

Credential and Competency Transparency for Linking Education, Training & Careers

ACQF Training Programme 18-227April 2022
Session 14

April 2022



Who Are We?



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Find @CredEngine on



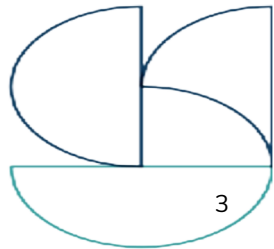
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Call to Action

- Learn about credential transparency
- Advocate for credential transparency as a public good
- Build a culture of credential transparency
- Incorporate credential transparency and a multi-national credential registry as part of the African Continental Qualifications Framework



About Credential Engine

Who We Are

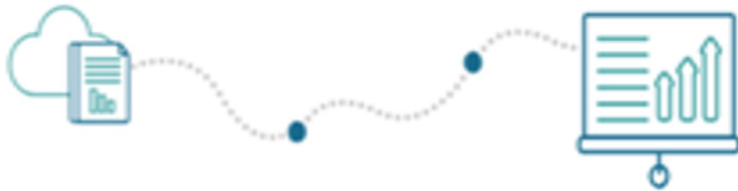
- Non-Profit
- Community built
- Vendor agnostic
- Data driven
- Mission oriented around credential, competency, and pathways transparency


What We Do

- Advocate for credential transparency
- Develop and support linked open data schemas
- Provide open, interoperable infrastructure
- Build and mobilize partnerships
- Provide expertise and services for organizations implementing credential transparency


What We Do NOT Do

- Collect or verify personally identifiable information
- Issue credentials
- Verify issued credentials





Building a linked, open, interoperable data network that everyone can access for timely and trusted information about credentials, qualifications, competencies, skills, quality, transfer, pathways, outcomes, links to jobs, and more.




Why: The Importance of Credential and Competency Transparency




Why It Matters--the U.S. Context

- The credential ecosystem is large, complex, and confusing. In the U.S. alone:
 - 967,734+ unique credentials;
 - Hundreds of thousands of competency frameworks and models;
 - Well over 50,000 providers of credentials;
 - Close to \$2t spend on education and training annually;
 - Various and unclear quality assurance entities, standards and public awareness
- “Credentials” are broadly defined to include diplomas, badges, microcredentials, certificates, certifications, apprenticeships, licenses, qualifications, and degrees of all types and levels.
- Before Credential Engine, there was no common language to describe or compare credentials and competencies. Now the Credential Transparency Description Language (CTDL) is recognized as the standard language to make credentials understandable, comparable, and discoverable. CTDL provides 800+ data fields.
- Without widespread adoption of this standard common language, people will continue to get lost and lose out on opportunities.



Credential Engine and its technologies support connections among formal qualifications, micro-credentials, competencies, job skills, occupations and jobs, pathways and transfer value, badges, learning and employment records,

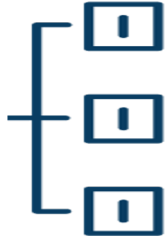


"Credential Engine has revolutionized the way we think about credentials and increased exponentially our ability to transform previously isolated data into linked, open data."

- Ken Sauer, Senior Associate Commissioner and Chief Academic Officer, Indiana



Credential Engine's Open Technologies



Credential Transparency Description Language (CTDL)

Common language for describing key features of credentials, qualifications, providers, competencies, skills, quality, outcomes, pathways, transfer, jobs, etc.,



Publishing Tools

After creating a user account, organizations use the API or any of the Publishing System tools to convert information to CTDL and publish to the Registry.



Credential Registry

More than a database, the cloud-based Registry collects and connects credential data described with CTDL and supports an open applications marketplace.



Open Applications Marketplace

Credential Engine is “vendor-agnostic”, and ensures that Registry data is accessible to all vendors for use in search, navigation, pathways, accountability, learning records, etc.

CREDENTIAL FINDER

Credential Finder

A Credential Engine supported tool to view and explore the information stored in the Registry.

This is an open, global resource.

The Credential Finder is not designed or intended to be a full-service platform for education, training, or career guidance.

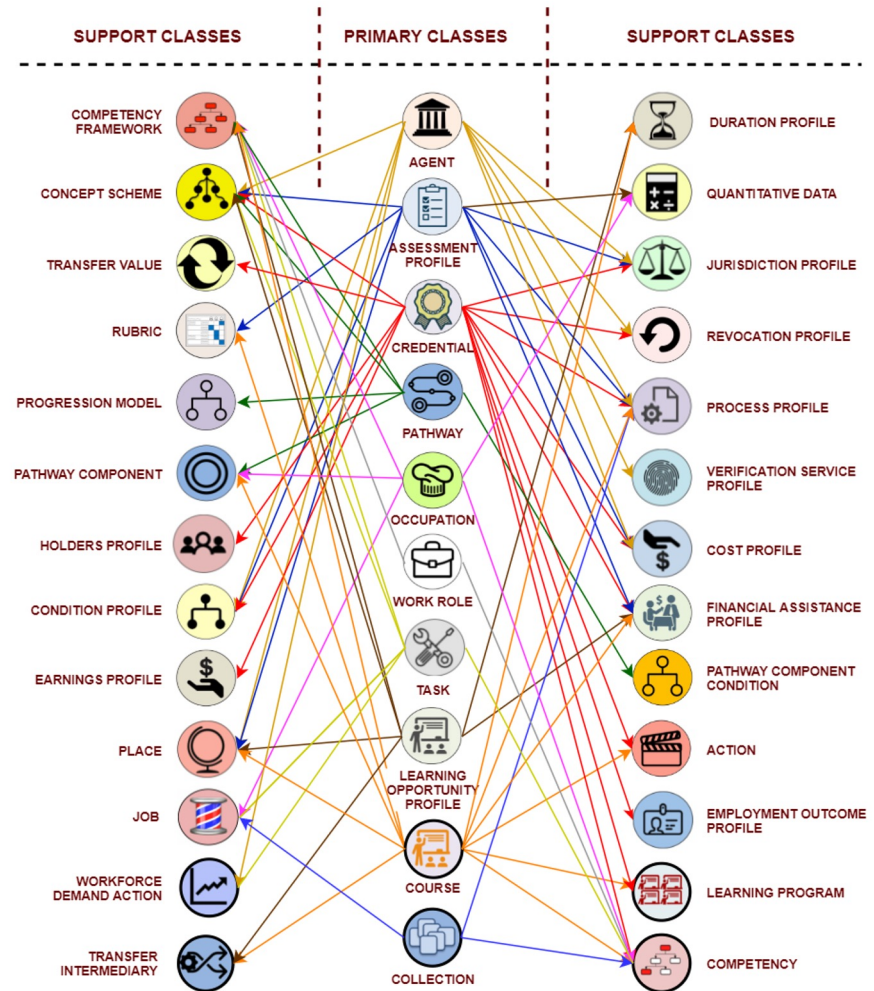
Built on global open standards,
W3C and schema.org
<https://credreg.net>

Credential Transparency Description Language (CTDL)

A common language modeled on the semantic web for transparency and comparability of credential and competency information.

Supports customizable CTDL profiles to meet community needs.

<https://credreg.net/ctdl/handbook>



Examples of Rich CTDL Information for Credentials, Qualifications, Skills, Jobs, and More



- Credential or qualification issuer information
- Learning opportunities and assessments
- Skills and competencies
- Alignments to quality assurance frameworks
- Connections, such as stacking of credentials and qualifications and combining of skills
- Accreditation and other third-party quality recognitions
- Occupational alignment
- Prerequisites, requirements, cost, and time to earn
- Jurisdiction and revocation where applicable
- Transfer value to other institutions
- Components of education and career pathways
- Bridges to jobs, work roles, and tasks
- Aggregate outcome and labor market information

The technical basis of the semantic web, linked data and knowledge graphs



RDF: Resource Description Framework



W3C Recommendations from 1999 onwards.

- early 2000's focus on the "**semantic web**": ontologies, knowledge representation and logical inferencing
- 2006 onwards focus on "**linked data**" and interoperability
- 2012 onwards focus on "**knowledge graphs**" and data mining

RDF: Resource Description Framework



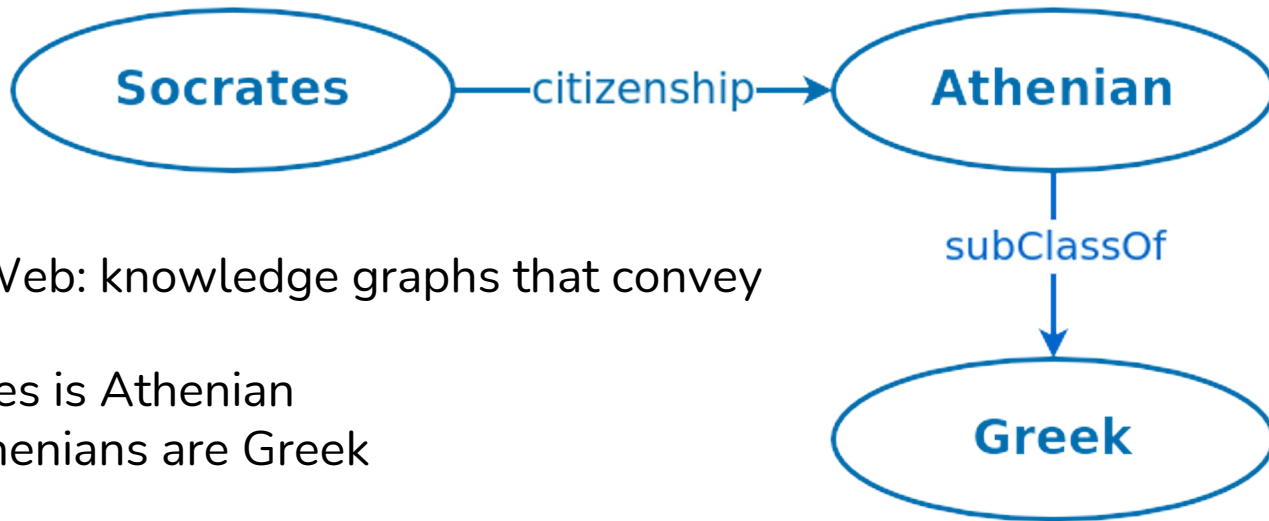
- Subject - predicate - Object
- Everything identified with URLs

<https://www.wikidata.org/entity/Q913> <http://www.wikidata.org/prop/direct/P27>
<https://www.wikidata.org/entity/Q844930>.

"People think RDF is a pain because it is complicated. The truth is even worse. RDF is painfully simplistic, but it allows you to work with real-world data and problems that are horribly complicated."

Dan Brickley, Schema.org and Google; Libby Miller, BBC ([source](#))

Knowledge Graphs and the Semantic Web



Semantic Web: knowledge graphs that convey meaning

- Socrates is Athenian
- All Athenians are Greek

Therefore


- Socrates is Greek


Linked Data

Remember, everything is identified with URLs

- Can follow the link for more data

Image is the Google "knowledge panel" from a search for Socrates.



Socrates 

Philosopher

Socrates was a Greek philosopher from Athens who is credited as the founder of Western philosophy and among the first moral philosophers of the ethical tradition of thought. [Wikipedia](#)

Born: 470 BC, Alopece

Died: 399 BC, Classical Athens

School: [Classical Greek philosophy](#)

Children: [Lamprocles](#), [Menexenus](#), [Sophroniscus](#)

Parents: [Sophroniscus](#), [Phaenarete](#)

Siblings: [Patrocles](#)

[More images](#)

Linked Data

Remember, everything is identified with URLs

- Can follow the link for more data
- Human language independent

Image is the Wikidata entry for Socrates name in various languages.

Socrates (Q913)

ancient Greek philosopher

Sokrates

▼ In more languages

[Configure](#)

Language	Label	Description
English	Socrates	ancient Greek philosopher
British English	Socrates	classical Greek Athenian philosopher
Spanish	Sócrates	filósofo griego clásico ateniense
Greek	Σωκράτης	φιλόσοφος της Αρχαίας Ελλάδος (-470/-399)
Afrikaans	Sokrates	Griekse filosoof
Amharic	ሶክራጥስ	No description defined
Aragonese	Socrates	No description defined
Old English	Socrates	No description defined
Arabic	سقراط	أغريقي قديم
Egyptian Arabic	سوفراط	No description defined
Assamese	সক্ৰাট	No description defined
Asturian	Sócrates	No description defined
Azerbaijani	Sokrat	No description defined
South Azerbaijani	سقراط	No description defined
Bashkir	Сократ	No description defined
Bavarian	Sokrates	No description defined
Central Bikol	Socrates	No description defined

Linked Data

Remember, everything is identified with URLs

- Can follow the link for more data
- Human language independent
- Allows disambiguation

Q: when is Socrates not Greek?

A: when Socrates is Sócrates

<<https://www.wikidata.org/entity/Q102331>>, not

Σωκράτης: <<https://www.wikidata.org/entity/Q913>>

Image is the Google "knowledge panel" from a search for Socrates.



Sócrates

Brazilian footballer

Sócrates Brasileiro Sampaio de Souza Vieira de Oliveira, simply known as Sócrates, was a Brazilian footballer who played as a midfielder. His medical degree and his political awareness, combined with style and quality of his play, earned him the nickname "Doctor Socrates".
[Wikipedia](#)

Born: 19 February 1954, Belém, State of Pará, Brazil

Died: 4 December 2011, Albert Einstein Israelite Hospital, São Paulo, State of São Paulo, Brazil

Height: 1.92 m

Spouse: Katia Bagnarelli (m. ?–2011)

Children: Gustavo Vieira de Oliveira, MORE

Siblings: Raí

Parents: Guiomar de Oliveira, Raimundo de Oliveira

Linked Data

Remember, everything is identified with URLs

- Can follow the link for more data
- Human language independent
- Allows disambiguation
- Map terms from different standards:
Equate "citizenship" to "nationality"

Image is the Wikidata entry for the citizenship relation.


country of citizenship (P27)

the object is a country that recognizes the subject as its citizen
subject of (country) | citizenship | citizen of | national of | (legal) nationality

▼ In more languages

Configure

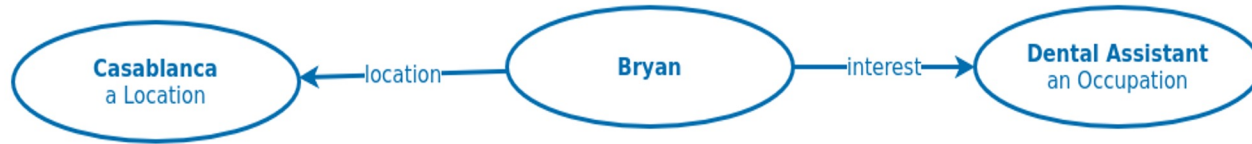
Language	Label	Description
English	country of citizenship	the object is a country that recognizes the subject as its citizen
British English	country of citizenship	the object is a country that recognizes the subject as its citizen
Spanish	país de nacionalidad	estado soberano del cual es ciudadana
Greek	χώρα πολιτογράφησης	κυρίαρχο κράτος ή πολιτεία που αναγνωρίζει το υποκείμενο

equivalent property  <https://schema.org/nationality>

▼ 0 references

Practical Knowledge Graph Example

Bryan, from Casablanca, wants to be a dental assistant.



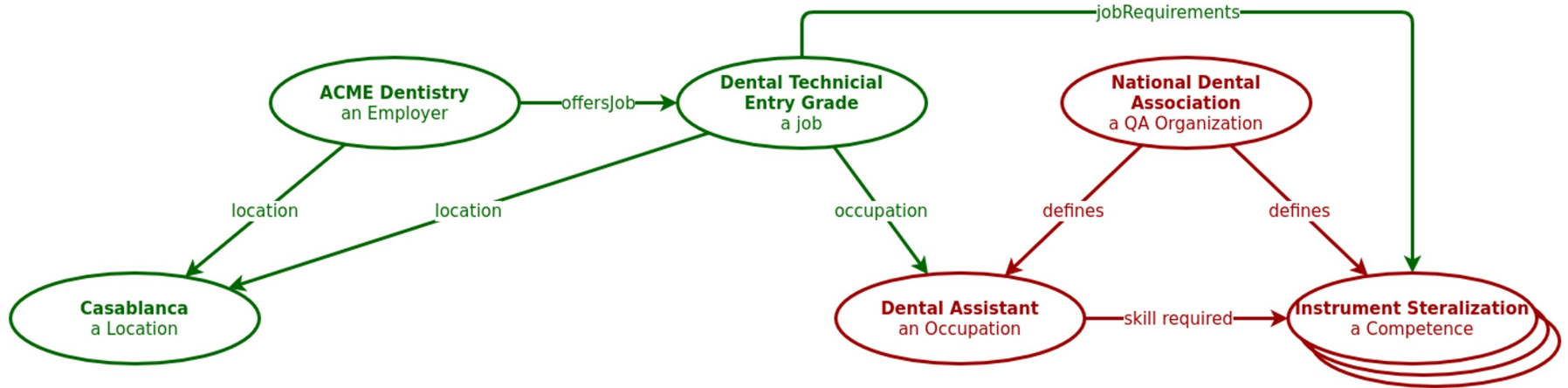
Practical Knowledge Graph Example

The occupation of dental assistant is regulated by the National Dental Association, who define a Competence framework and prescribe which competencies are required for which occupations.

The National Dental Association publish these requirements as linked data.



Practical Knowledge Graph Example



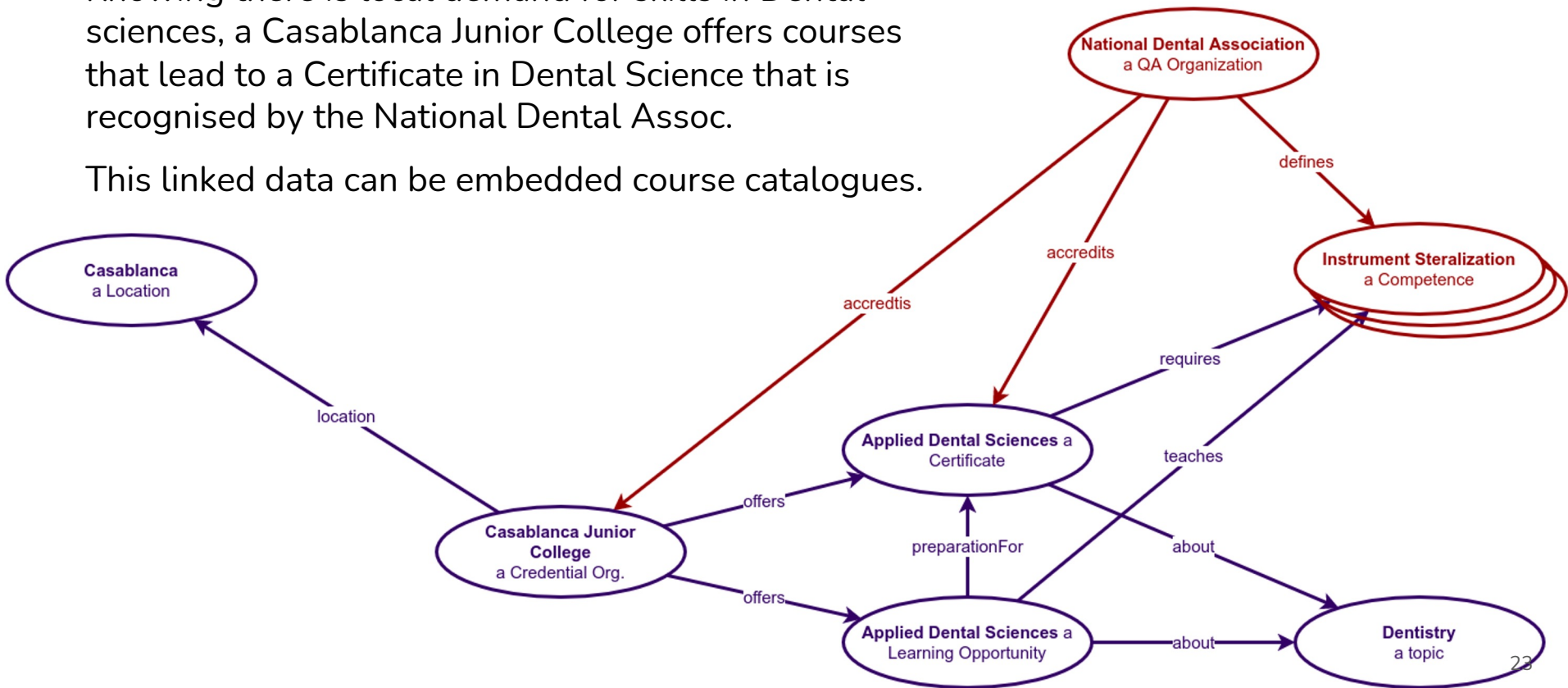
Local employers advertise jobs that are related to the occupation of Dental Assistant, and that list the required competencies specified by the National Dental Assoc.

This linked data can be embedded in job adverts.

Practical Knowledge Graph Example

Knowing there is local demand for skills in Dental sciences, a Casablanca Junior College offers courses that lead to a Certificate in Dental Science that is recognised by the National Dental Assoc.

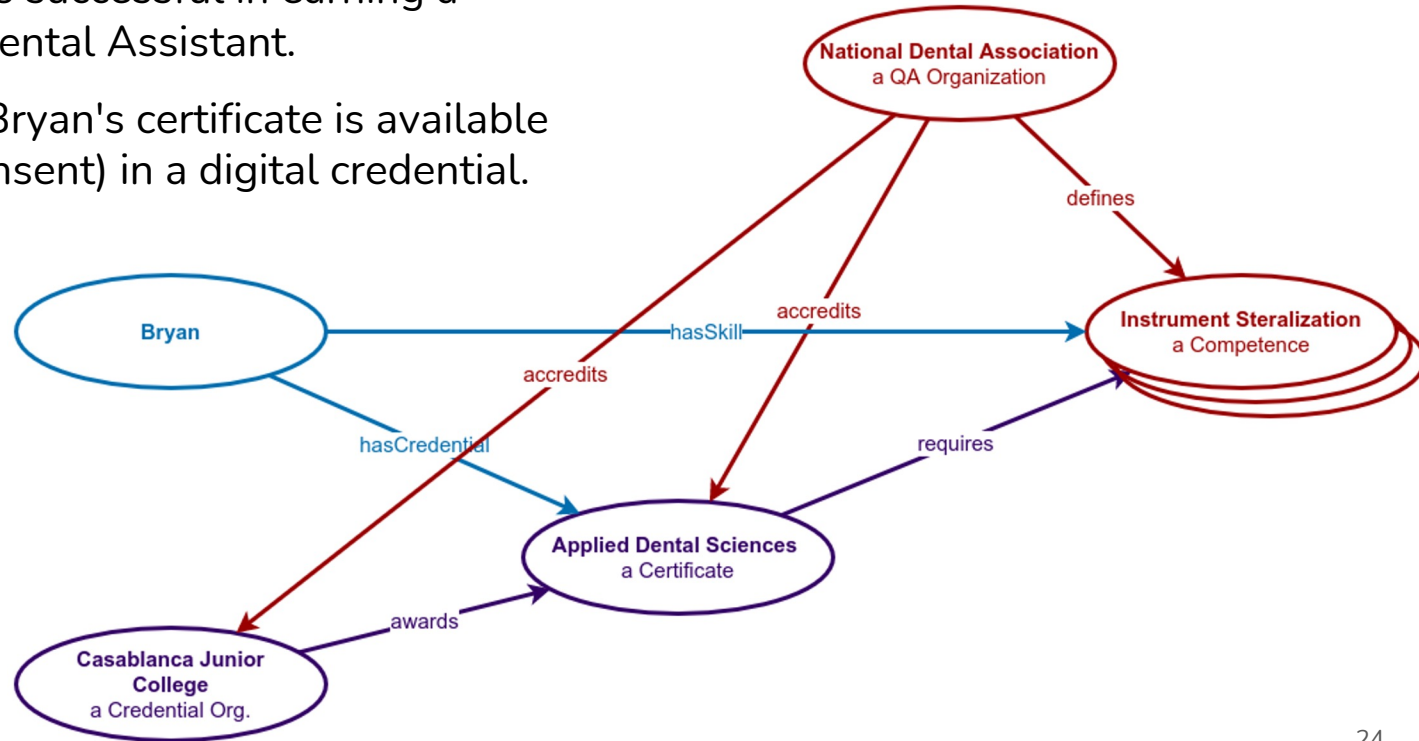
This linked data can be embedded course catalogues.



Practical Knowledge Graph Example

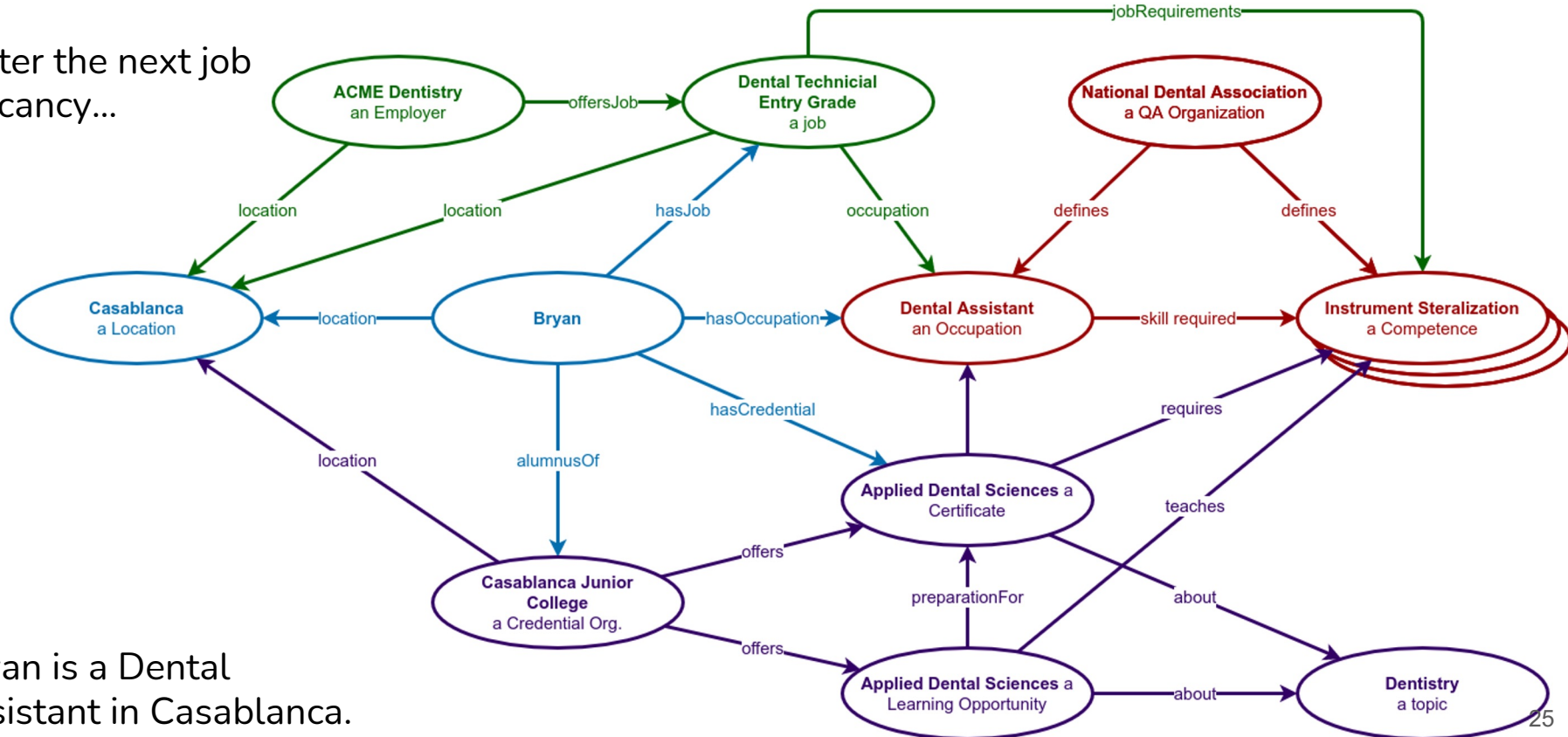
Bryan enrolls on the Applied Dental Sciences course and is successful in earning a certificate as a Dental Assistant.

The data about Bryan's certificate is available (with Bryan's consent) in a digital credential.



Practical Knowledge Graph Example

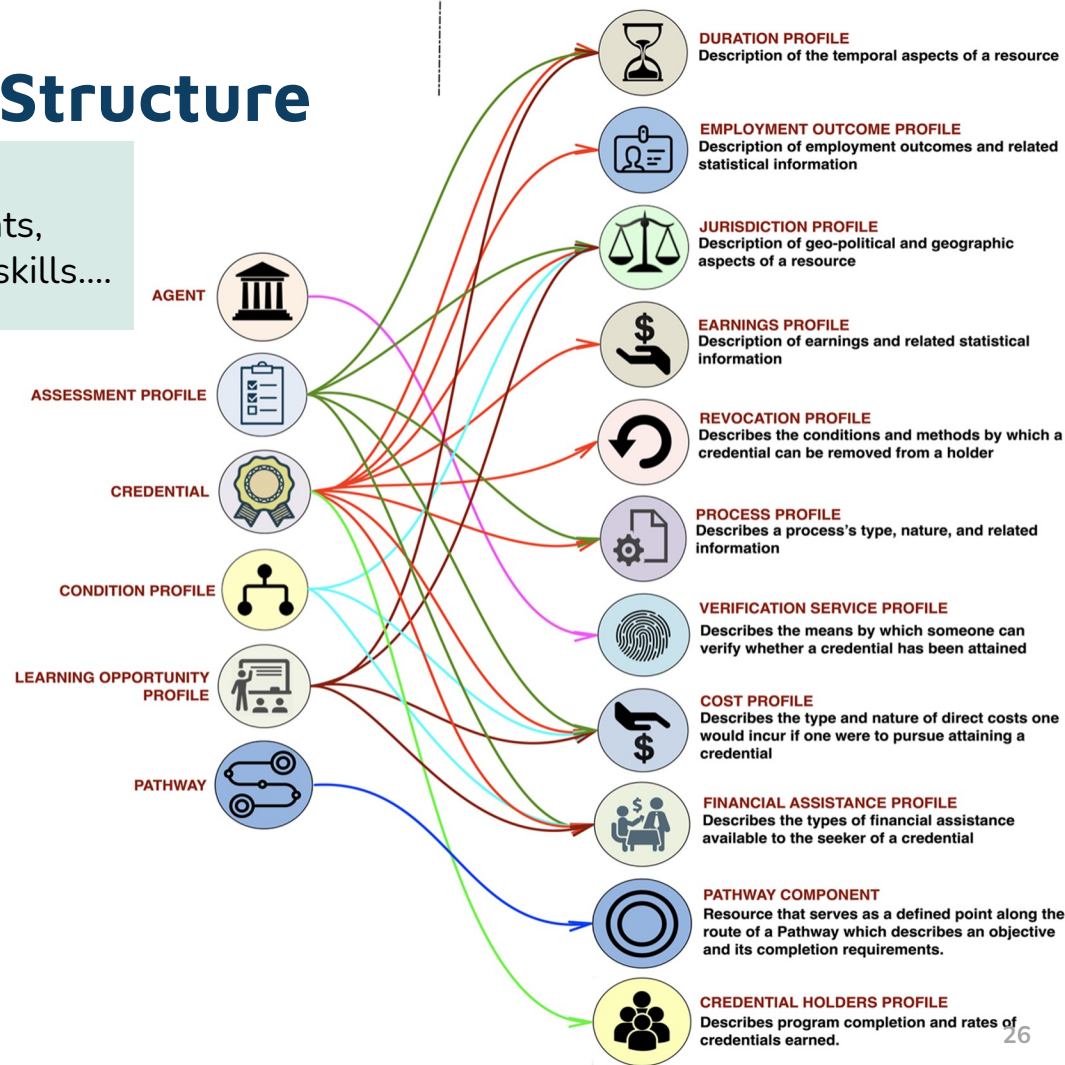
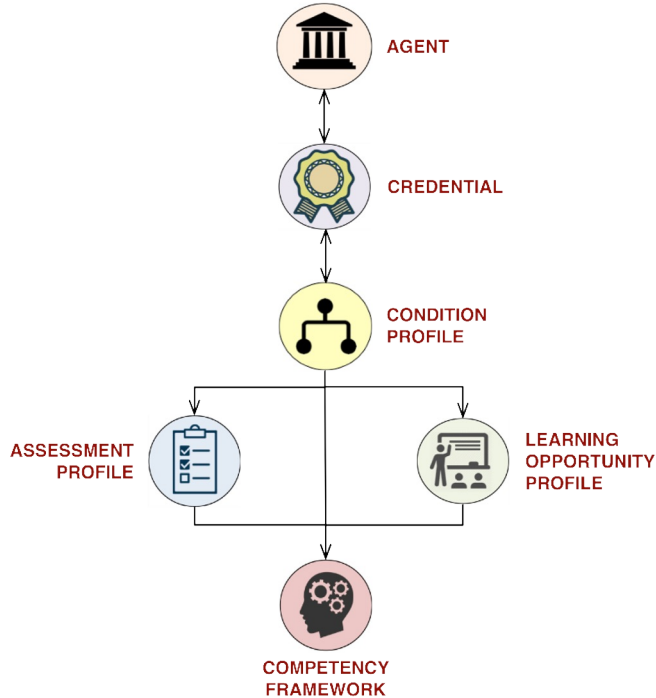
After the next job vacancy...



Bryan is a Dental Assistant in Casablanca.

CTDL Linked Open Data Structure

Linking between credentialing organizations, credentials, competencies, courses, assessments, pathways, quality assurance, occupations, job skills...



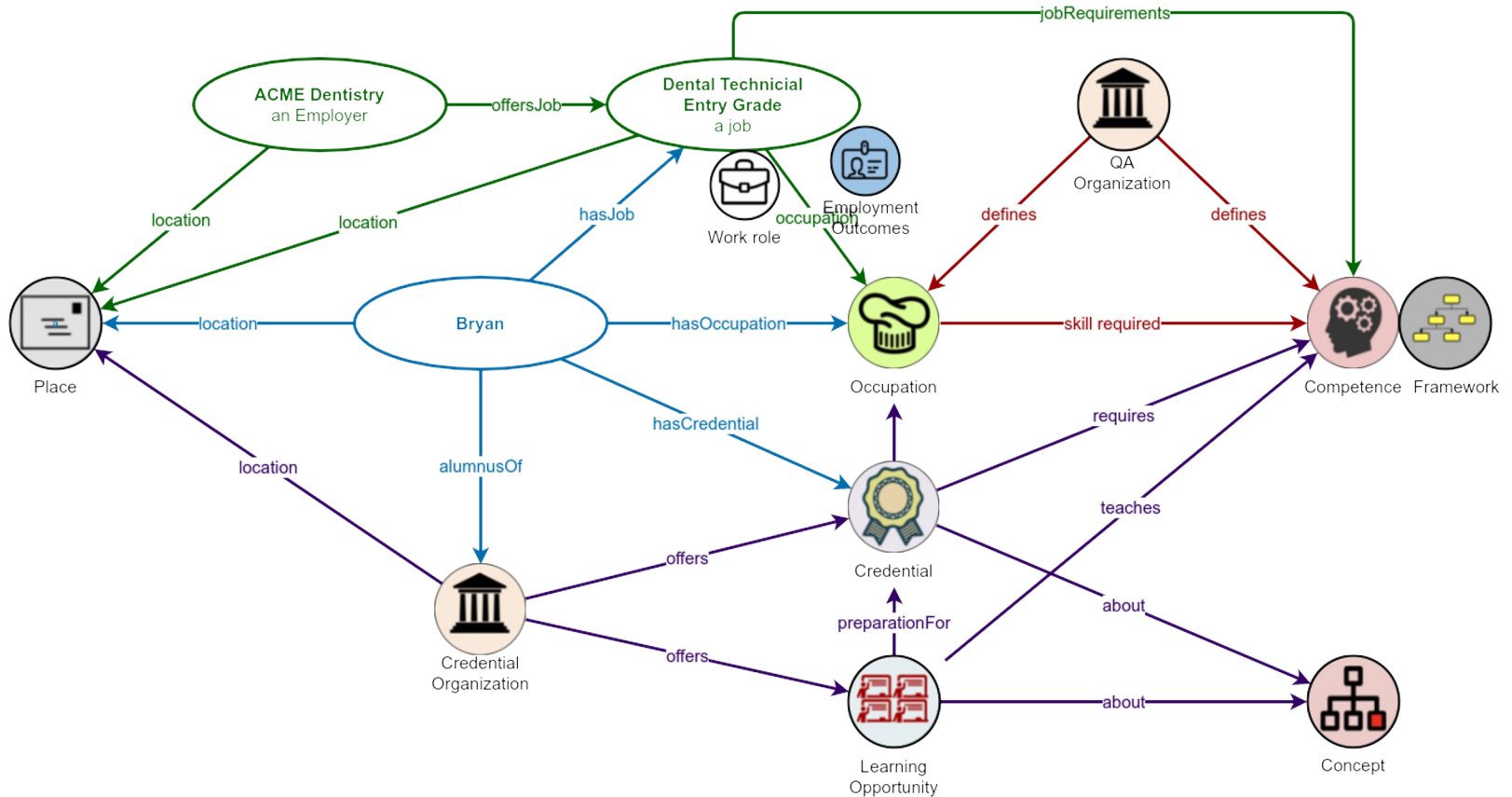
Credential Transparency Description Language (CTDL) Terms

Over 800 Linked Open Data terms providing rich descriptions of credentials and competencies

ceterms:Certification	
URI:	https://purl.org/ctdl/terms/Certification
Shorthand URI:	ceterms:Certification
Label:	<i>en-US</i> : Certification
Definition:	<i>en-US</i> : Time-limited, revocable, renewable credential awarded by an authoritative body for demonstrating the knowledge, skills, and abilities to perform specific tasks or an occupation.
Comment:	<i>en-US</i> : Certifications can typically be revoked if not renewed, for a violation of a code of ethics (if applicable) or proven incompetence after due process. Description of revocation criteria for a specific Certification should be defined using Revocation Profile.
Type of Term:	rdfs:Class
Status:	vs:stable
Subclass Of:	ceterms:Credential ceterms:Credential
	ceterms:accreditedBy ceterms:isRequiredFor

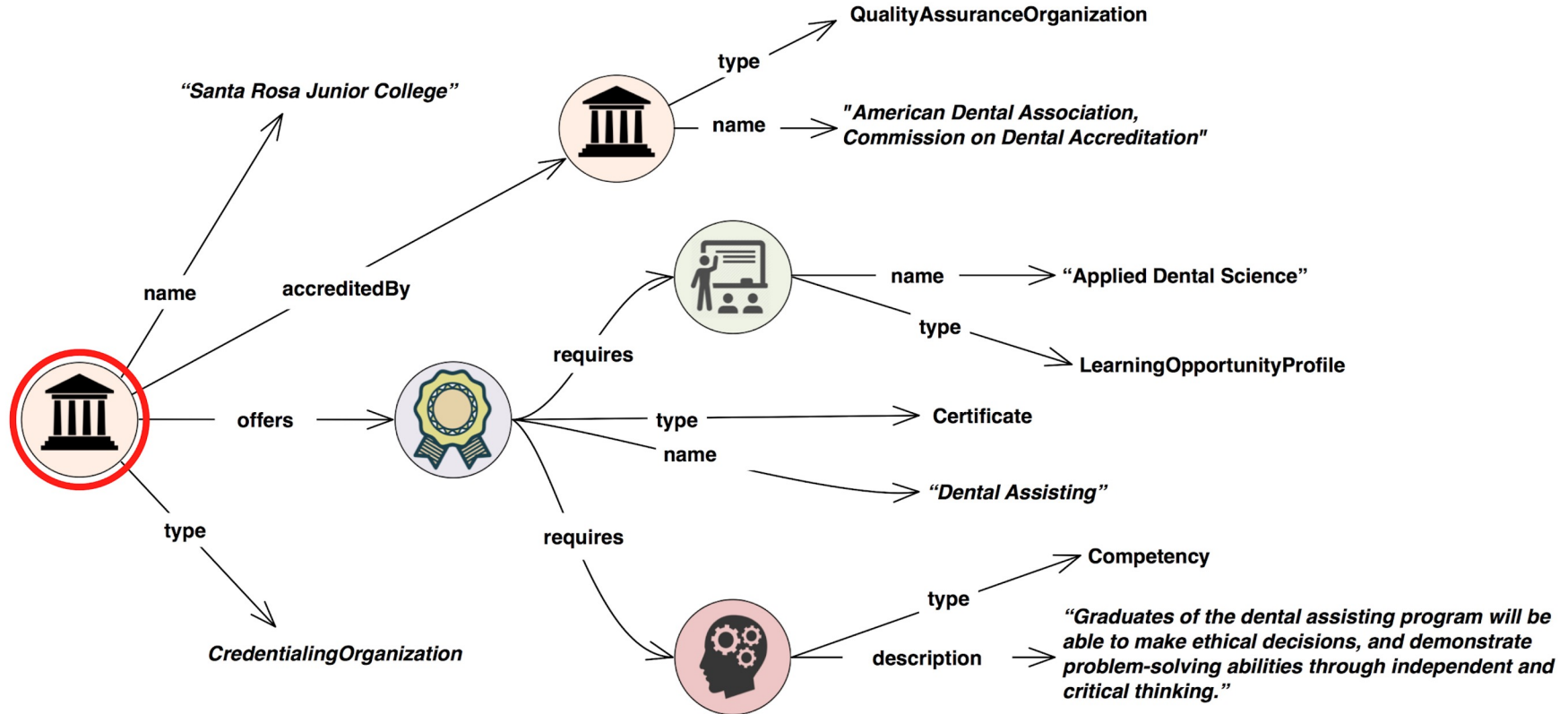
Certification:
Time-limited, revocable, renewable credential awarded by an authoritative body for demonstrating the knowledge, skills, and abilities to perform specific tasks or an occupation.

CTDL Coverage



CTDL Linked Open Data Example

Santa Rosa college offers a Certificate in Dental Assisting that requires completion of their Applied Dental Science program and requires specific competencies and is accredited by the American Dental Association.



CTDL Linked Open Data Example

Credential Finder The Credential Finder is a tool for exploring all of the information published to the Credential Registry

Home Search Finder Widgets Reports and Data Benchmark Reports Compare (0)

Certificate

Dental Assistant Certificate

San Francisco State University, College of Extended Learning

Last updated: Nov 4, 2020

Compare

About this Credential

Basic information about the Credential

Start a new career in the dental field. Dental Assistants support dentists in a variety of ways including preparing patients for their procedures, developing dental x-rays, and scheduling appointments. Dental Assistant is one of the most in-demand healthcare professions and is the fourth fastest growing occupation in the healthcare technician field. Our Dental Assistant Online Certificate Program teaches you the skills needed to start a career as dental assistant in two months. The in-depth curriculum also prepares you for the Dental Assisting National Board exams. Our Dental Assistant Online Certificate Program provides students with a foundation of knowledge regarding all areas of administrative and clinical dental assisting, focusing on the responsibilities required to work as an assistant in a dental practice.

[View this Credential](#)

Credential Type

Certificate

Credential Status

Active

Related Organization(s)

Organizations that own, offer, or perform other services related to the Credential

Owned and Offered By

San Francisco State University, College of Extended Learning

Occupations and Industries

Career Field information about the Credential

Industries

General Medical and Surgical Hospitals (6221)

Locations

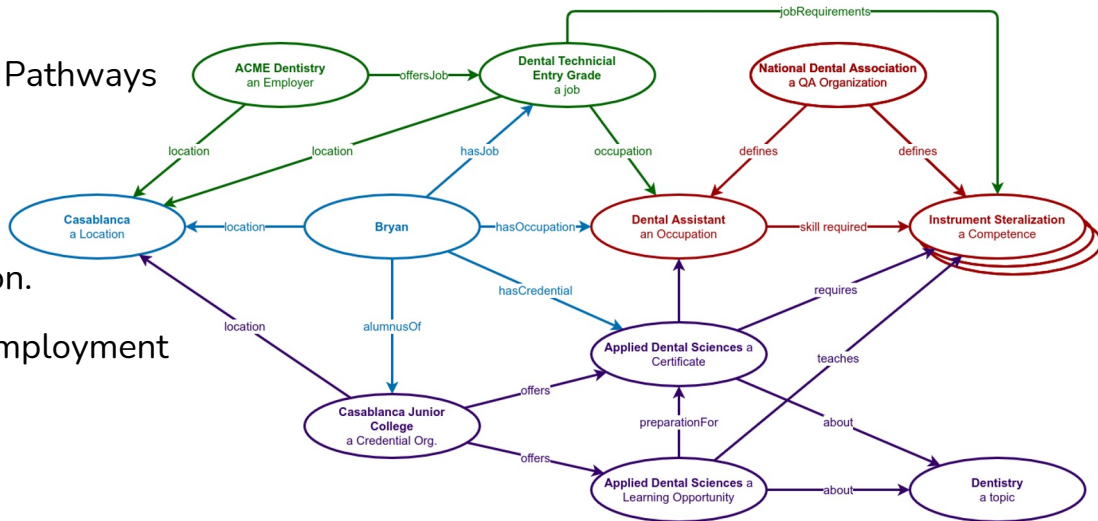
Geographic information about the Credential

1 College of Extended Learning
835 Market Street, 6th Floor | San Francisco, California 94103 | United States

https://credentialfinder.org/credential/10908/Dental_Assistant_Certificate

Benefits of Credential Transparency

- Shows relationships between credentials and skills.
- Shows relationships between credentials or skills and jobs or occupations.
- Provides information about what is required to earn a credential.
 - Courses, Assessments, Learning Pathways
 - Costs, Time
 - Mode of study
- Provides information about accreditation.
- Provides information about potential employment outcomes for holders of a credential.



CTDL and the Registry Can Support Linked, Open Data for the African Qualifications Ecosystem

- Consistent data for all qualifications, competencies, and connections
- Framework for recognition and comparison of microcredentials
- Connections among courses that contribute to completing qualifications
- Recognition of courses across higher education institutions
- Stackable short-courses and credentials to build credit value and contribute to a larger qualification or skill set
- Comparison of opportunities for developing specific skills sets
- Future-proof data structure that has the potential to be expanded to include non-ACQF offerings or other new/emerging credentials globally

Today, we can make credentials and competencies more transparent, relevant, and valuable

What if...

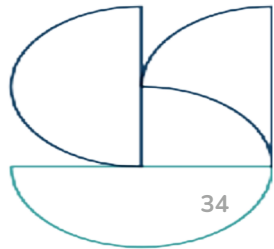
- Education and training organizations made their credentials and competencies transparent so everyone could see what they're really made of—and understand the value of what's inside?
- Employers had data to help them match candidates' credentials and competencies to job requirements?
- Government agencies could access credential and competency data in a common data structure that connects people and potential?
- Learners and workers could easily communicate what they know and can do, giving them clear and equitable pathways to career success?

We can achieve this together.

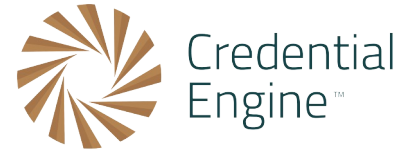


Call to Action

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- Build a culture of credential transparency
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Thank You



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Additional Resources

- Credential Engine website: www.credentialengine.org
- Credential Engine Project Services: <https://credentialengine.org/services/>
- Credential Engine Use Cases: <https://credreg.net/quickstart/usecases>
- Credential Engine technical website: www.credreg.net
- Credential Engine technical services: <https://credreg.net/page/technicalservices>