Higher Education Advisory Group
(30 Members)

Quality Assurance Advisory Group
(14 Members)

Technical Advisory Group
(57 Members)

Transparency through Technology

velop common terms
edential Transparency
scription Language -
DL) to describe key
tures of:

redentials
redentialing organizations
uality assurance (QA)
odies

-Create & populate voluntary, web-based credential registry with credential issuers and QA bodies

-Bring the registry to scale under non-profit governance

-Develop, test, & dep prototype search app facilitate use of the registry by stakeholde

-Foster competitive a marketplace

Credential Engine

Credential registry, descriptors, and applications are open-source.

redentials Addressed by Credential Engi

Registry Includes All Kinds of Credentials, Credentialing Organizations, and Quality Assurance Bodies

Apprenticeship

Badge

Certificate

Certification

Degree

Diploma

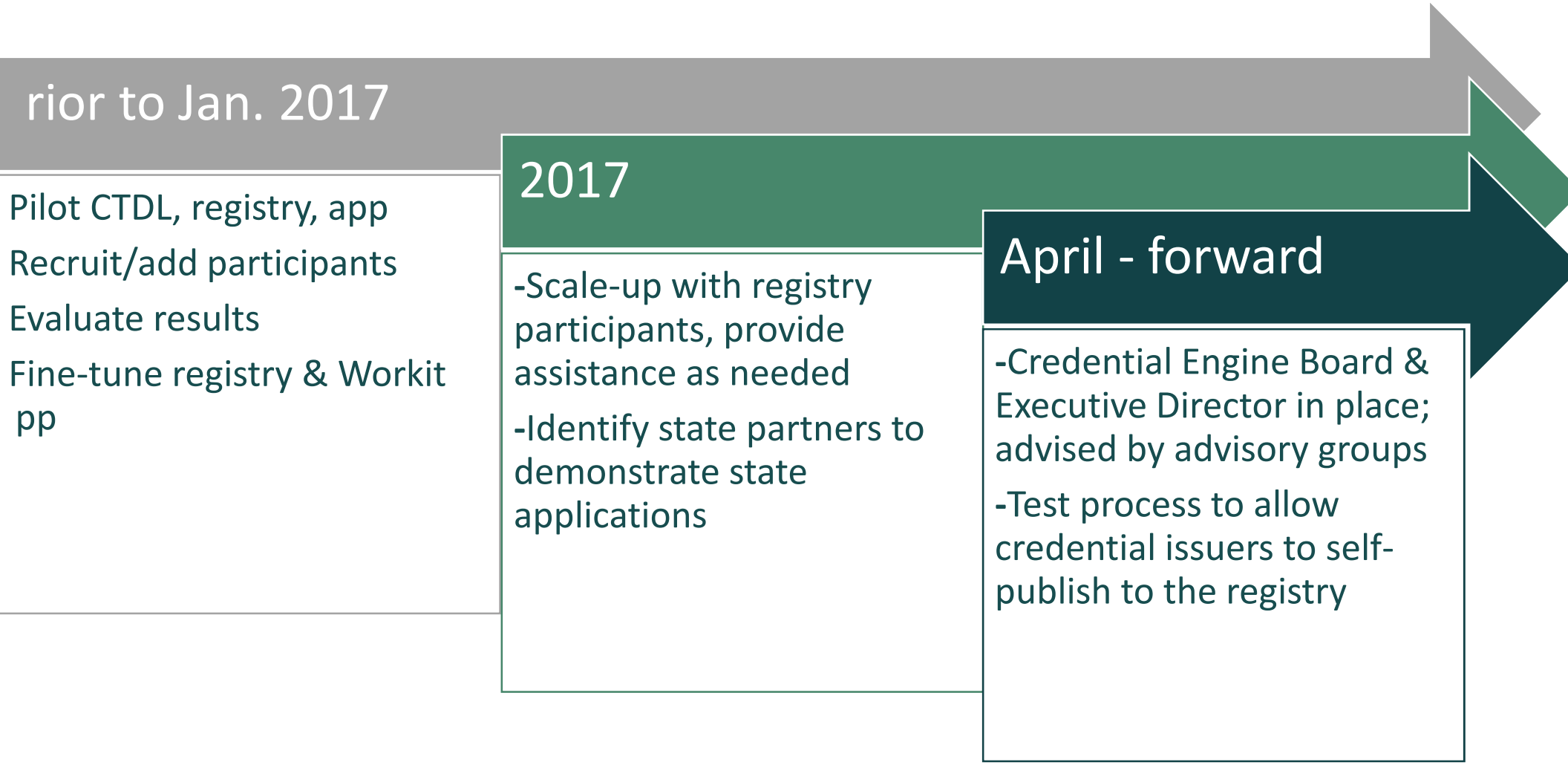
License

Micro-Credential

QA Bodies

Credential Engine

Timeline: Transitioning to Scale



Credential Engine

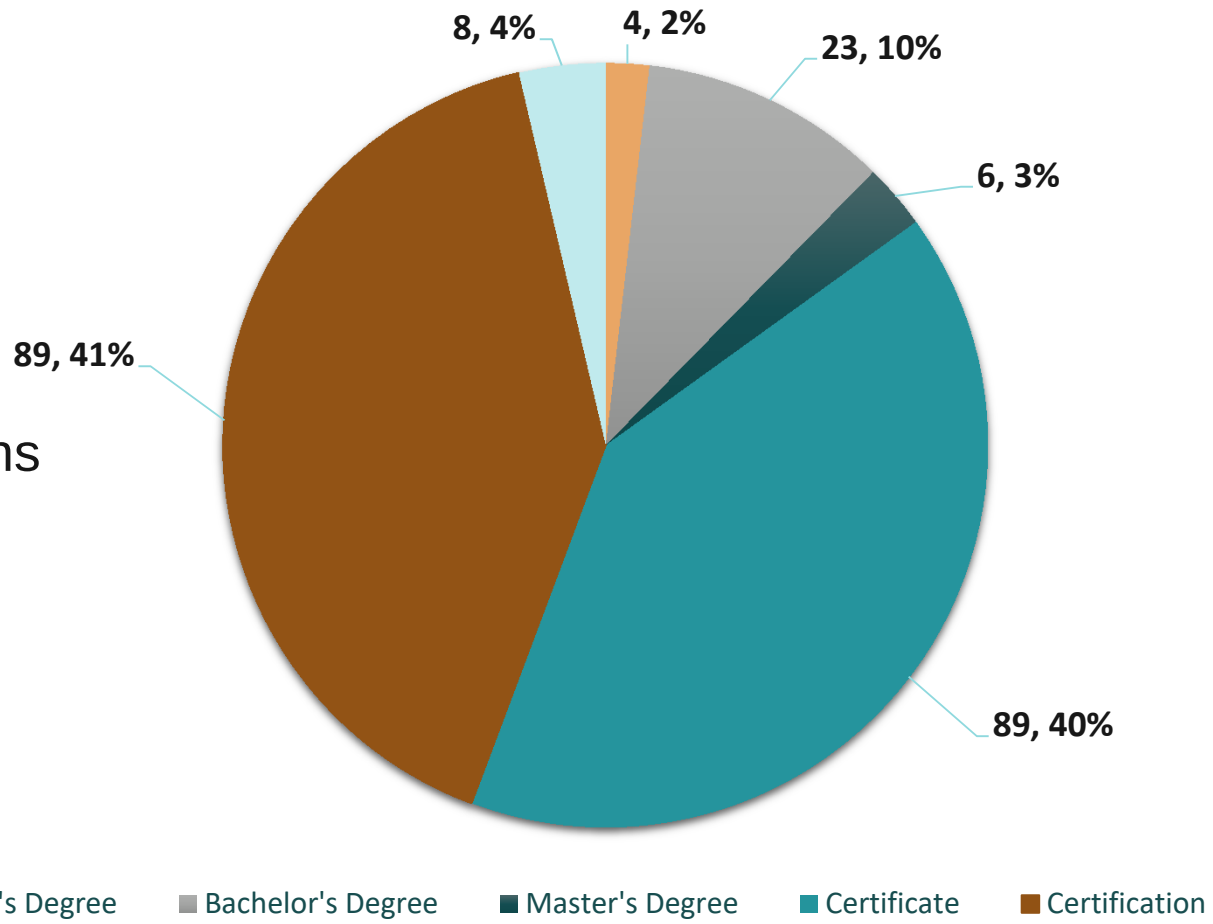
Credentialing Partners

rofile of Current Registry Participants

rticipant Organizations (April 2017)

total participants
Private Colleges & Universities
or Profit Colleges & Universities
Public Colleges & Universities
Community Colleges
Industry Certification Bodies
ndustry Certificate Granting Institutions
uality Assurance Organizations
ther

Credentials (as of April 17, 2017 = 209)



Credential Engine

Benefits to Participants

Gain greater visibility to vast market of students, employers, others.

Demonstrate commitment to credential and QA transparency.

Be at forefront of groundbreaking technology effort driving new credentialing ecosystem.

Receive suite of services beneficial to short—and long-term technology plannin including:

- technical and non-technical materials
- information about Web 3.0 technologies
- roadmap document showing where they are now and what steps can be taken to enable W3C vision for Linked Data

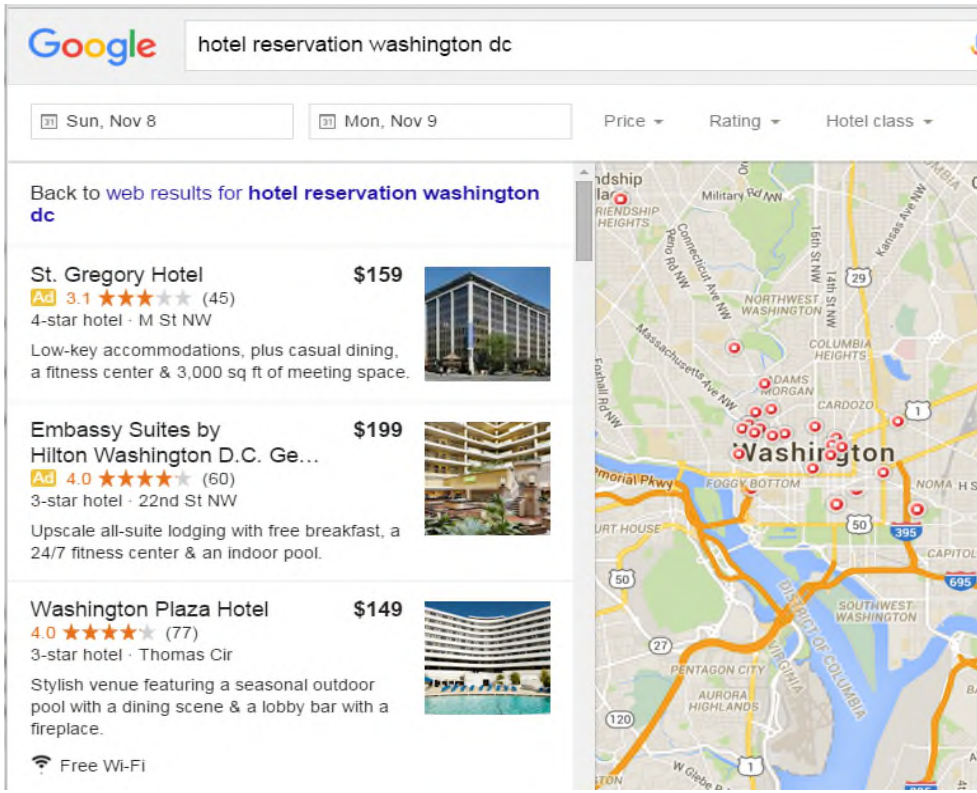
Influence initiative by providing feedback throughout the process.

Moving to a Web of Linked Data: Improving Web Formats

orld Wide Web is moving from a web of linked" documents to "linked data."

Google, job and travel aggregators use common terminology (metadata) that has been accepted as web standard (e.g., Schema.org)

Using consistent metadata for key features of credentials, the registry enables job seekers, students, workers, and employers to search for and compare credentials, just as travel apps are used to compare flights, rental cars, and hotels.

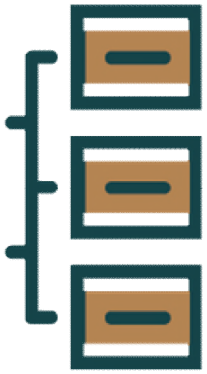


The web is moving to Linked Data. Don't get left off the map!

Credential Engine

Credential Engine Technologies

Credential Engine (CE) Technologies



Credential
ransparency
Description
nguage (CTDL)
– Metadata
Infrastructure

DR6

CTDL Editor – Transforms Partner's credential and quality assurance information to CTDL and publishes it to the Registry.

Credential Engine Registry – Set of services and repository.

Credential Find
Search App
Prototype – Ba
search to
demonstrate,
review, and ge
feedback.

Credential Engine

Slide 14

DR6 bolded hyphens next to CTDL and CTDL Editor for consistency

David Reischman, 5/1/2017

xample Stakeholder Relationships

Accredit, approve, endorse, recognize credentials and/or credentialing organizations.

dentialing anizations

- ✓ Certification Bodies
- ✓ Community Colleges
- ✓ Licensing Bodies
- ✓ Universities

Quality Assurance Entities

- ✓ ANSI
- ✓ Nation Accred
- ✓ Regio Accred
- ✓ Specia Profes Accred
- ✓ State Agenc

Accredit, approve, endorse, recognize credentials and/or credentialing organizations.

Offer credentials & learning opportunities.

Require or prefer competencies & credentials.

Credential Registry

Employers / Industry

- ✓ Companies
- ✓ Industry Associations
- ✓ Regional Collaboratives

Apps

- ✓ Emplo
- ✓ Job Se
- ✓ Studer

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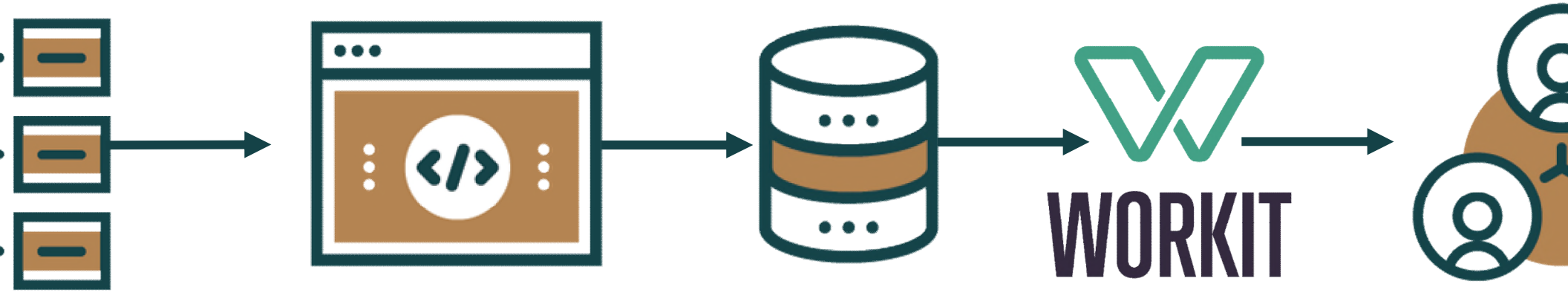
How it Works Now



redential nsparency tion Language) – Metadata astructure

CTDL Editor – Converts **Partner's** credential and quality assurance information to CTDL and publishes it to the Registry.

Credential Engine Registry – Set of services and Registry.

Credential Finder Prototype App – Basic search to demonstrate, review, and get feedback.

Partn Review, feedb ga

Make updates.

Credential Engine

Pilot Period

- Design/Develop CE technologies and garner feedback

aintaining Quality on the Registry at Scale

Denotes CE quality control already in place or in planning.

What are key quality indicators (apparent on the 'face' of the data)?

- Existence of recognized QA.
- Explicit statements of competencies.
- Metadata level of completeness.

What are key quality indicators (not apparent on the 'face' of the data)?

- Accuracy of the assertions.
- Currency of the credential information.

Everything must scale.

Automated quality mechanisms:

- Data validation including minimum expected data.
- Forward notification of 3rd party assertions (e.g., "accreditedBy") (notify/embargo assertion).
- Periodic reaffirmation of credential currency (embargo/notify).
- Reports.
- Systematic link checking (embargo/notify).

Community, Capacity & Consensus:

- Advisory/Stakeholder input.
- Code of Ethics.
- Crowd “reporting” (from broken links to sp
- Crowd rating & ranked ordering of displays
- Data auditing review service.
- Expert/peer review of credentials.
- Open CTDL with guidance.
- Technical assistance & training.

Credential Transparency Description Language & Competency Frameworks

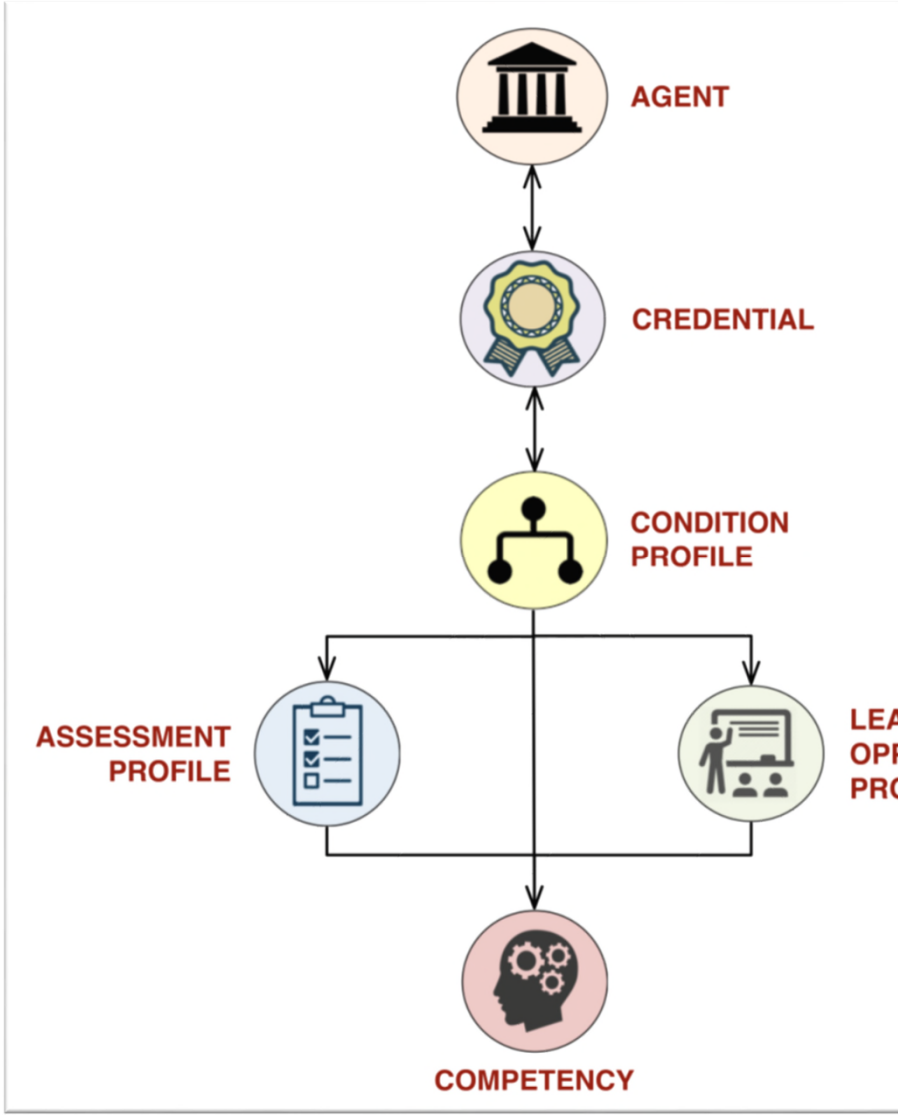
redential Transparency Description Language (CT

bout:

CTDL is a dictionary of terms for descriptions of credentials offered.

Enables simple statements and rich descriptions of entities in the credentialing ecosystem.

Modeled as a directed graph using the W3C's Resource Description Language [RDF] for describing data on the Web. RDF extends the linking structure of the Web to use URIs to name the relationship between things as well as the two ends of the link (this is usually referred to as a "triple"). Using this simple model, RDF allows structured and semi-structured data to be mixed, exposed, and shared across different applications.



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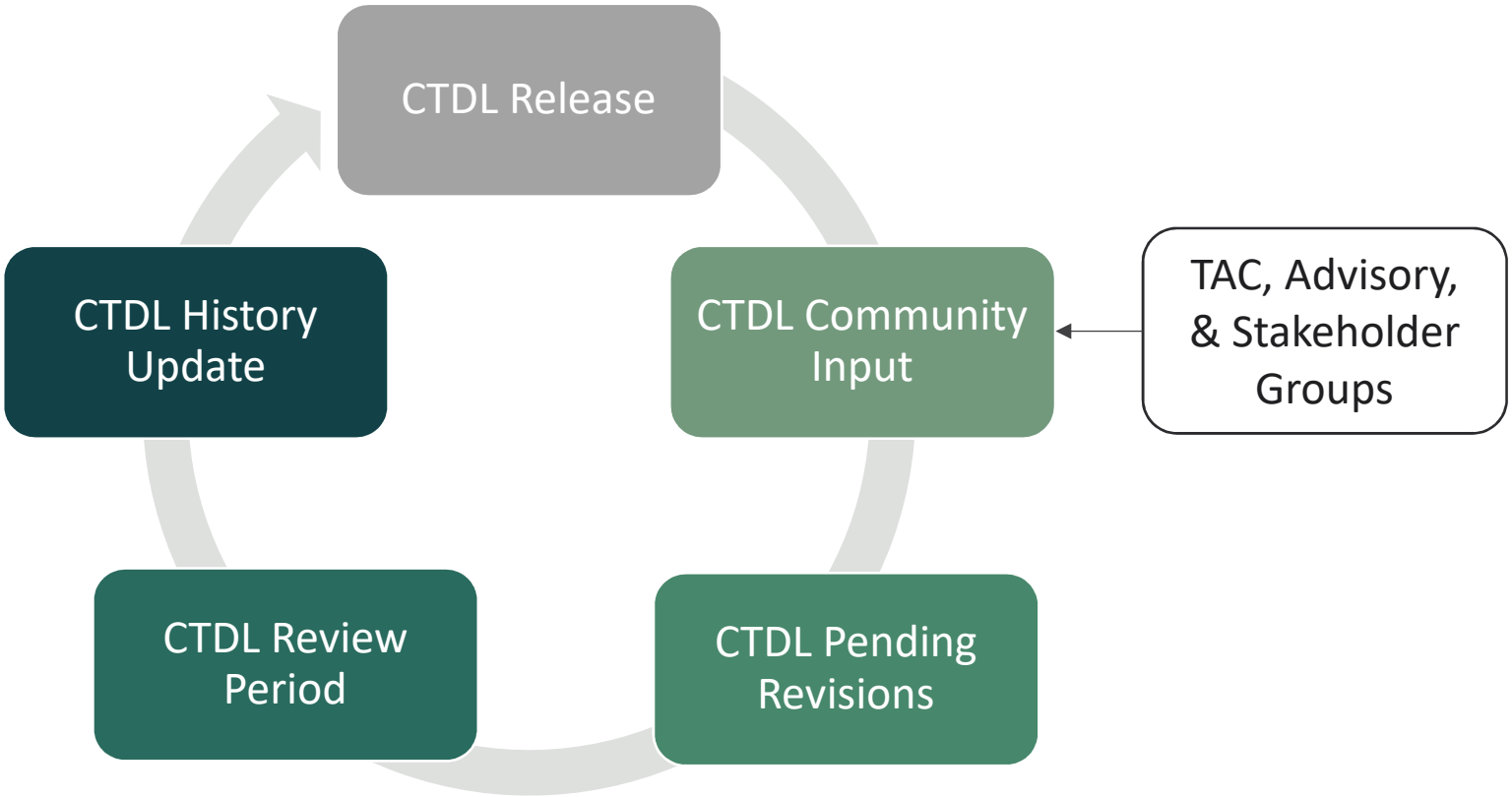
CTDL Continuous Review

CTDL is updated periodically through "releases" (stable snapshots).

Next release is June30, 2017



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R11

inking Data & Harmonizing

he CTDL is developed based on portant tenets:

The CTDL is modeled using W3C specifications for Linked Data.

Build off schema.org.

Harmonize with key standards bodies and promote wide adoption.

Slide 22

DR11 tabbed title to be at the same level as the others

David Reischman, 5/1/2017

edential Transparency Description Language (CTDL)

ring Name, Purpose, Type of Credential redentialing Organization

dentialing organization identification

dential organization type

dential identification

dential type

ose of credential

re credentialing is offered

sdiction

Declaring What Is Inside the Credential

- Credentialing eligibility requirements
- Competencies/learning outcomes required to attain credential
- Assessments required to attain credential
- Education and training for the credential
- Time required to attain credential
- Credentialing costs
- Maintaining credential
- Credential removal
- Credential holder authentication
- Version management
- Employer engagement

Declaring Other Key Characteristic Connections

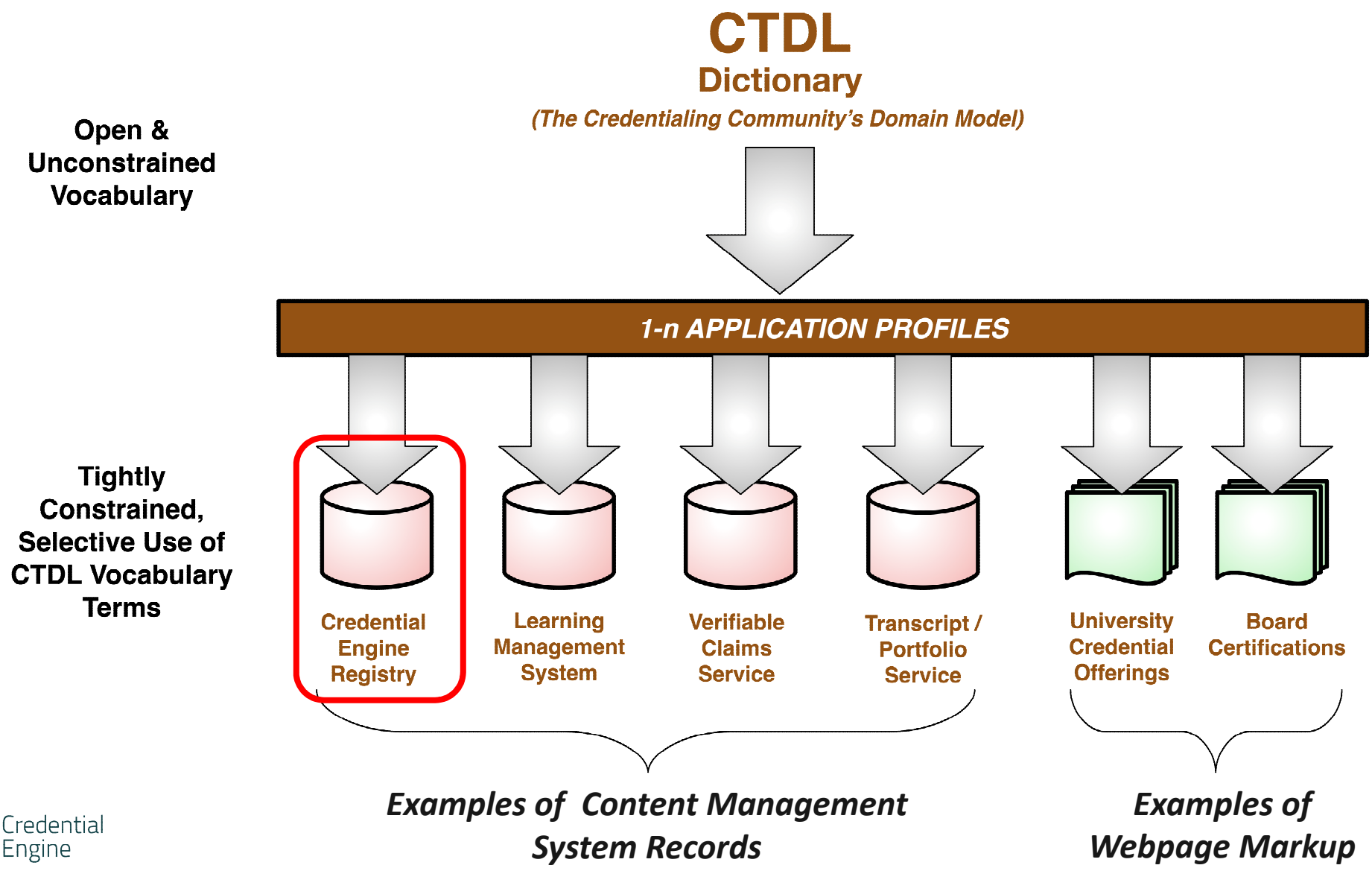
- Primary scope of application: subject/discipline area
- Primary scope of application: caree preparation and advancement
- Role of occupational regulation and licensing
- Geographic portability of credential
- Connections to other credentials
- *Career Pathway Connections**
- External quality assurances
- Employer recognition
- *Number and characteristics of cred holders**
- *Employment and earnings of crede holders**

**Italicized descriptors are not ye*

edential Transparency Description Language (CTDL)
ality Assurance

se & Scope of the QA Body	QA Process	Public Information about QA Decisions	Additional Info
e of QA body n purpose ions/Objectives t is accredited, endorsed, roved, recognized? is QA used? ary geographic scope imum period of approval, gnition, endorsement, editation? r body began operating	▪ Activities used to assess credential in QA process ▪ Process used to validate quality criteria? ▪ Quality criteria, standards, and requirements used in QA process ▪ Outcomes reviewed as part of QA process ▪ Stakeholders involved in developing quality criteria ▪ Criteria for selecting and evaluating assessors and reviewers?	▪ Types of decisions made and how they are defined ▪ Directory of accredited, approved, recognized and/or endorsed providers and their current status ▪ Information about QA body made public with request ▪ Information about QA body made public without request	▪ General Info ▪ Policies and pr for managing c interest, comp appeals ▪ External recog

CTDL Dictionary to Applications



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CTDL Profile of ASN-DL

DL application profile for the description of competency frameworks using the hievement Standards Network Description Language (ASN-DL).

veloped through NSF funding between 1999-2013

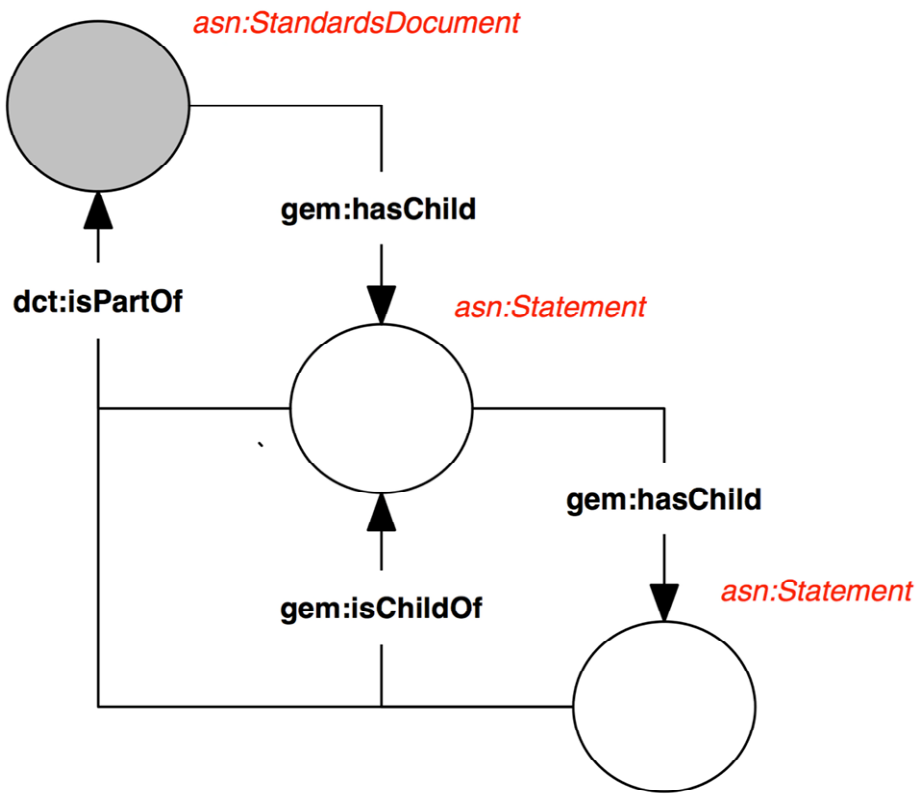
hat is ASN-DL intended to do?

- Designed to consistently describe any assertion of knowledge, skill, and ability.
- Serves as a data representation of the canonical (official) version.
- Supports the Semantic Web and Linked Data processes through its basis in W3C's Resource Description Framework (RDF).
- Supports cross-framework comparison and linking by means of a common abstract data model.
- Supports design of profiles through refinement and extension:
  - Refinement through creation of subproperties and subclasses to meet local/national needs;
  - Extension thorough the judicious addition of new properties and classes.
- Express competencies at any (arbitrary) level of granularity.

ofiles exist for the U.S., Australia, and Canada—this work will be the CE-ASN Profile

ASN model...

wo-Entity Model:



Standards Document

The competency framework as a whole including provenance information

Statement

The individual competencies of which a competency framework is comprised

Each concept is declared using "isPartOf" to be a member of one (or more) competency frameworks.

Term Declarations

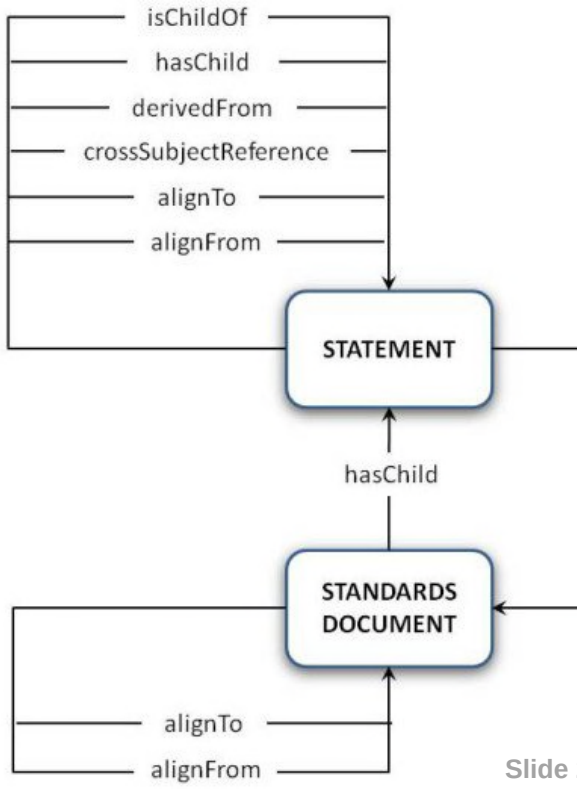
Properties

- 5.1.1 **Align From**
- 5.1.2 **Align To**
- 5.1.3 **Alternative Statement Notation**
- 5.1.4 **Assesses Competency**
- 5.1.5 **Authority Status**
- 5.1.6 **Broad Alignment**
- 5.1.7 **Broad Correlation**
- 5.1.8 **Comment**
- 5.1.9 **Comprised Of**
- 5.1.10 **Concept Keyword**
- 5.1.11 **Concept Term**
- 5.1.12 **Cross Subject Reference**
- 5.1.13 **Derived From**
- 5.1.14 **Exact Alignment**
- 5.1.15 **Exact Correlation**
- 5.1.16 **Export Version**
- 5.1.17 **File Created** ***[Deprecated]***
- 5.1.18 **Identifier**
- 5.1.19 **Indexing Status**
- 5.1.20 **Jurisdiction**
- 5.1.21 **List ID**
- 5.1.22 **Local Subject**
- 5.1.23 **Major Alignment**
- 5.1.24 **Major Correlation**
- 5.1.25 **Minor Alignment**
- 5.1.26 **Minor Correlation**
- 5.1.27 **Narrow Alignment**
- 5.1.28 **Narrow Correlation**
- 5.1.29 **Prerequisite Alignment**
- 5.1.30 **Prerequisite Competency**
- 5.1.31 **Proficiency Level**
- 5.1.32 **Publication Status**
- 5.1.33 **Repository Date**
- 5.1.34 **Skill Embodied**
- 5.1.35 **Statement Label**
- 5.1.36 **Statement Notation**
- 5.1.37 **Teaches Competency**

*** Includes additional core properties from Dublin Core**

5.2 Classes

- 5.2.1 Competency Map
- 5.2.2 Correlation Resource
- 5.2.3 Jurisdiction Encoding S
- 5.2.4 Learning Resource
- 5.2.5 Map
- 5.2.6 Standard Document
- 5.2.7 Statement
- 5.2.8 Status Encoding Schen



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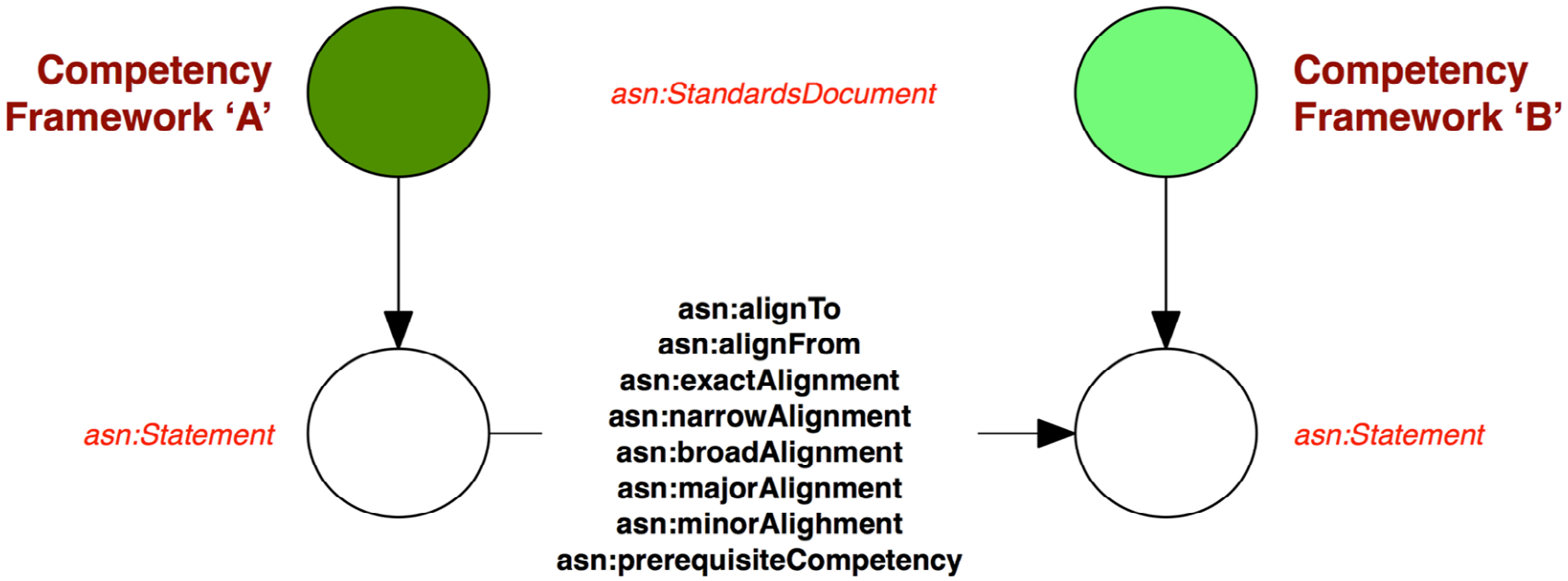
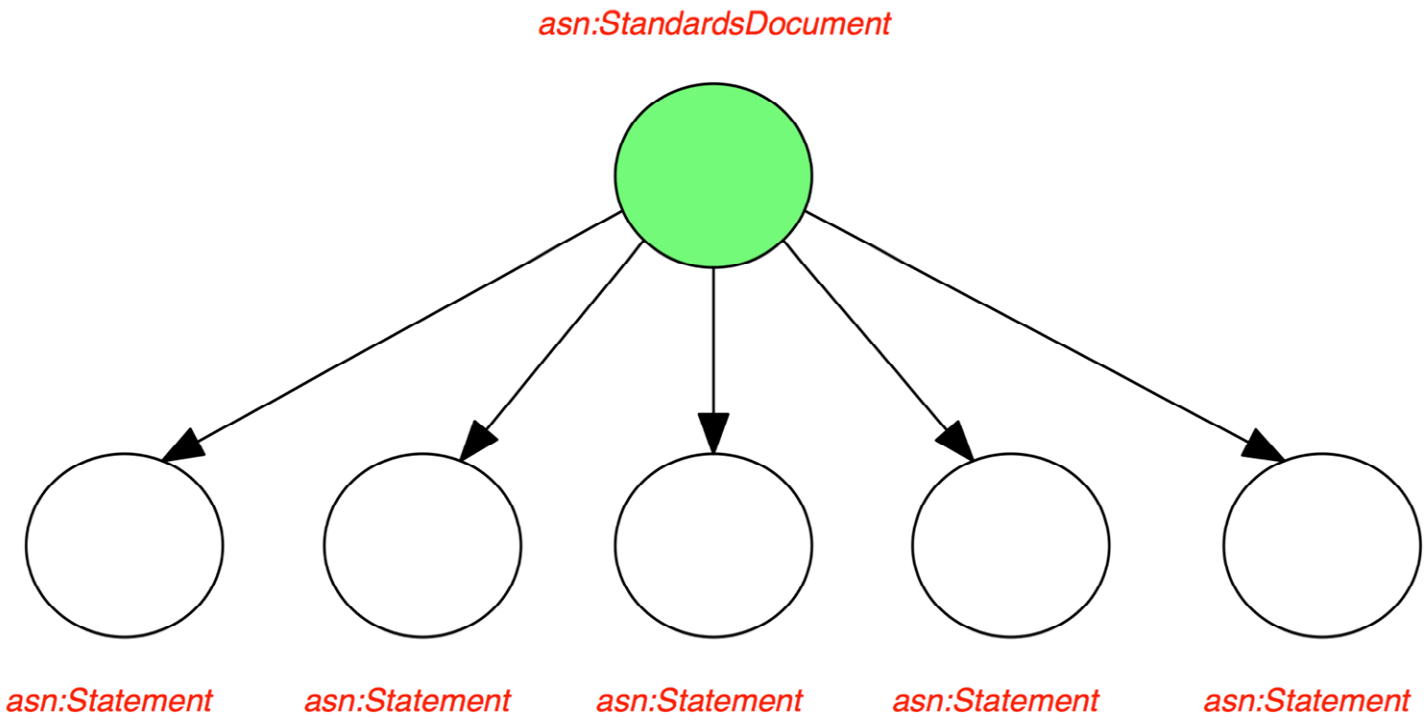
Competency-to-Competency mapping...



Flat "list" concept scheme...



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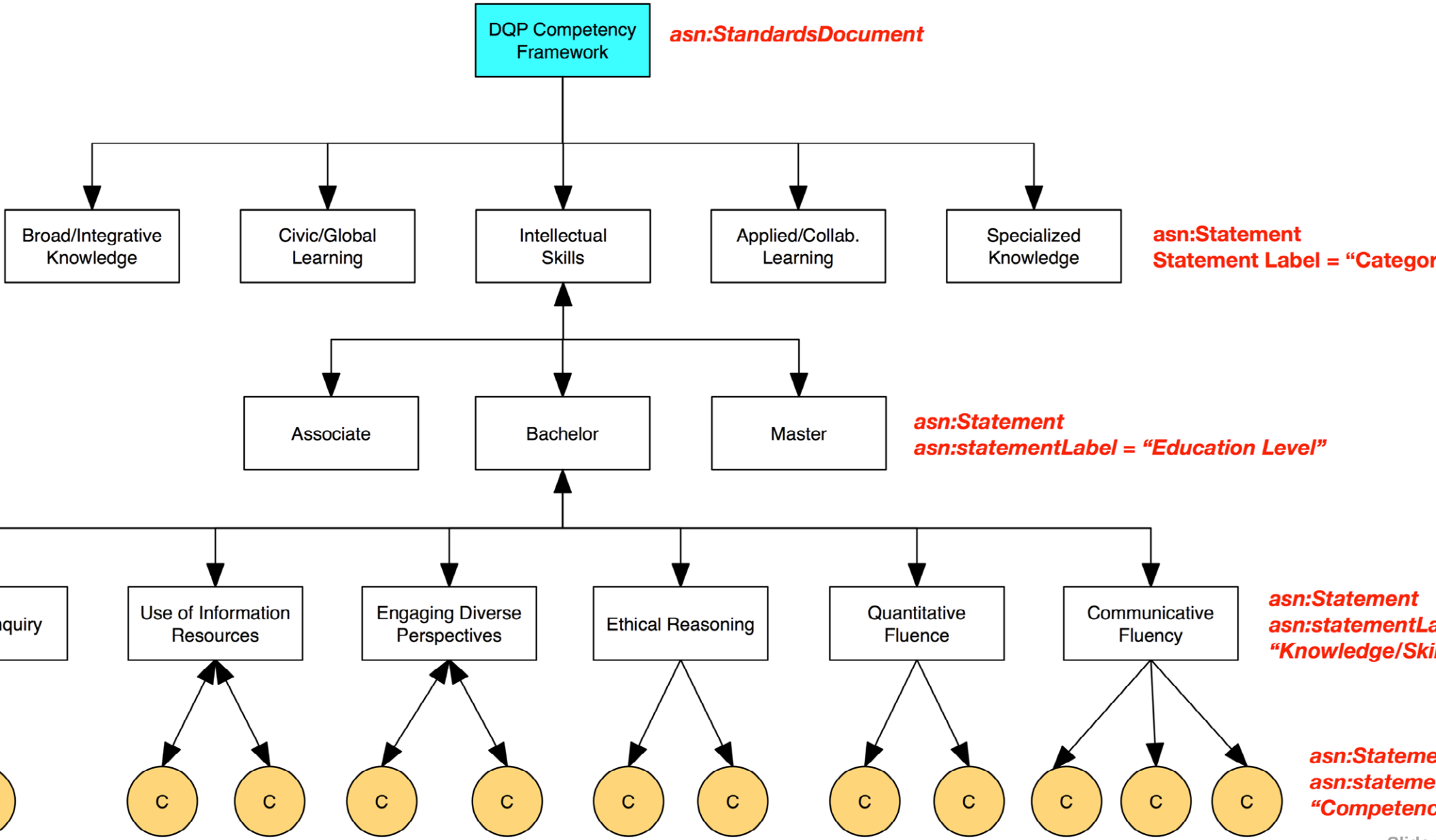
DQP Competency Framework
asn:StandardsDocument
Broad/Integrative Knowledge
Civic/Global Learning
Intellectual Skills
Applied/Collab. Learning
Specialized Knowledge
asn:Statement
Statement Label = "Categor
Associate
Bachelor
Master
asn:Statement
asn:statementLabel = "Education Level"
Use of Information Resources
Engaging Diverse Perspectives
Ethical Reasoning
Quantitative Fluence
Communicative Fluency
asn:Statement
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"Knowledge/Ski
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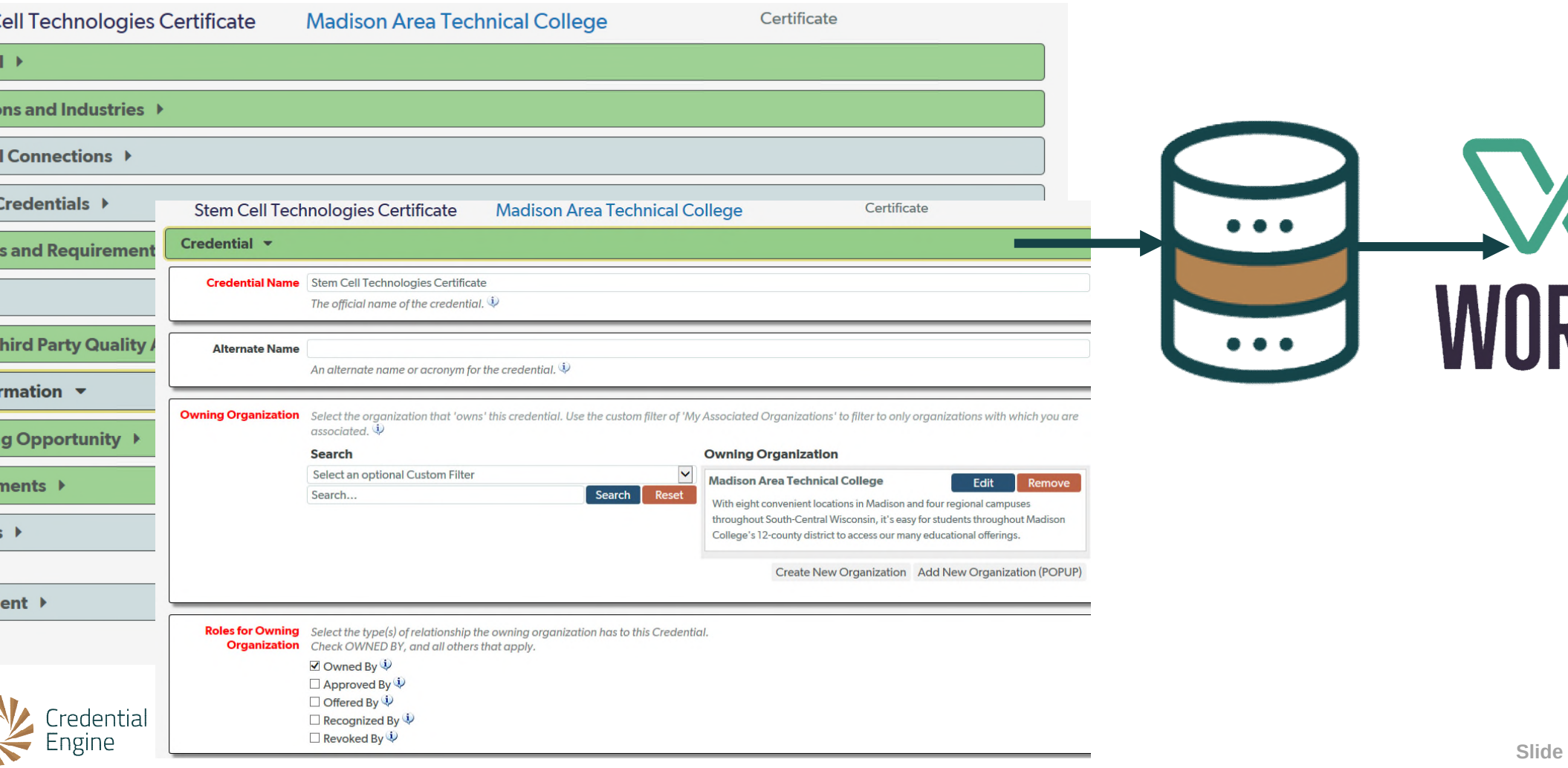
Credential Registry & CTDL Editor

CE Team Works with Partners to Populate CTDL Editor

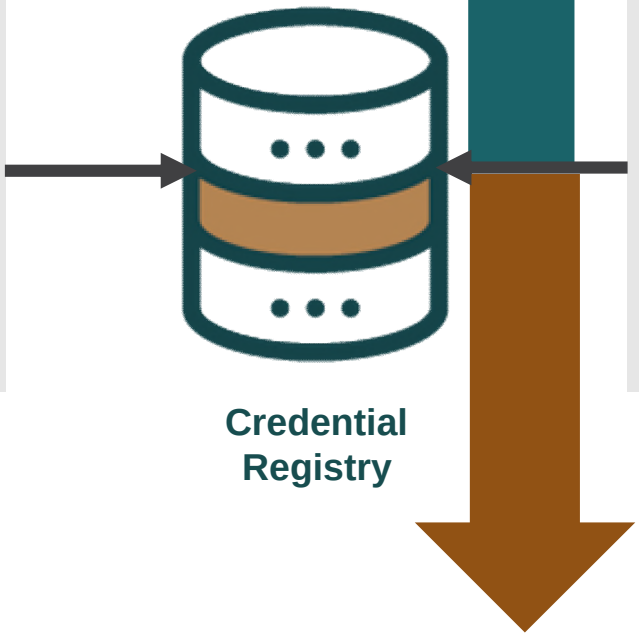


Co-Designing Automated Updating

Pushing
Credentialing organization pushes their CTDL descriptions to the *Credential Registry*.

ual

TDL Editor
- Small Quantity
- Stable



Automated

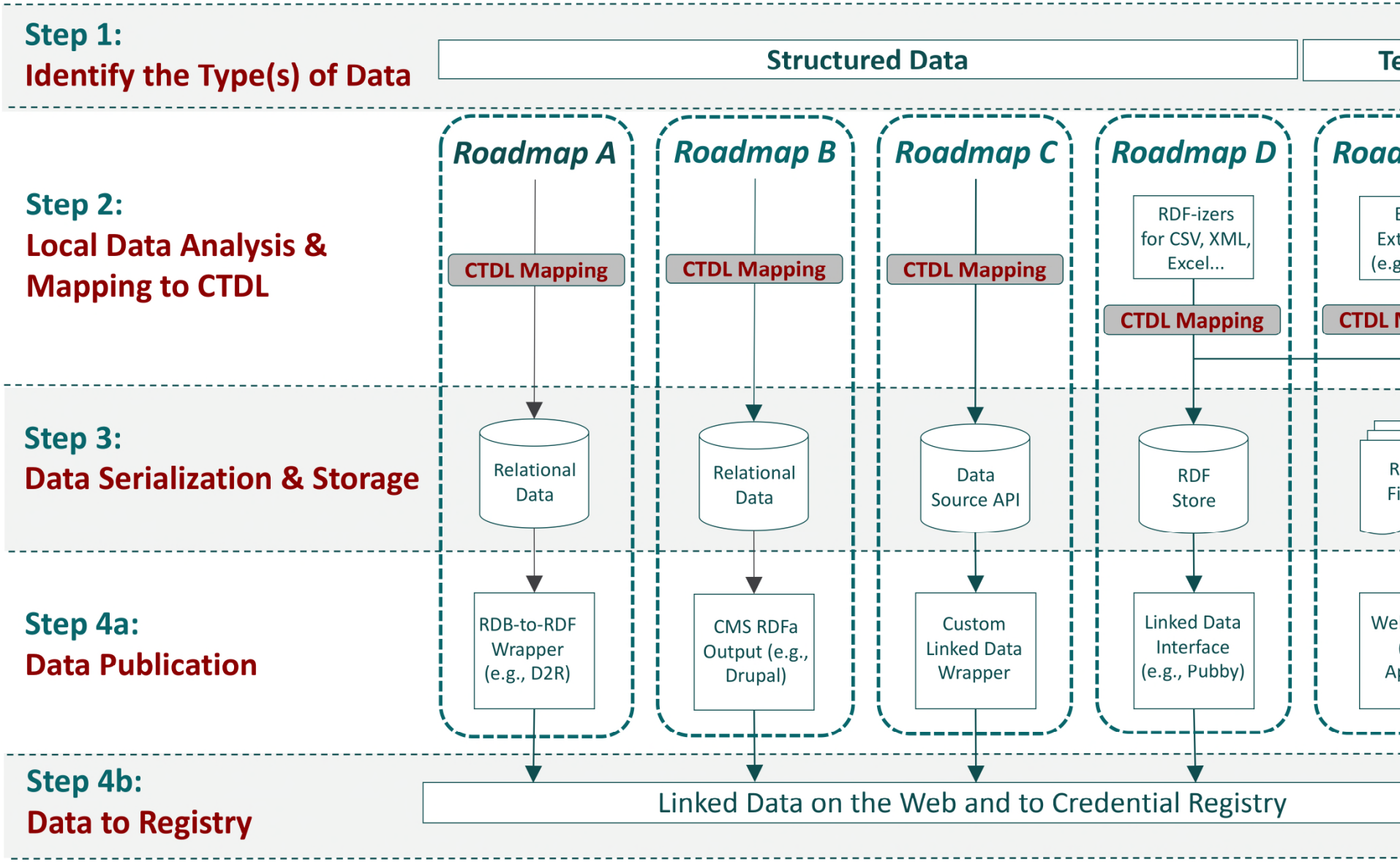
- Roadmap Guidelines
  - Large Quantity
  - Dynamic

Pulling
The *Credential Registry* pulls (harvests) th
data from the credentialing organization e
as page markup or as records.

Credential Engine

http://credreg.net/registry

End-to-End Partner Work Flows



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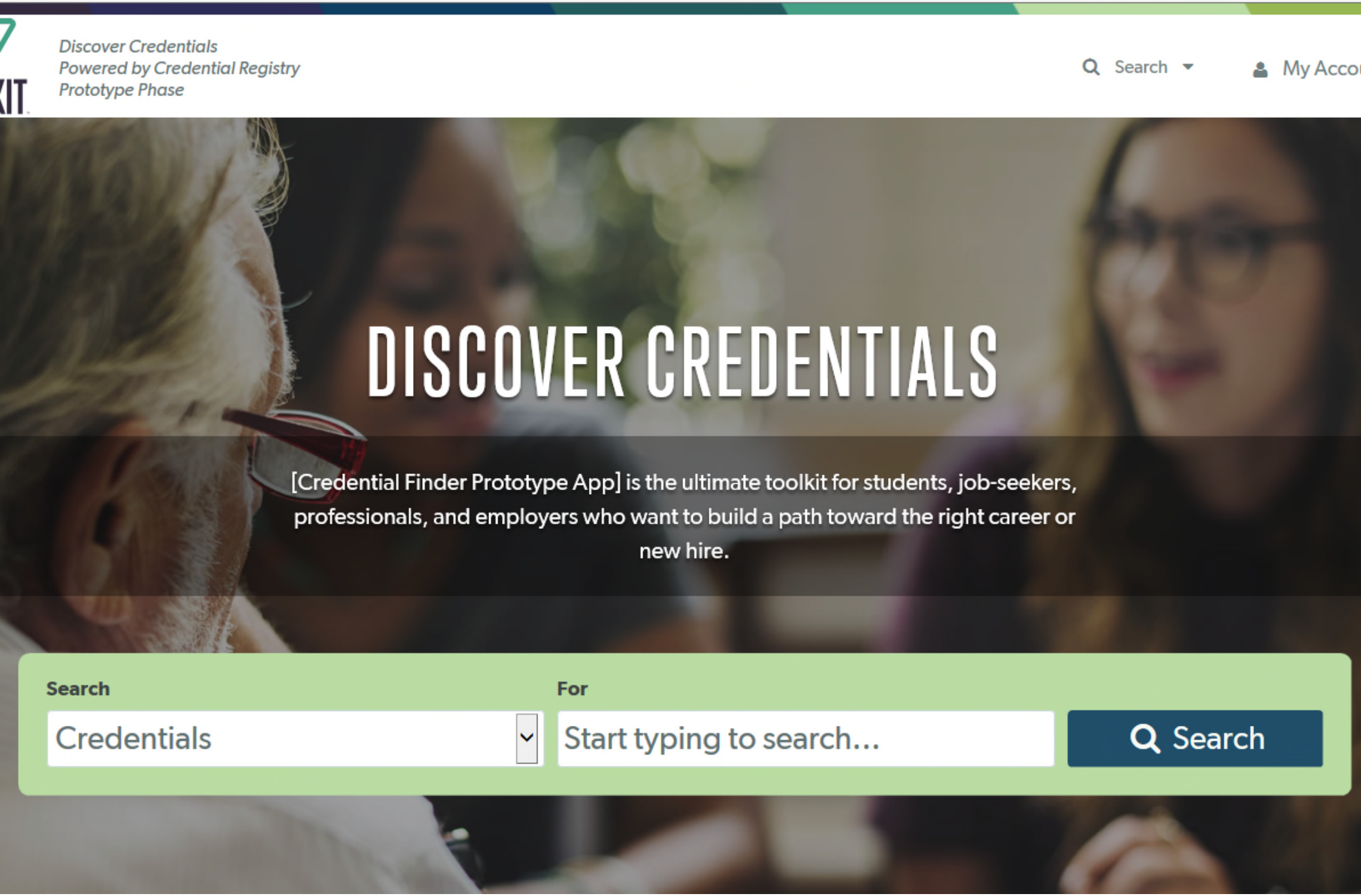
Workit™ Search App Prototype


KIT
Discover Credentials
Powered by Credential Registry
Prototype Phase
Search
My Acco
DISCOVER CREDENTIALS
[Credential Finder Prototype App] is the ultimate toolkit for students, job-seekers, professionals, and employers who want to build a path toward the right career or new hire.
Search
Credentials
For
Start typing to search...
Search

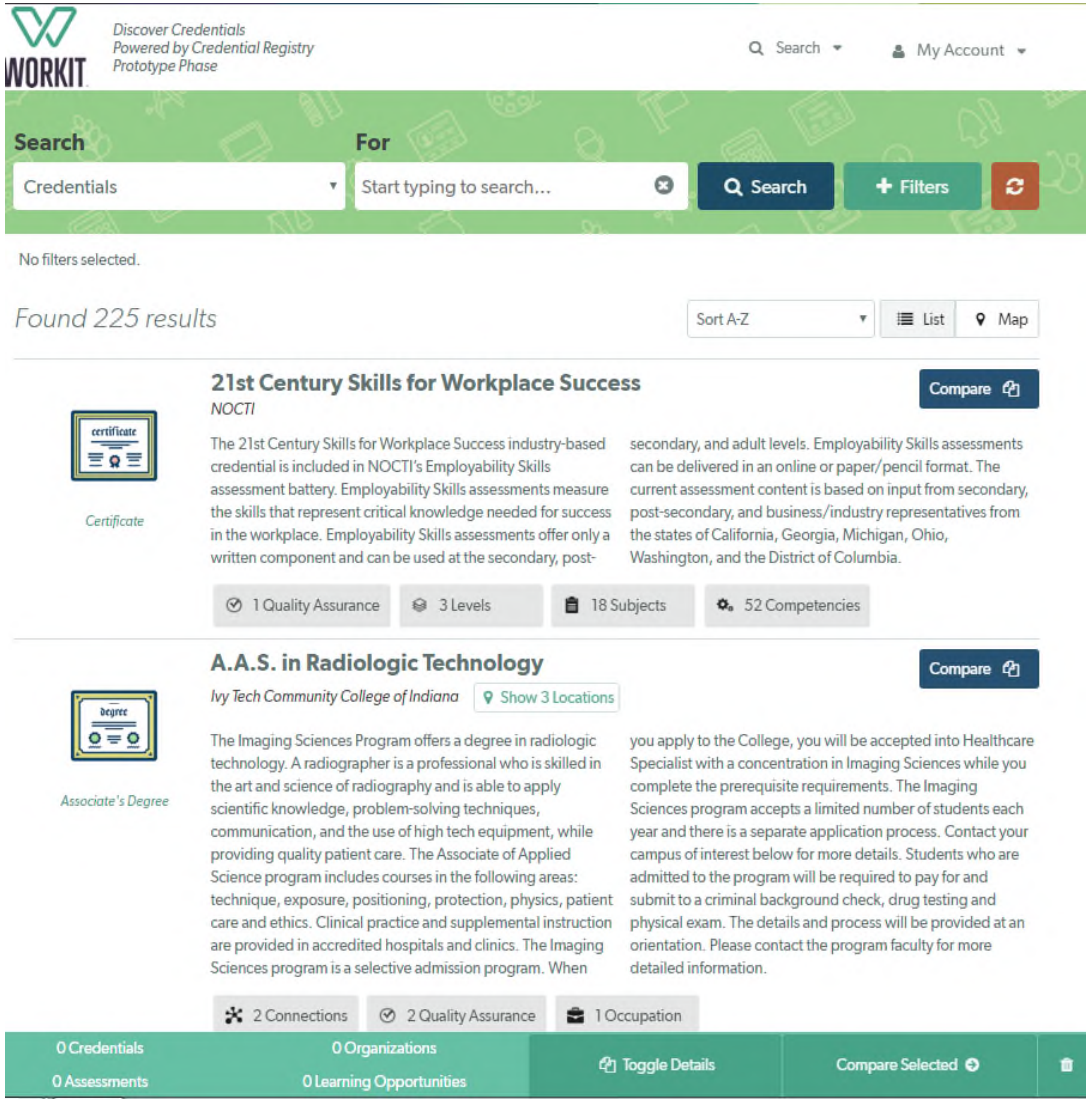
Workit™ Search App Prototype

Participants view information about the small number of credentials they have selected for testing on the registry in the context of an app.

Shows the credential information from the Registry.

Provides context for understanding the Credential Transparency Description Language (CTDL) and why it's important to have transparent and comparable credential information.

Requires a password.



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Q & A

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acebook: https://www.facebook.com/credengine

BetterCreds

Credential Engine