Welcome, Introductions & Opening Remarks – MC: Michael Sessa, PESC President & CEO

Welcome to Vancouver from Program Co-Chairs

➢ Ruth Blades, Executive Director, CATNS – CATNE; PESC Board of Directors, Secretary

➢ Monterey Sims, Director of Admissions & Evaluation, University of Phoenix; PESC Board of Directors, Vice Chair

Indigenous Land Acknowledgement

➢ Karen McCredie, Executive Director, EducationPlannerBC

Thank You Sponsors

➢ Jennifer Kim, Director of Membership Services, PESC

Introductions

➢ David Moldoff, CEO & Founder, AcademyOne; PESC Board of Directors, Chair

Why Are We Here?

➢ Michael Sessa, PESC President & CEO

INDIGENOUS LAND ACKNOWLEDGEMENT

PESC acknowledges that the October 2022 Data Summit will occur

on the territory of the Coast Salish Peoples, including the territories

of the Musqueam, Squamish, and Tsleil-Waututh Nations.

We are honoured to spend time learning, sharing

and growing on these territories.

INTRODUCTIONS

➢ Name

➢ Organization

➢ PESC Madlib

Other than standards,
what is PESC's value?

Why Are We Here?

Landscape: Outside factors impede advancement of the mission at all levels, but may also create opportunities:

» The digital education ecosystem is complex and intricate; and <u>no</u> single law, product or service will be adopted by the tens of thousands of organizations supporting the decentralized infrastructure

» Systems and technology are correspondingly complex and disparate, and barriers must be overcome with integration and standardization if not prioritized

» Human and financial investment in the *status quo* can build resistance and self interest when technology changes fast and data exchange methods and standards are viewed as competition with proprietary approaches

Why Are We Here?

Values: A community platform or marketplace has incrementally grown, due to PESC's focus, activities, experience and open, neutral, transparent environment and its attractiveness to those with the shared desire to:

» improve their technology and/or overall interoperability (and/or learn how to)

» increase the visibility of their technology, standards, systems, integrations, projects, pilots, etc. and/or seek support

» seek education, guidance and/or best practices on emerging technology, standards, systems, integrations, projects, pilots, etc.

» network and connect with others with similar interests or needs in an open, friendly environment

» explore new business ventures and partnerships in an open, trusted environment

Why Are We Here?

Benefits: At the core of the community platform and supported by Boards, Forums, Task Forces, User Groups, Workgroups, Data Summits, and Social Media:

» A direct line to policymaker and IT sectors at all levels, including subject matter experts and practitioners

» Connections to projects and user groups seeking to develop pilots and infrastructure and/or incubation support

» Established perception as the window and/or clearinghouse that is connected regardless of competitive factors

» High visibility and promotion of leaders and participants in Boards, Forums, Task Forces, User Groups, Workgroups and Data Summits

Words Matter – Pictures Matter

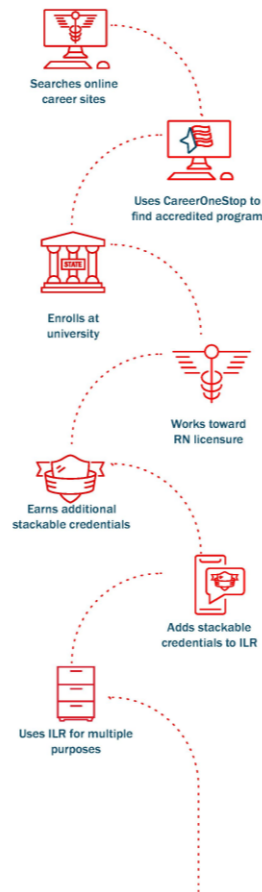White Paper on Interoperable Learning Records

What is an Interoperable Learning Record?

To begin the discussion on ILRs, it is useful to consider Olivia Hafez and a near-future scenario.[9] Olivia wants a secure job with opportunities for advancement. Looking at career sites online, she discovers that the field of registered nursing has strong employment prospects, excellent earnings potential, and pathways for promotion near where she lives. She uses CareerOneStop[10] to find an accredited nursing program that best meets her needs and is endorsed by the Commission on the Collegiate Nursing Education (CCNE) and/or the Accreditation Commission for Education in Nursing (ACEN), which is required for credential eligibility for employment as a Registered Nurse (RN). She enrolls in the program at State University.

During the program, Olivia not only works toward RN-licensure eligibility, she also earns stackable professional, verified credentials along the way for part-time employment in the health sciences. More specifically, in addition to prescribed skills and procedures required for Certified Nursing Assistant (CNA) practice, she has also learned safety protocols, electronic records keeping, and communicating with people under stressful conditions that satisfy eligibility requirements for credentialing as a Certified Medical Administration Assistant (CMAA). Olivia can now gain access to entry-level employment in the clinical and administrative support aspects of her chosen profession, which reduces her need for federal financial aid.

As Olivia earns the stackable health science credentials, she adds them to her ILR, which is a private and secure digital application or interface available on her devices, analogous to a file cabinet, where she can manage all her data and records and also authorize sharing. Olivia uses her ILR for multiple purposes as a permanent, verifiable set of records.

- Searches online career sites
- Uses CareerOneStop to find accredited program
- Enrolls at university
- Works toward RN licensure
- Earns additional stackable credentials
- Adds stackable credentials to ILR
- Uses ILR for multiple purposes

9 The persons and institutions named in this scenario are fictitious.
10 https://www.careeronestop.org/Credentials/default.aspx

White Paper on Interoperable Learning Records

Olivia gives permission to make selected records available to others on her social media professional networking site, where employers' systems use industry-standard terms and credentials that allow them to search across multiple platforms for candidates with specific skills and proficiencies. Very early in her RN degree program, Olivia is a candidate for a position at a local hospital.

In her job interview she is proud to talk about her relevant skills, including the work she did to achieve her CNA and CMAA credentials and all the relevant badges that required skills such as communication, safety protocols, and electronic records systems. This sets her apart from other candidates, and she accepts a position at Declan Hospital where her new manager is impressed by her strong clinical and administrative skills documented in the curated ILR she presented.

Olivia's Director of HR has read research by SHRM that shows offering employees career mobility can result in better retention and less turnover.[11] Because of this, Olivia's manager offers her a promotion pathway building on Olivia's goals and strengths, including a scholarship program for completion of her RN degree and license. Olivia now has the ability to focus even more diligently on her RN degree plan. Upon completion of her accredited RN program, the registrar will issue Olivia a digital academic credential that can be validated for RN licensure examination, which she completes successfully to become a state-licensed RN. Olivia is transferred to an administrative leadership position of a clinical unit (employing her CNA & CMAA credentials and experience).

During her next performance review, the hospital provides digital, verifiable information to Olivia about the skills she has learned and demonstrated on the job, including her recent work in an Emergency Department setting. Olivia's ILR gives her control over verified records of her achievements across contexts and pathways to her future career advancement goals to the benefit of her employer and patients.

- Shares selected records on professional networking sites
- Impresses hiring leader during her interview
- Lands the job at the hospital
- Leader develops promotion pathway
- Registrar issues digital academic credential
- Transfers to leadership position
- Hospital provides verifiable info about on-the-job skills
- Controls her future career advancement with ILR

11 https://www.shrm.org/resourcesandtools/hr-topics/talent-acquisition/pages/employees-stay-career-mobility-pay-raises-culture.aspx

6/33

7/33

ACCESS & EASE-OF-USE

How many standards support Amanda throughout her lifetime?
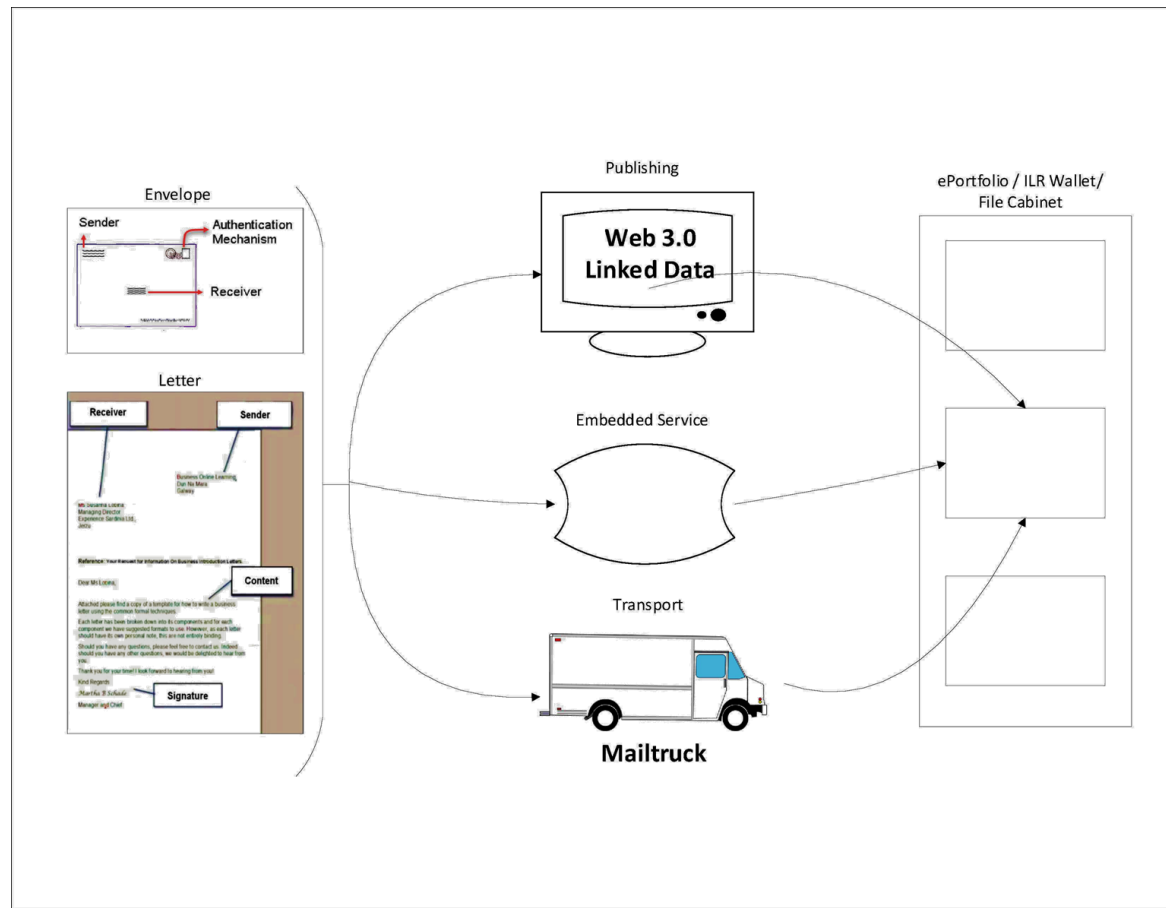
Amanda's Data ('My Lifelong Data')

Business Reasons (Use/Business Cases)

| Education PK12 Postsecondary	Military	Workforce & Employment	Health
Citizenry Community Service Leadership	Sports	Government	Accomplishments

IEEE SA STANDARDS ASSOCIATION

4.2 ILR Logical Component

The primary use case presented here is just one of many.

*Self-Sovereign Wallet ILR Scenario: "When a **learner** achieves an **outcome**, an **issuer** asserts a cryptographically signed **credential** that can be held in any standard **digital wallet** app to control **verifiable presentation** to a relying party in any jurisdiction. The relying party can determine verifiable trust and crosswalk equivalence without the need of data sharing agreement."*

IEEE ILR Recommended Practices Framework
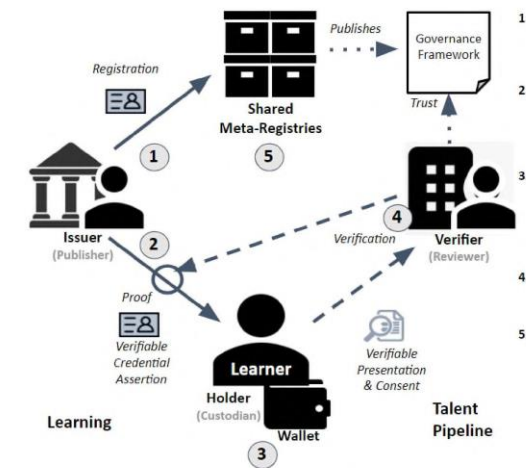
1. **Achievement Assertion Tool** – Services that enable instructor/evaluators to assert that a learner has achieves a skill, credential, or other outcome (e.g. PESC, CLR, OB, Europass).

2. **Credential Publisher** - Services that enable achievement assertions to be wrapped in credentials that are cryptographically signed onto distributed ledgers for verification from requestors (e.g. W3C VC, T3 Wrapper)

3. **Digital Wallet** – Services that enable learners and their adult guardians to subscribe, curate, and control access to achievement assertions and other credentials creating a presentation that is shared with a verifying party or Universal Validator.

4. **Universal Validator/Requestor** - Presentation services that enable credential requestors to view and validate credentials (W3C)

5. **Shared Meta-Registries:**
   a. Skill Crosswalk Service (e.g OCFC)
   b. Trust Registry Services
   c. Accreditation Services
   d. Resource Services
   e. Distributed Ledger
   f. Credential Services
   g. Revocation Services

There are two core features of this new model that build on prior work and advance the global learning and talent marketplace:

1. **Learner-centric.** By design, Issuer, Holder, and Reviewer can all be in separate networks, exchanging over the Internet without peer to peer institutional agreements needed:
   a. Enabling the Holder to cross networks enables the learner and their adult guardian to control access to personal records issued from multiple lifelong services through explicit, targeted, temporary consent.
   b. Enabling the Reviewer to cross networks enables an open marketplace for learning and talent at a global scale.

2. **Exchangeable.** Verifiable Credentials for education and talent are made exchangeable through explicit recommended record structures and schemas based on OB2, CLR, PESC, and Europass Learning Model.
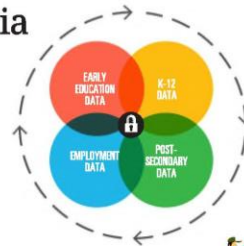
Grace's Path to Success

Information is critical to support California student success all along the way.

Students' pathways to success are increasingly varied. But no matter the path, students must make choices that shape their future options and opportunities — and they shouldn't have to make these decisions in the dark. California's students and their families deserve information that can point them down the right pathway to get them where they want to go.

Grace needed information to help her navigate the right path to reach her goals. Successful transitions are impossible without data to help guide students and their families all along the way. California's students deserve no less than Grace.
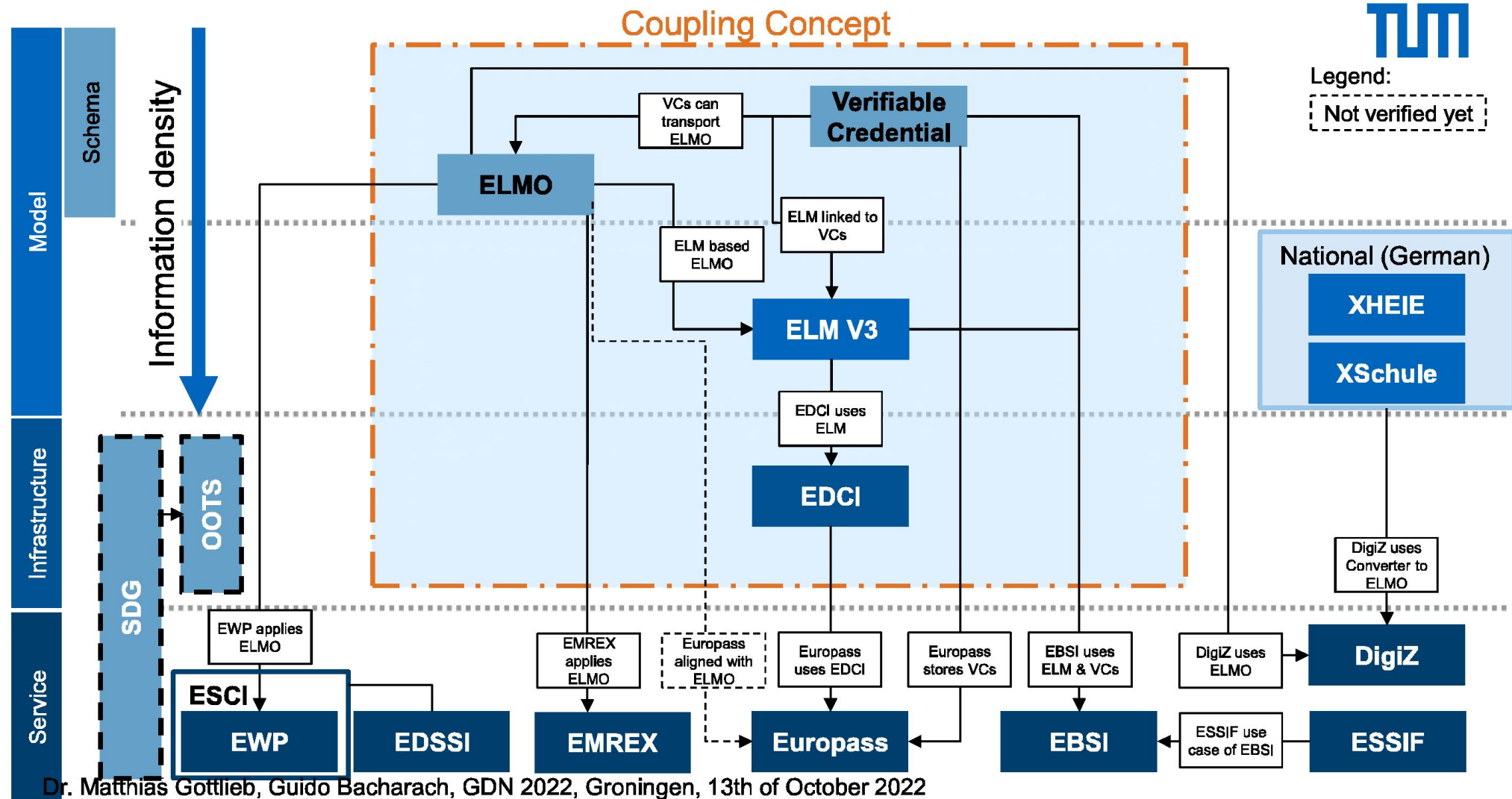
More than ever, students' paths to success are varied. Successful transitions along this journey are impossible without the tools and information to help guide students and families all along the way.

Dr. Matthias Gottlieb, Guido Bacharach, GDN 2022, Groningen, 13th of October 2022

Brookings Institute

"Digital credentials are precisely what they sound like—the digital equivalent of a paper document, such as a **transcript** or **certificate**, that signifies the completion of an educational process."

https://www.brookings.edu/blog/techtank/2022/10/17/encouraging-interoperability-to-help-learners-in-the-digital-credential-marketplace/?utm_campaign=Center%20for%20Technology%20Innovation&utm_medium=email&utm_content=230211773&utm_source=hs_email
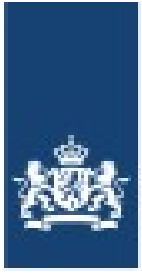
I agree and respectfully disagree.

"Credential" referring to physical access – do you have clearance?

https://armypubs.army.mil/epubs/DR_pubs/DR_a/pdf/web/ARN17425_P25_2_13_Admin_FINAL.pdf

[Dienst Uitvoering Onderwijs (DUO)](#)19,251 followers6d • Edited • 6 days ago

DUO doet zoveel meer dan het uitbetalen van studiefinanciering! Zo beheert DUO ook Mijn diploma's. Hierin kun je zelf een digitaal uittreksel van je diplomagegevens downloaden. Papieren diploma's zijn overbodig geworden. Gebruik het uittreksel voor je sollicitatie. Benieuwd of jouw diploma erin staat?
Check [mijndiplomas.nl](#).
Of bekijk de animatie van Mijn diploma's: [https://lnkd.in/eSrZaw-d](#)

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DUO does so much more than pay out student finance! This is also how DUO manages **My Diplomas. Here you can download a digital extract of your diploma data** yourself. Paper diplomas have become superfluous. Use the extract for your application. Wondering if your diploma is in it?
Check [mijndiplomas.nl](#).
Or watch the animation of My diplomas: [https://lnkd.in/eSrZaw-d](#)

[#eindexamen](#) [#afstuderen](#) [#ditismbo](#) [#mbo](#) [#diploma](#) [#geslaagd](#) [#afgestudeerd](#) [#student](#)enleven [#dienstuitvoeringonderwijs](#) [#duostudent](#) [#mijndiplomas](#) [#gef eliciteerd](#) [#vlag](#) [#feest](#) [#toekomst](#) [#vo](#)lgendestap
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Whose language are you speaking?
We need clarity. We should keep things simple.

- Certificate, Degree, Diploma, Course, Transcript
  Why do these terms need another name?

- Skills, competencies, learning outcomes (expected or actual), qualifications
  Terms that are vague and subjectively defined based on who you ask.

From this point on – become a healthy, data advocate and skeptic

PESC PLEDGE

I _____ (state your name)
Promise to abide by PESC's values
And serve as a beacon and a rock
For students, learners and my colleagues
Openly and transparently in co-opetition
So help me PESC!

Unlocking the Power of Student Data
October 2022 Data Summit | Vancouver

A Thriving, Digital Ecosystem Requires

SUSTAINABLE STANDARDS AND COMMON INFRASTRUCTURE

PESC PARTNERS

PESC APPROVED STANDARDS

- » ACADEMIC COLLEGE TRANSCRIPT
- » ACADEMIC HIGH SCHOOL TRANSCRIPT
- » ACADEMIC CREDENTIAL & EXPERIENTIAL LEARNING
- » ACADEMIC EPORTFOKIO
- » ADMISSIONS APPLICATION

- » EDI – ELECTRONIC DATA INTERCHANGE
- » EDUCATION COURSE INVENTORY
- » EDUCATION TEST SCORE REPORTING
- » PDF ATTACHMENT
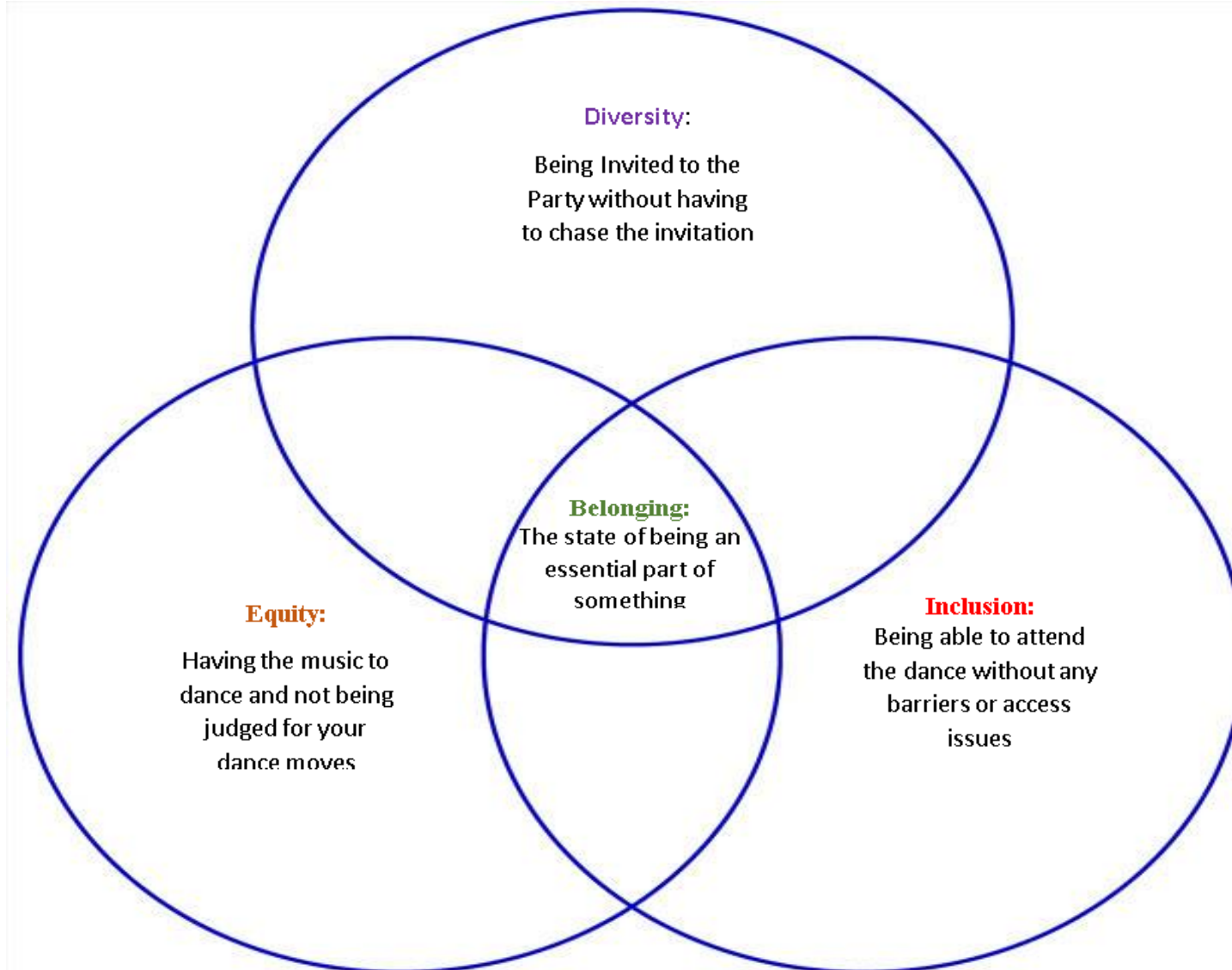- » STUDENT FINANCIAL AID (GRANTS, LOANS, SERVICING)

What is Diversity, Equity and Inclusion?

- Diversity: The "who" and "what" of all characteristics of each individual. Elements of diversity define the range of human differences.

- Equity: Intentional creation of fairness by providing people with support to compensate for differences between individuals. Equity is the ACTION that we take in order to achieve Equality.

- Inclusion: The GOAL – being welcomed, valued, respected and heard

Diversity:

Being Invited to the Party without having to chase the invitation

Belonging:
The state of being an essential part of something

Equity:

Having the music to dance and not being judged for your dance moves

Inclusion:
Being able to attend the dance without any barriers or access issues

DEI Progress: Lived Name

University of California Policy Change (*effective **December 2023***):
- Allow students to specify a lived name, at any time for any reason
- Most staff on UC Campuses will have access ONLY to the specified Lived Name

Implementation:
- National Student Clearinghouse will allow schools to provide a file with **both** lived name and legal name.
- Having both names, allows future matching on either Lived or Legal name.
- UC will provide academic documents with the LIVED name and the Clearinghouse will continue to comply with reporting to NSLDS with the LEGAL name.

Agenda

Image Credit

➤ Introductions

➤ A brief history of CanPESC

➤ Recent initiatives and accomplishments

➤ Future directions

A brief history of CanPESC
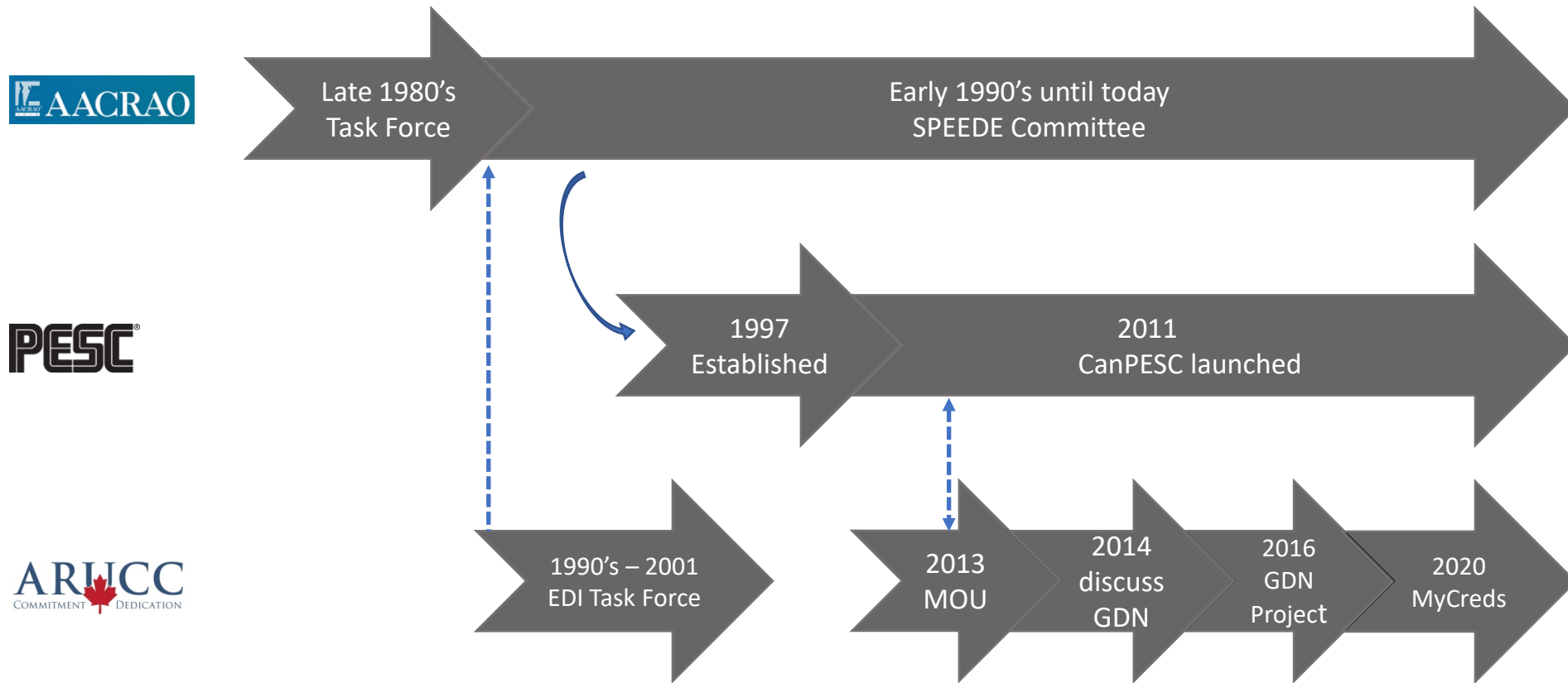
Data exchange bridges built along the way!

PSI Transcript/Acks
(BC to ON)

2003 – 2014 (EDI)

2014 (XML)

HS Transcript/Req
(BC to ON)

2021 (XML)

HS Transcript/Req
(BC to AB)

2022 (XML)
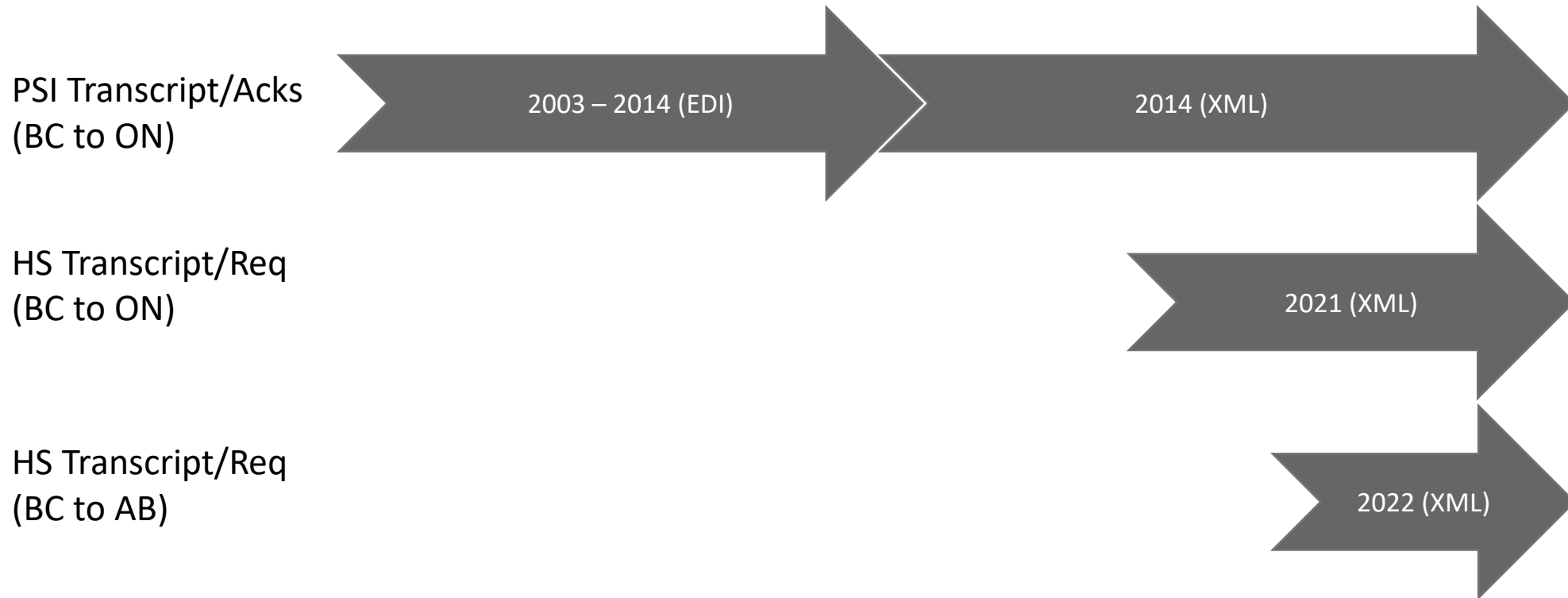
* Additional HS Transcript exchanges with SK, AB, ON, NS in discussion

Recent initiatives and accomplishments

➢ Standards of Practice: "Tip Sheet" v1.0

➢ Common Digital Layout: Operational!

➢ GEO Code: ~50% Canadian High Schools Codified!

    ➢ BC, ON and NS (6 more underway)

Future directions

- ➢ CDL: French labels

- ➢ Standards Upgrade Pathway: White Paper

- ➢ GEO Code: Additional High Schools and PSIs

- ➢ New "Parking Lot"

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OCTOBER 26-28, 2022
VANCOUVER
www.pesc.org

THANK YOU!

Cathy van Soest
Director, Client Relations

BRITISH COLUMBIA | EducationPlannerBC

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Doug Holmes
Manager, eTranscripts

ØUAC Ontario Universities' Application Centre

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SESSION

The leaders of Canada's provincially based data hubs and application centres will affirm their organizations' key areas of focus and discuss the challenges and opportunities they face in expanding electronic data exchange across the country.

Highlights will include changing vocabulary to meet the needs of non-binary learners, the never-ending battle to migrate away from paper documents to electronic, and inter-provincial exchange of high school records.

Recognizing that PESC and CanPESC will play a vital role in finding the best solutions that meet the needs of learners, institutions, and the organizations that support them, the Canadian hubs and centres will share their perspectives on the future of data exchange in Canada.

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The T3 Innovation Network has grown to more than 500 organizations working together to change the way we provide, access, and use educational and workforce data by using advanced technologies like AI, blockchain, and others to create an open and decentralized public-private data ecosystem. The T3 Network looks to:

➢ Define what a competency-based lifelong learner record should be so that all learning counts, no matter where it takes place.
➢ Modernize technology and advance data standards to achieve seamless sharing of data throughout a person's education and career pathway.
➢ Empower individuals with a validated record of their skills and competencies in a way that all employers can understand.

Data Standards United (DSU), a partnership among standards bodies and standards stakeholders, looks to support major initiatives including the work and efforts of the T3 Innovation Network. PESC, PESC members and organizations in DSU, are engaged and participating in T3. DSU also looks to support additional major initiatives including shared infrastructure, the JSON-LD Transcript development, and the Resume Standard development, among others.

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Project Goals

- **Improve efficiency for high schools and colleges**
  - **High schools**
    - **Transcripts in PDF format can be automatically generated from the SIS**
    - **Transcripts can be transmitted electronically**
  - **Colleges**
    - **Standardized transcript eliminates district-by-district variation**
    - **Receiving the data feed eliminates the need for data entry**
- **Make data available for research**

Partnerships

- **Forming the necessary partnerships required enthusiastic champions from multiple agencies**
  - **Iowa State University**
  - **Board of Regents**
  - **Iowa Department of Education: Community Colleges and K12**
  - **Cedar Labs**
  - **With support from Iowa College Aid and Iowa Workforce Development**
- **Funding**
  - **Staff time and resources from each partner**
  - **FY2019 SLDS Grant**

Challenges

- **Unique transcript elements**
  - **Standardized GPA**
  - **Standards-based grading**
  - **Admission eligibility**

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Universal Iowa High School Transcript

Janes, Simon F II

Projected Graduation Date: 06/06/2021
Diploma Received: No

Powered by:
IOWA DEPARTMENT OF EDUCATION
BOARD OF REGENTS STATE OF IOWA
IOWA STATE UNIVERSITY

Page 1 of 2

Prepared
09 Mar 2021

Student		Student Mailing Address	District/Building Information	
Student State ID:	123456	100 Main St. Apt. #101	District Name:	Des Moines Independent Comm School District
Preferred Name:	Janes, Simon Fred	Des Moines, IA 50309	Building Name:	Des Moines Central Campus High School
Birth Date:	09/04/1999		District/Building Number:	1737 / 0185
			High School CEEB:	320195
			Contact Phone:	(512) 555-1213

School Year: 2004-2005 — Start Date: 08/25/2004
Session Type: Semester — Grade Level: 08

Local Title	SCED Code	Provider	CCN	Grd	Attp	Earn	Type	MDM	PSM	ES	SR
ALG 1b PRE-AP	02052G05011	Brody Middle School		B	0.5	0.5	TN	0.83	67%	91%	3

School Year: 2005-2006 — Start Date: 08/25/2005
Session Type: Semester — Grade Level: 09

Local Title	SCED Code	Provider	CCN	Grd	Attp	Earn	Type	MDM	PSM	ES	SR
PHYSICS/CHEMISTRY	03159G10010			A	1.0	1.0	SN	0.93	87%	100%	4
ENGLISH 1	01001G10011			B	1.0	1.0	SN	0.86	100%	90%	3
JOURNALISM 1	11101G10010			B	1.0	1.0	SN	0.88	88%	88%	3
FRENCH 1	06121G10011			B	1.0	1.0	SN	0.85	89%	85%	3
GEOMETRY	02072G10011			C	1.0	1.0	SN	0.79	50%	88%	2
MS 9 FOOTBALL	08001G10010			C	1.0	1.0	SN	0.77	64%	77%	2

School Year: 2006-2007 — Start Date: 08/25/2006
Session Type: Semester — Grade Level: 10

Local Title	SCED Code	Provider	CCN	Grd	Attp	Earn	Type	MDM	PSM	ES	SR
BIO 1	03051G10011			A	1.0	1.0	SN	0.93	95%	88%	4
ENGLISH 2	01002G10011			C	1.0	1.0	SN	0.77	81%	95%	2
FRENCH 2	06122G10010			B	1.0	1.0	SN	0.88	90%	71%	3
ALGEBRA 2	02056G10010			B	1.0	1.0	SN	0.85	85%	100%	3
MS VARSITY FOOTBALL	08001G10010			A	1.0	1.0	SN	0.93	100%	93%	4
WESTERN CIVILIZATION	04063G10011			C	1.0	1.0	SN	0.77	85%	90%	2

School Year: 2007-2008 — Start Date: 08/25/2007
Session Type: Semester — Grade Level: 11

Local Title	SCED Code	Provider	CCN	Grd	Attp	Earn	Type	MDM	PSM	ES	SR
CHEMISTRY 1	03101E10010			A	1.0	1.0	SN	0.93	100%	93%	4
ENGLISH 3	01003G10003			C	1.0	1.0	SN	0.77	65%	77%	2
PRE CALCALCULUS	02121H05000			B	0.5	0.5	SW	0.88	100%	50%	3
MS VARSITY FOOTBALL	08001G10010			B	1.0	1.0	SN	0.85	100%	88%	3
HEALTH 1	08051G05000			A	0.5	0.5	SN	0.93	100%	93%	4
UNITED STATES HISTORY	04101G10010			C	1.0	1.0	SN	0.77	90%	85%	2

Summary

School Reported:

GPA	7.90	Class Rank	150
Wgt GPA	8.30	Wgt Class Rank	138
Scale	12.00	Class size	300

Standardized (4-point scale):

Core GPA (non-wgt)	2.75
Total GPA (non-wgt)	2.90
Total GPA (wgt)	3.10

Standardized Tests

Test	Subtest	Adm Date	Score
SAT I	Total	10/2008	1500
	EBRW	10/2008	750
	Math	10/2008	750
ACT I	Composite	10/2010	27
	English	10/2010	26
	Math	10/2010	30
	Science	10/2010	27
	Reading	10/2010	26
	Writing	10/2010	9

Your Current Regent Admission Index (RAI) Score

27 ACT Composite Score x 3	81
3.50 Cumulative GPA x 30	105
16.5 years of core courses x 5	82.5
Total RAI Score	**268.5**

Iowa public colleges and universities to which your current academic record qualifies for admission:

*Iowa State University — www.iastate.edu
*University of Northern Iowa — www.uni.edu
*University of Iowa — www.uiowa.edu
Des Moines Area Community College — www.dmacc.edu

*You must also meet minimum high school course requirements.

Note: There may also be independent Iowa colleges and universities to which you qualify for admission. For further information, please refer to www.iowaprivatecolleges.org

Iowa eTranscript Gateway: How it works

- **Create approved account**

- **Search for students**

- **Receive transcript information from Cedar Labs**

- **Send transcript information to recipients**
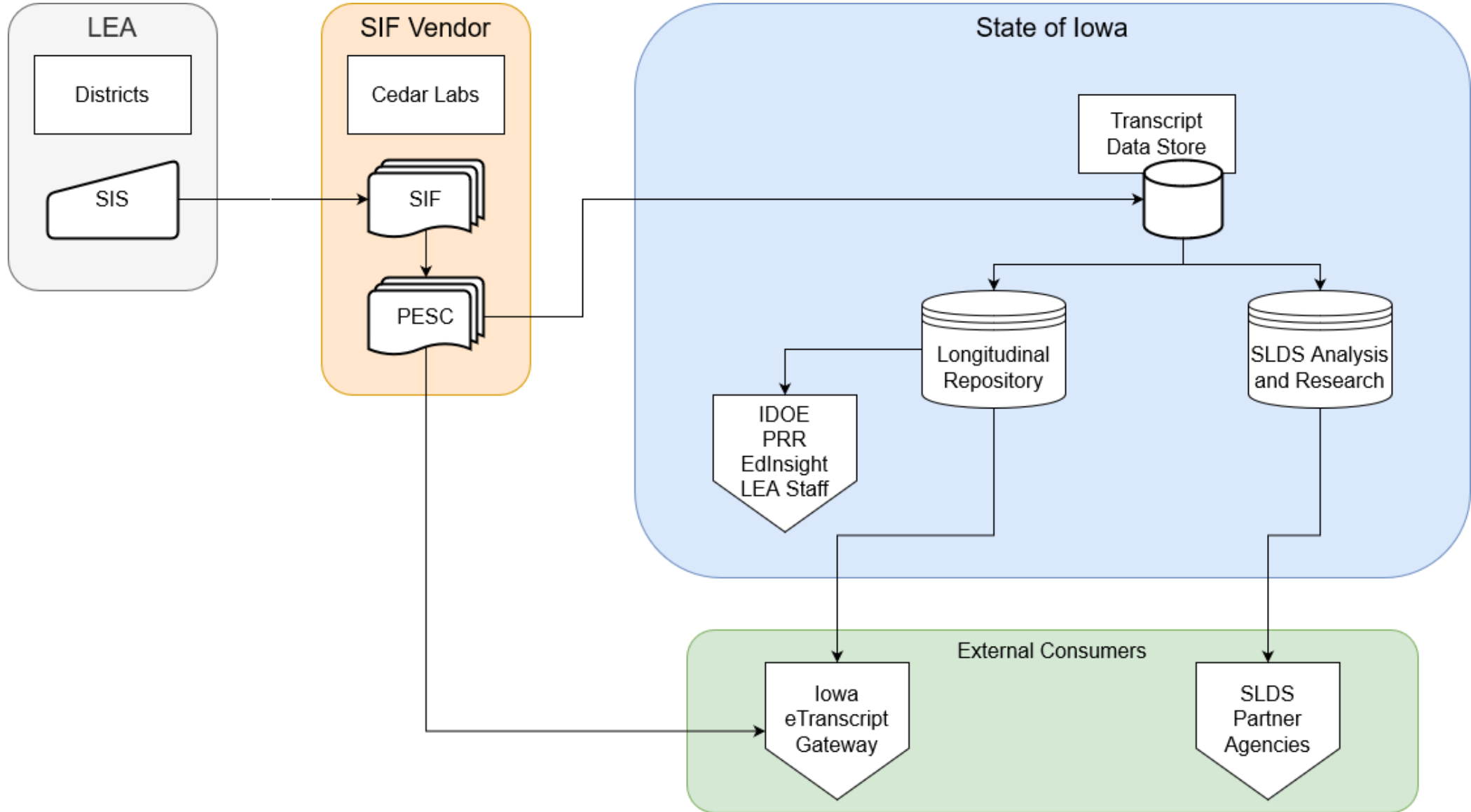
Lessons Learned

- **Patience and flexibility are essential**

- **Fully committed partners and enthusiastic champions are key**

- **Good communication and organization is important**

- **Building on existing technology worked better than trying to start from scratch**

Looking into the Future

- **Pilots**
  - **Fall 2022: PDF Transfer**
  - **Winter 2022: PESD High School Transcript**

Data Standards United

A Standardized Infrastructure?

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Why Don't Standards Groups Develop and Use a Standardized Infrastructure?

- *Not the Priority*

- *Pushback*

- *Perceives Limits Choice*

- *It is Hard Work*

Advantages of Standardizing Infrastructure?

- *It paves the way for plug-and-play interoperability.*

- *It empowers meaningful quality control (i.e. certification).*

- *It accelerates development.*

- *It allows choice.*

- *It provides clarity.*

- *It breaks down barriers.*

- *It better enables decision-making.*

What Would be the "Big Picture" Benefits?

- *Less Development and More Reuse*

- *Creates a Bigger Tent*

- *Few Barriers Between Sectors*

- *Quality AND Control*

- *Local to Global*

INFRASTRUCTURE

The 'HOW'

Defines the transport and messaging functionality over the "wire" where payloads are securely exchanged.

In use globally

Completely independent of the data model, can carry any data model

Incorporates marketplace utilized REST technology

Middleware Broker is optional, not required

Increased scalability

The globally used **Standardized Infrastructure** defines the transport and messaging functionality over the "wire" where payloads are securely exchanged—no matter the payload/data model. The standardized Infrastructure has been third-party 'load tested' and results show 'data bottlenecks' are not being seen. Without over-stressing a performance load test, over 200 million data objects were sent in an hour!   https://bit.ly/A4LEdDataTesting

Shared Infrastructure - "R³"

Rationale

- *It paves the way for plug-and-play interoperability.*
- *Quality and control*
- *It accelerates development and reuse*
- *It allows choice.*
- *It provides clarity.*
- *It breaks down barriers between sectors*
- *It enables decision-making*

Requirements

- *Identify data needs to be moved (payload) over the wire*
- *Ideally the "payload" is represented in XML and/or JSON*
- *The infrastructure leverages a REST based approach to data exchange*
- *With minor development changes, is easy and already used internationally*

Real World

- *One Roster / IMS LTI*
- *IA Dept of Education using PESC Transcript*
- *Common Education Data Standards*
- *National Photographers*
- *Medbiquitous*
- *Ed-Fi*
- *Chamber / T3 JEDx*
- *HR Open*

Flexibility: What might that look like?

1.Service Name (Object Name): For any Service/Object, its name MUST be defined and unique within the current scope.

>   2.Example JSON: {"StudentPersonal":{}}

2.Resource Name (ID): Where a Service/Object can be found MUST be specified. We suggest using version one of the universally unique identifiers (UUID) scheme:

>   1. Example JSON: {"StudentPersonal":{"RefId":"e199fd0e-cbf5-11ec-9d64-0242ac120002"}}
>   2. Example Path: /StudentPersonals/e199fd0e-cbf5-11ec-9d64-0242ac120002

3.Collections: The standardized infrastructure can move actual data with each service call

>   1. Example JSON: {"StudentPersonals":{"StudentPersonal":{}}}
>   2. Example Path: /StudentPersonals

4.Binary Data: The standardized infrastructure is designed to move text but can include a picture but it should be Base64 Encoded and included in a data element along with the rest of the document and its metadata

>   1. Encoded Example: VGhpcyBpcyBub3QgYSBwaWN0dXJlIIQ==

Privacy: The result of common expectations!

Here is the data we will give you and details on how we want it treated

End Users

Automated

Providers

Here is how we have treated the data and details on how we can prove it to you
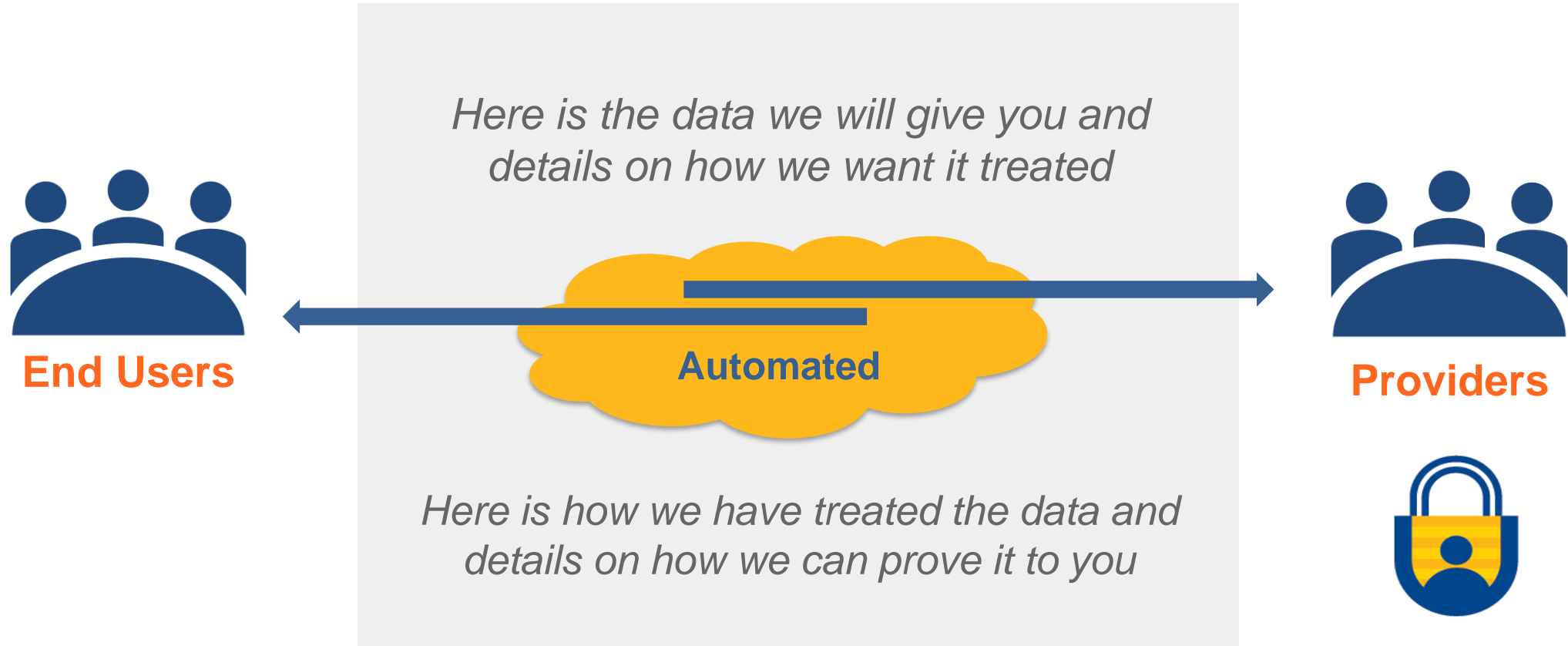
Increased interoperability without the inclusion of privacy requirements = increased RISK. Both data sharing and privacy parameters must be identified and communicated.

Scalability: Twenty-five years of lessons learned.

		Total Records	Records /Second
SIF 2 Infrastructure	Mock SIS	1,063,119	295
	Digester	19,697	5
Hybrid	Mock SIS	1,063,119	295
	Digester	1,311,408	364
SIF Infrastructure 3.4	Mock SIS	215,622,600	59,895
	Digester	375,188,400	104,219

https://bit.ly/A4LEdDataTesting
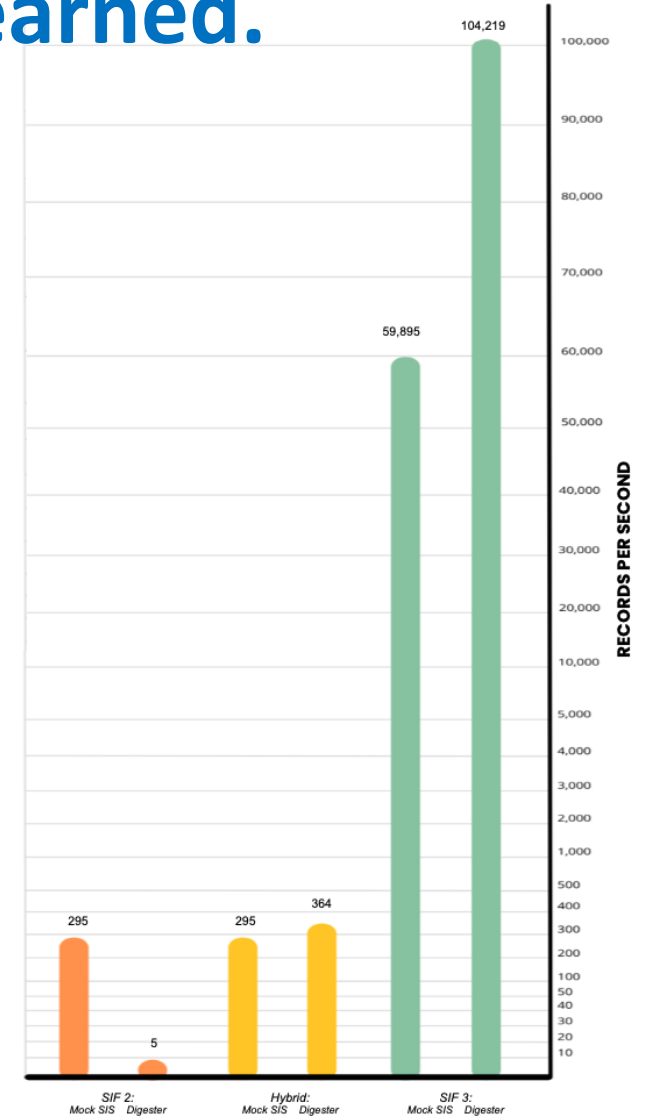
Note that these load test results were achieved using Cedar Labs technology. Real-world results may vary, depending on the capabilities of the technology implemented in your use case.

Agenda

➢ Highlight insights driving the skills, competencies, and micro credential conversations

➢ Discussion of fundamental elements for skills aligned experience

➢ Discussion on key stakeholders and enablers

➢ Leveraging the power of data

➢ Discussion on problems still to be solved from lessons learned

Market Insights Driving Change

➢ Prioritization of skills-based hiring vs degree is on the rise with 23% of employers making change in that direction; 39% exploring move to that direction (Gallagher, 2018)

➢ Pressure on higher education providers to use universal language with employers and make visible through a comprehensive student learner record capturing both skills acquired in their program, certificate, or professional development courses and those they earned through other education providers or prior life experiences (PLA/CLA)

➢ Employers struggling with retaining and finding talent and questioning the value of degrees

Market Insights Driving Change

➢ Time starved student expectations of limiting activities they perceive to be useless or irrelevant, needed to re-focus work on program/certificate maps down to single skill units in courses (including general education courses) while cross walking with accreditor/regulator expectations

➢ Students are expecting for the price of the degree to get something more than a degree in a broad major, they want concrete outcomes (skills and competencies, digital credentials) that will lead to specific jobs and they don't want to wait until the end of degree to get that next or better job

➢ Employers do not want badges without authentic evidence –authentic skills assessments are critical in curriculum to support badges

Fundamental Elements for Skills Aligned Experience

➢ Curriculum maps

➢ Course design

  ➢ Real-world, employer-worthy deliverables (authentic assessment)

  ➢ Capturing and storing learners' acquisition of a skill

➢ Visibility of skills and relevance to students

➢ Visibility of skills and metadata behind the assessments for employers

➢ Digital credentialing

Key Stakeholders

➢ Deans, Faculty

➢ Enrollment (Admissions) Advisors and Academic Counselors

➢ Instructional Designers

➢ Employers/Workforce Solutions Team

➢ Industry Advisory Councils

➢ Badging Partner

➢ Technology (Product Teams), Infrastructure including Learning Management System (LMS)

➢ Data Teams

Key Enablers

➢ Technical infrastructure and standards

    ➢ Program learning outcomes, course learning outcomes, badging outcomes, student achievements

➢ Learning management system and course design

➢ Data infrastructure

Power of Data

➢ Evaluate effectiveness of curriculum design

➢ Evaluate program effectiveness

➢ Evaluate student progress and potential needs for support services

➢ Enables product teams to build key career tools

➢ Match students to employers

➢ Leverage data for marketing collateral on website and campaigns

Problems Still to Be Solved

➤ Comprehensive Learner Record infrastructure

➤ Employer collaboration and identification of their skills needs, systems infrastructure for matching

➤ Badging vision and infrastructure

➤ Student's understanding of the data and how to leverage for career progression

QUESTIONS & ANSWERS

OCTOBER 2022
Data Summit
UNLOCKING THE POWER OF STUDENT DATA

25TH ANNIVERSARY
PESC

OCTOBER 26-28, 2022
VANCOUVER
www.pesc.org

APPENDIX

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PESC®

OCTOBER 26-28, 2022
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Pre-Map Work – Program Creation

Academic Leaders: Visioning

Higher-ed and discipline benchmarking, conversations with colleagues, faculty, review of academic literature, vetting ideas with advisory council

Aligned Job Titles

Ids for educational programs (CIP) and aligned to occupation codes (SOC). Based on CIP/COC identify appropriate job titles.

Advisory Council

Each College has a minimum of one industry council, seek input on degrees, trends, and skills/gaps we need to address

A
B
C
D
E
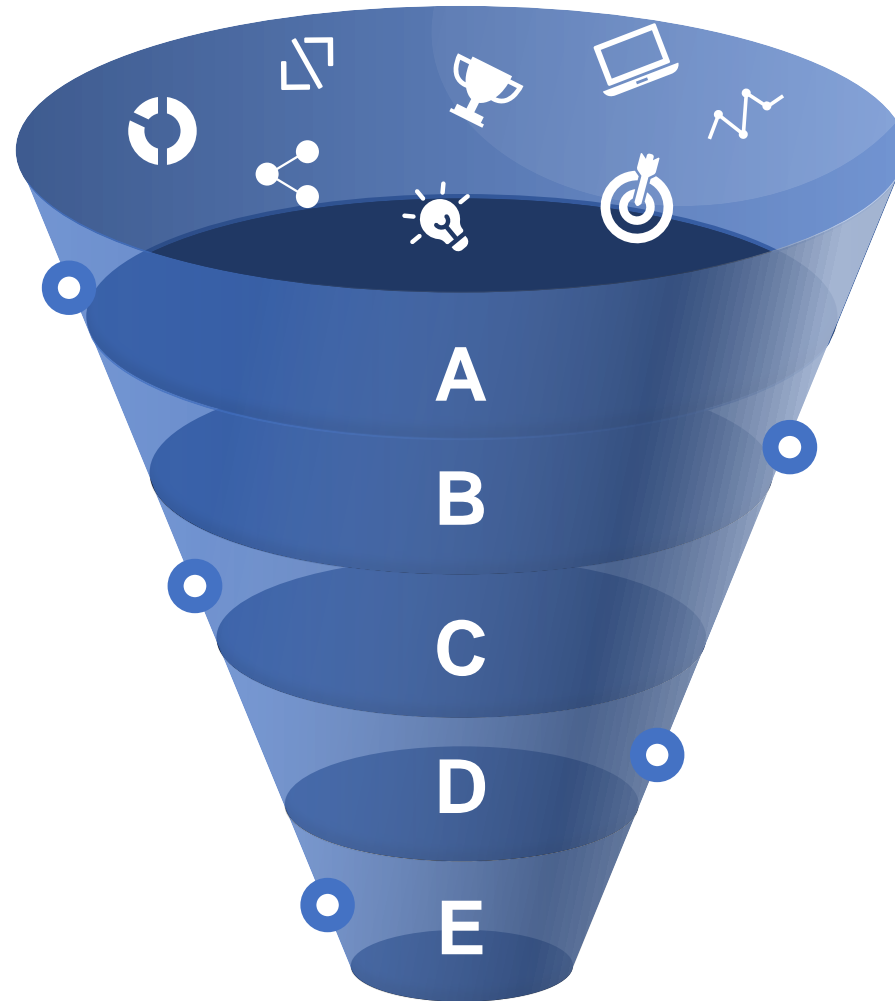
Program

College & Stakeholder Conversations

programmatic accreditor requirements. Process for program design that involves market research and ROI, faculty councils

EMSI -Economic Modeling Data

Captures current job posting data tied to titles, CIP/SOC and employer information and grabs skills for those areas allowing us to map programs to in demand skills

Assessment? ·········· (NO) ·········· (YES)

	Milestone Badge	Academic Badge	Microcredential	Short Burst Learning
BADGE TYPE	Milestone Badge	Academic Badge	Microcredential	Short Burst Learning
EVIDENCE TYPE	Attend event, Informal Milestone (Dean's List)	Demonstrate Skill or Apply Skill in Some Way.	Complete a Defined Group of Badged Skills	Complete a Self-Paced Course
LEVEL OF EVIDENCE		Measurable and Quantifiable. Aligned to Evidence that is Portable and Sharable. Could support early entry into career field.		
BADGE CLASSIFICATION	Celebration	Skill	Microcredential	Certificate of Completion/Badge
BENEFIT	Motivation. Affirmation of Accomplishments. Reinforcement of Decision.	Visual Representation of Relevant Industry Skill. Identify work pathways. Reinforce Value of Degree. Motivation. Metadata Linked to Jobs - Begin to see Opportunities Increase. Could Earn 3 Per Course	Longer to earn. Could Identify More Complex Level of Skills that Could Differentiate the Learner. (i.e. PSLOs that come at end of program).	Same as Academic Badge.

Student Insights

Value of Badge

- 70% - understand the professional benefit

- 66% - believe badging will help with advancing their career

- 68% - worked harder in the course because of the ability to earn a badge

- 75% - believe it will be easier to communicate their skills to potential employers with the badge

- 83% - thought it was easy to claim their badge

- 73% - are eager to start their next course (because of badges)

- 80% - have a strong desire to complete their program (because of badges)

Badge Sharing with Employers or Potential Employers

- 58% will share

- 28% want to share but they don't know how

- 15% won't share – mainly because they don't need them for their current position

Agenda

➢ Introductions

➢ Overview of MyCreds^{TM} and Digitary by Parchment

➢ Why are we focusing on open standards?

➢ How we unlock the power of student data

➢ Next Steps for MyCreds^{TM}

➢ Questions and Answers

ARUCC MyCreds™

- **What is MyCreds™?**
  - 24/7 virtual credential platform & digital exchange for digitized documents and credentials
  - Shared service
  - Regional, national, and international connectivity

- **What does MyCreds™ support?**
  - Inbound admissions; support letters to help learners access funding, student authorizations, and other govt support; transition support to jobs and regulatory bodies
  - Outbound: Transcripts, parchments, badges, micro-credentials, letters, degrees, diplomas, certificates, etc
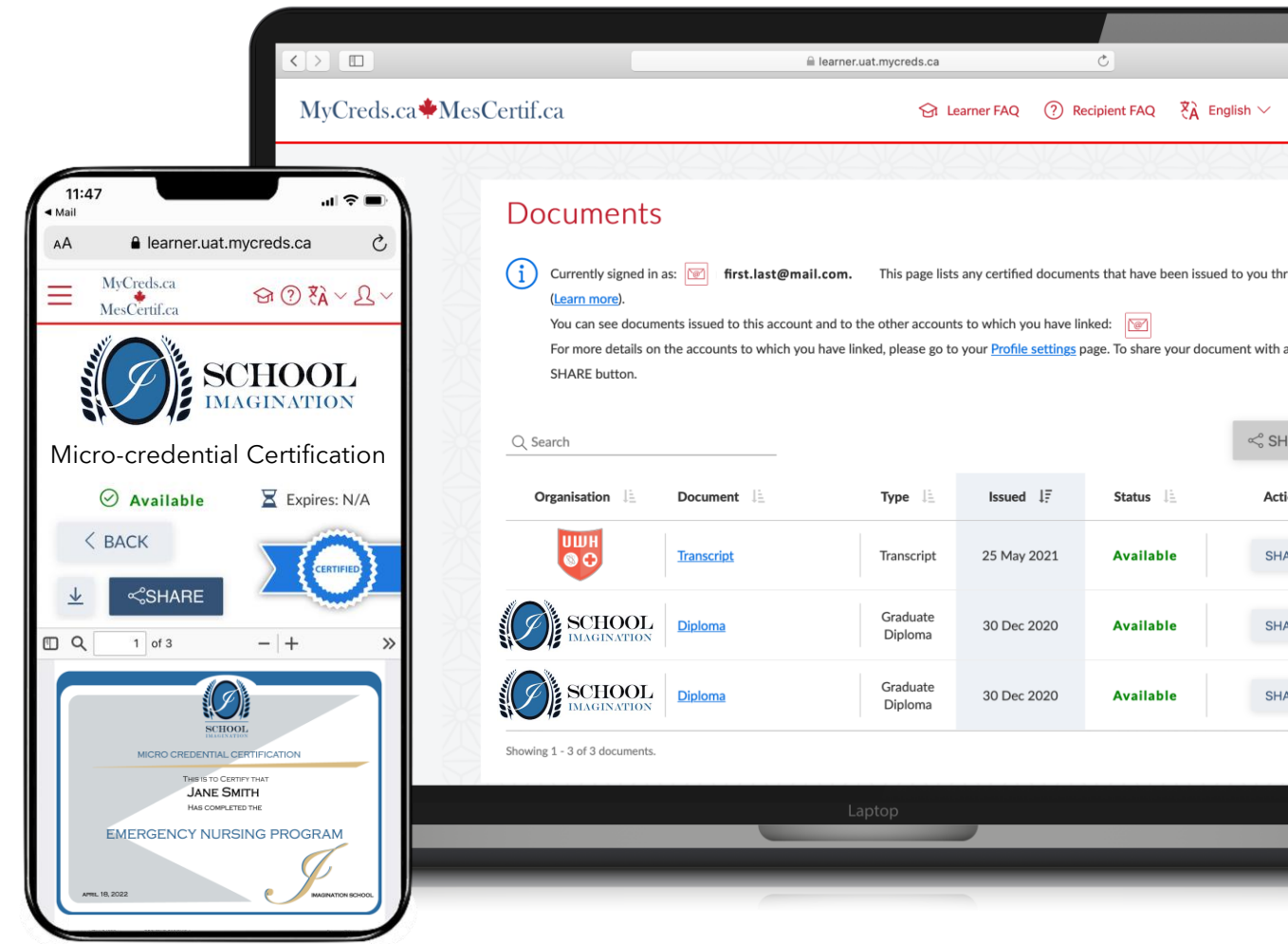
ARUCC MyCreds™

Incorporated	• Not-for-profit under ARUCC
Sector owned	• MyCreds™ and MesCertif™
National participation	• Colleges + Universities
Nationally supported	• Partners include: Pan-Canadian Council on Admissions and Transfer (PCCAT), Canadian University Council of Chief Information Officers (CUCCIO), Canadian Postsecondary Electronic Council User Group (CanPESC)
Sector supported	• Endorsed by our: Colleges and Universities, Credential evaluation organizations, Governments

ARUCC MyCreds™ Governance Structures

ARUCC Board

ARUCC MyCreds™ Steering

ARUCC MyCreds™ Strategic Advisory Board

ARUCC MyCreds™ Registrars Group

ARUCC MyCreds™ Deputy Registrars group

ARUCC MyCreds™ Communications Working Group

ARUCC MyCreds™ Integrated Working Group

- ARUCC MyCreds™ Banner User Group
- Technical MyCreds™ Community group

MyCreds™ strategic plan

Partnerships

Registrarial sector leadership
organizations

Higher Education Community

Government

Federal Treasury Board
Ontario
Nova Scotia
Government owned regulatory bodies

Core service providers:

Universities' Canada
Colleges and Institutes Canada
DIACC
ID Lab
Regulatory bodies

Not-for-profit sector leadership

Industry

DUKLAS CORNERSTONE CONSULTING INC.

DIGITARY
by lpar parchment

MATTR

Student Information
System providers
Other nodes
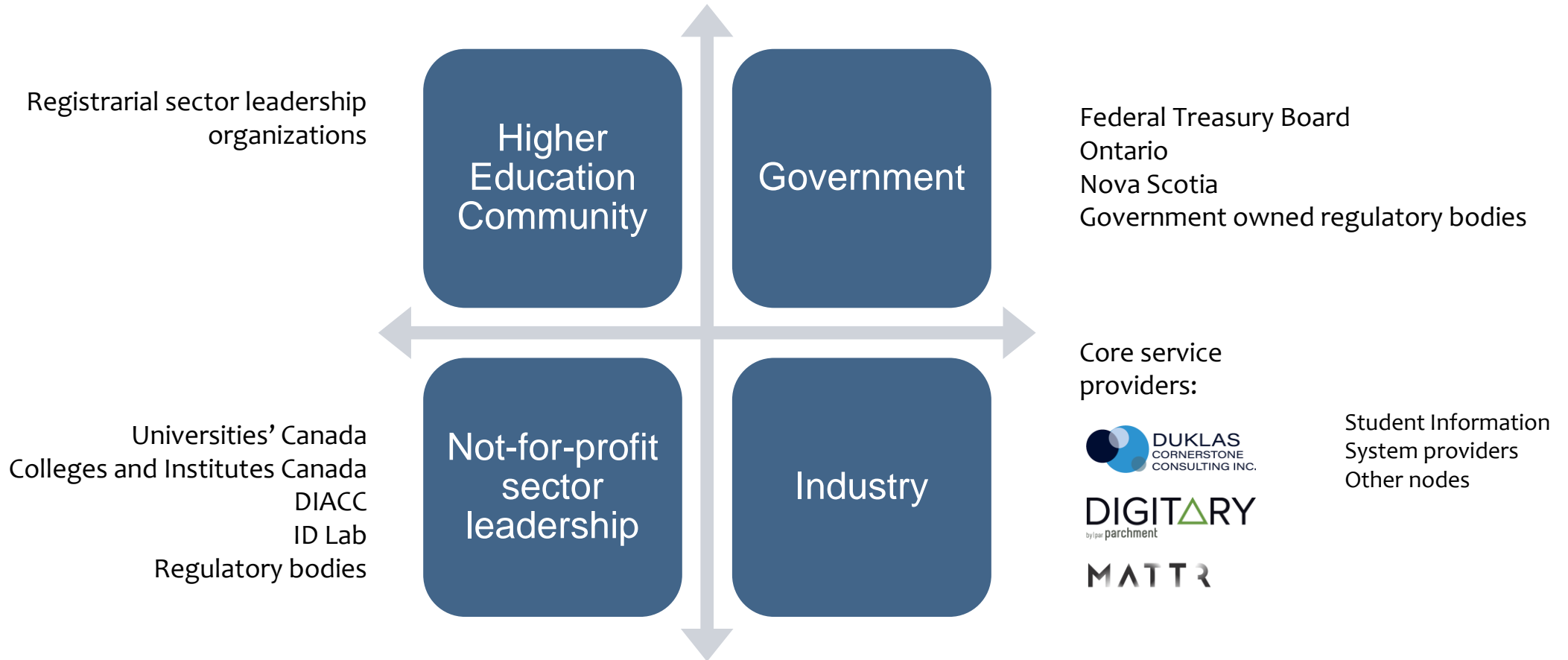
MyCreds™ is growing

In Canada

At scale in Ontario, Alberta, Newfoundland, Saskatchewan, and soon, Nova Scotia

- Attracting government participation and/or grant funding

- Attracting industry and trades participation

Overall

Canada and internationally as part of the Digitary by Parchment Network

- 3M+ learners worldwide

- 10M+ documents

- Canada is 13% of the world network and growing

"We are very happy with how MyCreds has been working for us and our students. As a next step, we are excited to expand our usage in the coming months with additional document types as will build out our institutional adoption of digital verifiable solutions to support learners."
Mark Hilgersom, registrar, Lethbridge College

MyCreds.ca MesCertif.ca

MYCREDS™ | MESCERTIF™
1ST PLACE WINNER
FOR MOBILE LEARNER
– PESC 22ND ANNUAL BEST PRACTICES –

An award Winning Not-for-Profit Solution
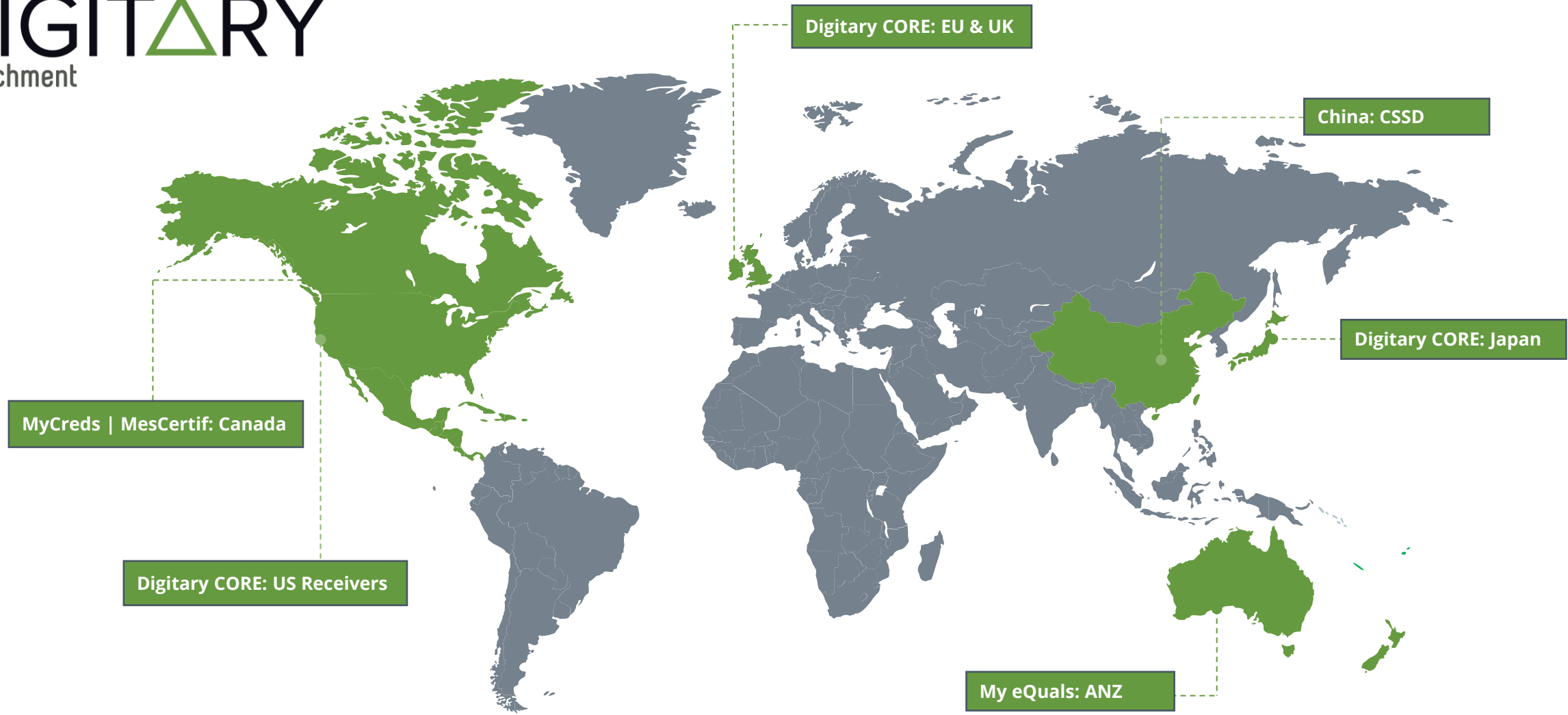
DIGITARY
by parchment

- **Organization Portal**
  - **Issuing**
    - Secured access for institutions to issue and manage documents for learners
    - Only digitally signed (certified) documents are accessible to learners through the learner portal
  - **Receiving**
    - Secure access for institutions to receive documents from anywhere in Digitary's worldwide network including access to embedded XML data from issuing institutions such as CSSD in China
- **Learner Portal**
  - Portal for learner access to their certified documents

Transcripts

Badges

Parchments

Micro-credentials

Confirmation letters

& more…

Awards

Institutions

Verify

Issue

Share
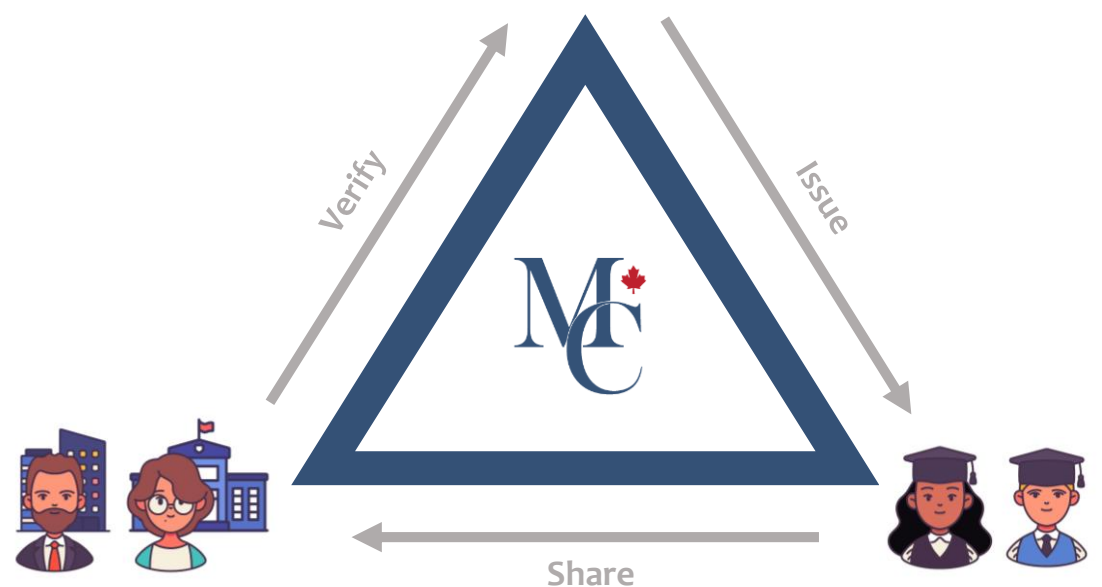
Extending the Digitary platform and Innovating our Credentials
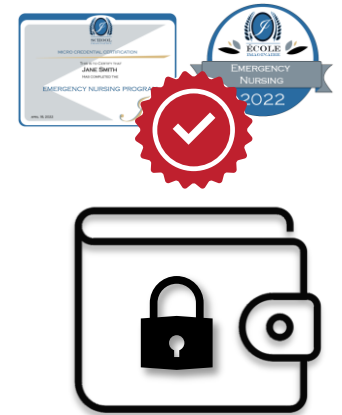
PAPER - - - - - - - - - - - - - - → **DIGITAL** - - - - - - - - - - - - - - → **VERIFIABLE**

Why are we focusing on open standards?

- **National data interoperability of transcripts and credentials to promote learner mobility and efficiencies for institutions**

- **International data interoperability of credentials to promote global learner mobility**

- **Portability and comparability of micro-credentials for institutions, learners and industry partners**

- **Expansion of use cases beyond our own post-secondary ecosystem**

National data interoperability

Challenges

- Lack of consistently applied standards across the country limits inter-provincial exchange

Opportunities

- CanPESC working group focusing on Standards Upgrade Pathways
  - White paper looking at various strategies for upgrading to newer PESC XML standard versions
- MyCreds next steps to promote national Recommended Implementation Practices for:
  - Transcripts (PESC College Transcript and High School Transcript)
  - Academic Credentials (PESC Academic Credentials and Experiential Learning)
- MyCreds is establishing a micro-credential Recommended Implementation Practice for use nationally but with alignment to work that has been done in the EU and NZ
  - Micro-credential data structure for delivery as a Verifiable Credential

International data interoperability

Challenges

- Differing standards and technologies in use internationally

Opportunities

- The Digitary platform already transforms PESC standards to Digitary Learner Profile to enable translation to and from other standards

- MyCreds currently piloting issuance of Verifiable Credentials (VCs) using Self Sovereign Identity (SSI) technologies

  - Ontario Virtual Skills Passport project in partnership with MATTR Global to deliver Verifiable Credentials from the MyCreds platform.

  - Planning for a pilot project in collaboration with the Federal Government and EU for Academic Credentials to enable translation from PESC standards to European Verifiable Credential initiatives

  - Participation in the W3C + Jobs for the Future (JFF) Interoperability Plugfest (Nov. 14th)

Portability and comparability of micro-credentials

Challenges

- Institutions are looking for guidance on how to represent their micro-credentials as data and how learners can most effectively utilize them

Opportunities

- Expand institutional use of micro-credentials on MyCreds
  - Badges as IMS Open Badges
  - Micro-credential parchments as PDF, PDF/XML and Verifiable Credentials
- Verifiable Credentials (VCs) using Self Sovereign Identity (SSI) technologies
  - Ontario Government funding support to promote micro-credentials use through the Ontario Virtual Skills Passport Project
  - Explore interoperability with Ontario Govt VC Wallet Strategy through our partner, MATTR Global

Expansion of use cases beyond post-secondary ecosystem

Challenges

- Determine how education sector Verifiable Credentials can be leveraged in combination with Verifiable Credentials from other sectors

- Third party verifiers for employment

Opportunities

- Ontario Virtual Skills Passport project and employers for third party verifications using Self Sovereign Identity (SSI) technologies and Verifiable Credentials (VCs)

- Communication and acceptance of digital technologies among employers, professional associations and application centres.

How we unlock the power of student data

PDF
XML

Institutions

DIGITARY
by parchment

Verify

Issue

VC

MATTR

Claim
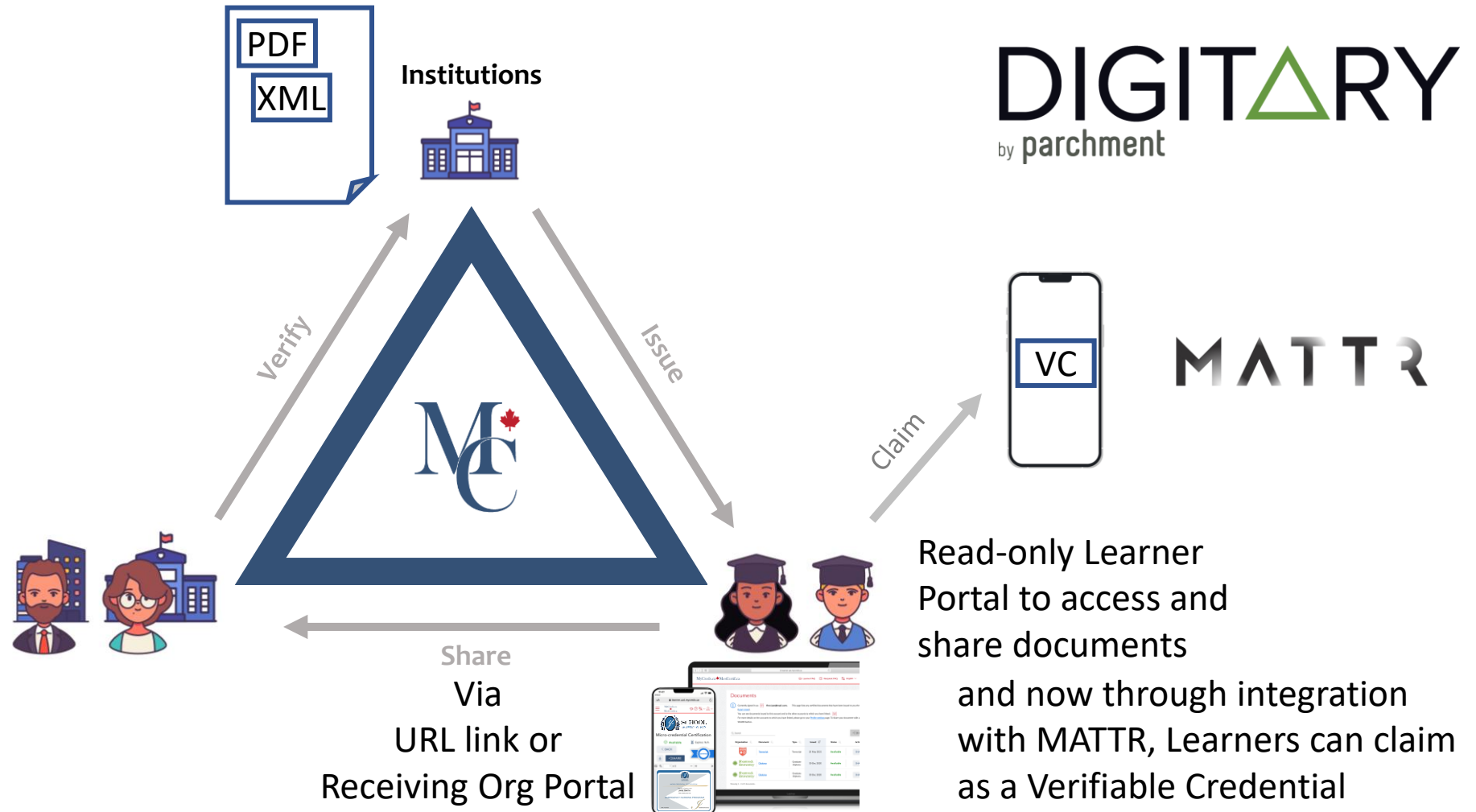
- Third Party Verification back to source
- Ability to consume PDF and XML

Share
Via
URL link or
Receiving Org Portal

Read-only Learner Portal to access and share documents and now through integration with MATTR, Learners can claim as a Verifiable Credential

Verifiable Credentials using Self Sovereign Technologies
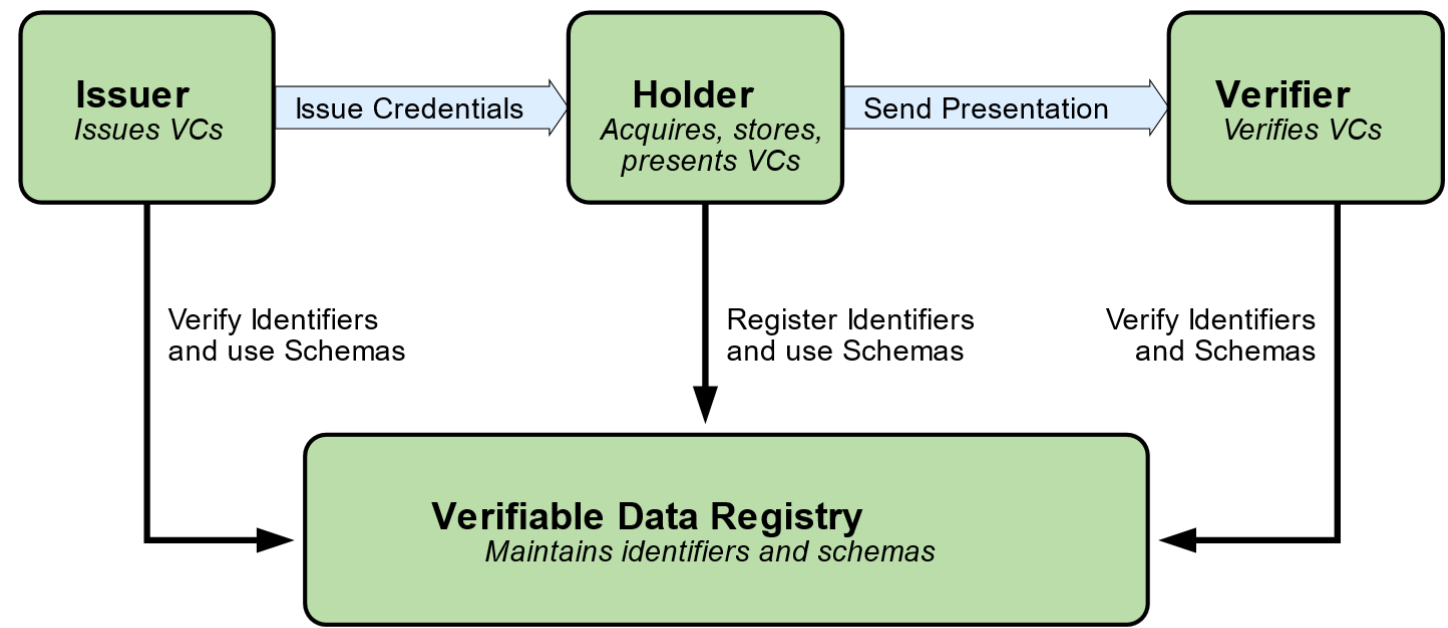
An enhanced verification model:

✓ Critical interoperability and portability enabler

✓ Standard lightweight data model

✓ Cryptographically reliable

✓ Decentralized status mechanisms

✓ Flexible proof mechanisms

✓ Advanced proof formats – selective disclosure

Source: Verifiable Credentials Data Model v1.1 - https://www.w3.org/TR/vc-data-model/

Enables verifiers to confirm the issuing organization and integrity of the credential through cryptographic proof mechanisms

Turning Micro-credentials into Verifiable Credentials (VCs)

University
of Regina

Christie Schultz

has earned a

Professional Microcredential

in

Strategic Planning and Management

Certified on

November 21, 2021

Christie Schultz

Dr. Christie Schultz, Director of the Centre for Continuing Education

Sample

© Digitary

```
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        <Birth>
            <BirthDate>1990-03-14</Birthdate>
        </Birth>
        <Name>
            <FirstName>Christie</FirstName>
            <LastName>Schultz</LastName>
        </Name>
        <Contacts>
            <Email>christie.schultz@uregina.ca</Email>
        </Contacts>
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                </Address>
                <URL>https://www.uregina.ca/</URL>
            <Department>Centre for Continuing Education</Department>
        <MicrocredentialAwardProgram>
            <ProgramName>Strategic Planning and Management</ProgramName>
        </MicrocredentialAwardProgram>
    </LearningRecord>
</Student>
```

Sample

Turning Traditional Credentials into Verifiable Credentials (VCs)

Development of a standardized data structure for micro-credentials

- Feedback from institutions that micro-credentials follow structures that they are familiar with based on existing PESC standards
  - PESC College Transcript is widely used by institutions in BC, Alberta, Ontario and Nova Scotia
  - PESC Academic Credential and Experiential Learning was reviewed and has influenced the micro-credential structure

- A draft micro-credential structure has been established based on input from participating institutions and existing MyCreds governance working groups

- Data elements from the EU and NZ micro-credential standards have also been mapped

- A subset of the micro-credential structure has been scoped for the pilot Verifiable Credential

Interoperability and Portability

Next Steps for MyCreds^{TM}

National promotion of standards use and data delivery/consumption

- Promote issuing documents with PESC standard data through existing MyCreds governance groups (ARUCC MyCreds^{TM} Integrated Working Group, Registrar's user groups, Technical user group, and SIS based user groups) and provincial government funded opportunities

- Develop and communicate Recommended Implementation Practice guides for each of the existing PESC standards at the national level
  - PESC College Transcripts
  - PESC High School Transcripts
  - PESC Academic Credentials
  - Micro-credentials

Next Steps for MyCreds^{TM}

National promotion of standards use and data delivery/consumption

- Deliver an accessible central repository of information about each institution's implementation on MyCreds
  - Document types issued together with formats (PDF, PDF/XML, Verifiable Credential) and compliance with PESC standard version numbers
  - Availability of Open Badges
  - Institution specific data definitions for issued documents
  - Institution receiving capability (PDF, PDF/XML)

- Continue our discussions with the provincial hubs and application centres:
  - Include OAUTH integration to enable application centres to include verified documents from our world-wide network into their application processes (similar to our integration with CollegeNet in the US)

Next Steps for MyCreds^{TM}

Continual feedback and evolution of the standards

- Micro-credential implementation practices
    - Input from institutions on micro-credential data
    - Alignment with micro-credential standard work from EU and NZ

- Contribution to the evolution of existing standards

Next Steps for MyCreds^{TM}

Expansion of the Verifiable Credential capabilities using open standards

- Micro-credential use cases

- Academic Credentials

- Integration/exchange with EU Verifiable Credential initiatives

- Interoperability with other Verifiable Credential Wallets

- Other Digital Identity and Verifiable Credential ecosystem partnerships

THANK YOU!

BERT VAN DER GEEST
REGIONAL DIRECTOR

BERT.VDG@DIGITARY.NET

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— FOUNDER AWARDS —
2022

AACRAO   **ellucian.**

Recognized for continuous, annual PESC Membership and successful, continual election to the PESC Board of Directors

AACRAO & **Ellucian**

honored in 2022 at PESC's 25th Anniversary

— OUTSTANDING SERVICE AWARDS —
2022

Recognized for long-term support, participation, leadership & governance in PESC, honored in 2022 at PESC's 25th Anniversary

Kristi Blabaum
Ascendium Education/NASLA

Michael Morris
ACT

Doug Falk
National Student Clearinghouse

Susan McCrackin
College Board, rtd.

Doug Holmes
OUAC

Rick Skeel
Ellucian

David K. Moldoff
AcademyOne

Francisco Valines
Florida International University

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In looking back over PESC's 25-year history, I will reflect on how PESC started – along with a review of the people that made it happen and what PESC has been striving to achieve.

- *What is PESC's mark of achievement?*
- *What is PESC's footprint?*
- *Is PESC more than the 'transcript' in all its formats?*
- *What is PESC's role in financial aid?*

As we prepare for PESC's 57th convening, this session will cover these topics and include a few of the best stories from over the years. Then long-time PESC leaders will join in to discuss what's next.

- *What is the future of data standards?*
- *What is the future of PESC?*
- *What are the roles of government and foundations in the ecosystem?*

Suite of Standards

UNLOCKING THE POWER OF STUDENT DATA / OCTOBER 2022 DATA SUMMIT | VANCOUVER header banner

History of Govt

> > P E S C   A N A L Y S I S   < <

FEDERAL & STATE GOVERNMENT RELATIONSHIP
WITH VOLUNTARY CONSENSUS STANDARDS &
STANDARDS-SETTING BODIES

AUGUST 20, 2019 v 1.1

MULTIPLE STAKEHOLDRS. ONE VISION.

MICHAEL D. SESSA
PRESIDENT & CEO
POSTSECONDARY ELECTRONIC STANDARDS COUNCIL
1250 CONNECTICUT AVENUE NW, SUITE 700
WASHINGTON, D.C. 20036
WWW.PESC.ORG
FACEBOOK.COM/PESCUPDATES
TWITTER.COM/PESCUPDATES

PESC Unpublished

All work, artifacts, documents and proposed candidate standards
From groups and initiatives that
Either stopped or were not continued
Due to lack of funding

Coming Soon…

GROUPS & INITIATIVES

BOARDS	**PESC MEMBER-BASED GROUPS** Governing the PESC Mission, the Standards Process, and Policies and Procedures Manuals	• BOARD OF DIRECTORS • CHANGE CONTROL BOARD • SEAL OF APPROVAL BOARD • TECHNICAL ADVISORY BOARD
TASK FORCES	**FREE AND OPEN GROUPS WITH PESC MEMBER CO-CHAIRS** Studying and Researching Emerging and Strategic Topics	• GENDER IDENTITY TASK FORCE • JSON-LD TASK FORCE • MICROCREDENTIALS TASK FORCE • STUDENT AID TASK FORCE
USER GROUPS	**FREE AND OPEN GROUPS WITH PESC MEMBER CO-CHAIRS** Managing Multiple Long-Term Projects and/or Services	• CanPESC USER GROUP • EdExchange USER GROUP • GEO Code USER GROUP
WORKGROUPS	**FREE AND OPEN GROUPS WITH PESC MEMBER CO-CHAIRS** Developing PESC Approved Standards	• JSON-LD TRANSCRIPT WORKGROUP

PESC GROUPS include education leaders and experts spanning policy, practice and technology working together through PESC in 'co-opetition' - that is 'cooperation among competitors'.

PESC GROUP meetings are held regularly weekly, monthly and/or quarterly by webinar; while they convene in-person at April and October Data Summits.

PESC GROUP participation is available to representatives of PESC Member organizations (in good standing); and free and open for all interested parties in the student and learner ecosystem.

ALL PESC GROUPS look to:
➢ **Focus** on one common cause or interest
➢ **Foster** collaboration across educational sectors to solve industry-shared problems
➢ **Strive** to bring much needed clarity and coherence to the education ecosystem
➢ **Educate** and inform on current initiatives and emerging best practices impacting technology and standards
➢ **Promote** innovative, collaborative solutions that employ automated, reusable and sustainable technologies and standards.

JOIN PESC!

PESC
www.pesc.org
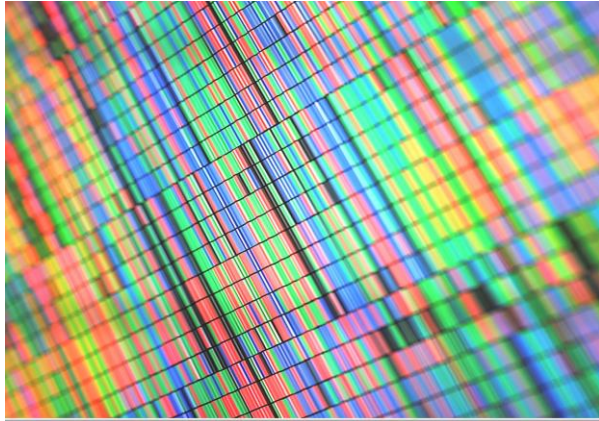
POSTSECONDARY ELECTRONIC STANDARDS COUNCIL
GENDER IDENTITY
IN DATA SYSTEMS & LIFELONG LEARNING
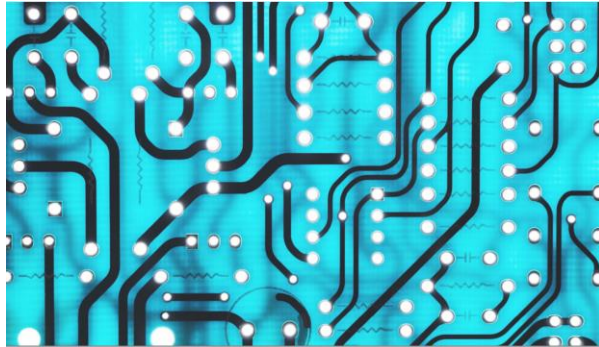
POSTSECONDARY ELECTRONIC STANDARDS COUNCIL
MICROCREDENTIALS
IN DATA SYSTEMS TASK FORCE
A FOUR-PART SERIES INVESTIGATING USAGE OF
TECHNOLOGY & STANDARDS FOR SKILLS & COMPETENCIES
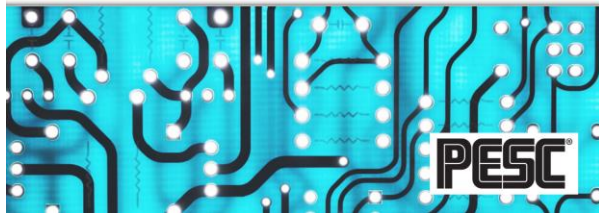
POSTSECONDARY ELECTRONIC STANDARDS COUNCIL
STUDENT FINANCIAL AID
IN DATA SYSTEMS TASK FORCE
A FOUR-PART SERIES INVESTIGATING IMPACTS OF
CURRENT EVENTS ON FEDERAL STUDENT AID

FUNDED IN PART BY

POSTSECONDARY ELECTRONIC STANDARDS COUNCIL
SOFTWARE & WEB 3.0
IN DATA SYSTEMS TASK FORCE
A FOUR-PART SERIES INVESTIGATING VALUE OF
EMERGING TECHNOLOGIES & STUDENT SERVICES

PESC Finances

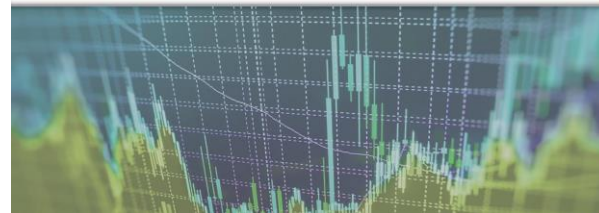|	WINTER DATA SUMMIT January–April	SPRING DATA SUMMIT April–May	ANNUAL CONFERENCE ON TECHNOLOGY AND STANDARDS April–May	FALL DATA SUMMIT October–November
1999		Arlington VA		Washington, D.C.
2000		Arlington VA		Reston
2001		Arlington VA		Tampa
2002	Miami	Arlington VA		Spokane
2003	San Francisco*	Alexandria		Austin
2004	New York City		Crystal City	Newport Beach
2005	San Diego		Washington, D.C.	Atlanta
2006	Clearwater		Washington, D.C.	San Diego
2007	Las Vegas		Washington, D.C.	Montreal
2008	Washington, D.C.		Washington, D.C.	Crystal City
2009		Washington, D.C.	Washington, D.C.	Washington, D.C.
2010		Washington, D.C.		Los Angeles
2011		Boston		San Francisco
2012		Las Vegas		Vancouver
2013		San Diego		Palm Beach
2014		Chicago		Washington, D.C.
2015		Washington, D.C.		Washington, D.C.
2016		Washington, D.C.		San Diego
2017		Washington, D.C.		Toronto
2018		Washington, D.C.		San Francisco
2019		Washington, D.C.		Montreal
2020		Virtual		Virtual
2021		Virtual		Virtual
2022		Washington, D.C.		Vancouver

UNLOCKING THE POWER OF STUDENT DATA
OCTOBER 2022 DATA SUMMIT | VANCOUVER

PESC, AACRAO A + T, ARUCC, NASFAA, GDN, EDUCAUSE

March					April					June					July					October				
2022					**2022**					**2022**					**2022**					**2022**				
					4	5	6	7	8						4					10	11	12	13	14
					11	12	13	14	15											17	18	19	20	21
					18	19	20	21	22	20	21	22	23	24						24	25	26 VC	27	28
					25 DC	26	27	28	29	27	28	29								31				
2023					**2023**					**2023**					**2023**					**2023**				
6	7	8	9	10	3	4	5	6	7				1	2	3	4	5	6	7	2	3	4	5	6
13	14	15	16	17	10	11	12	13	14	5	6	7	8	9	10	11	12	13	14	9	10	11	12	13
20	21	22	23	24	17	18	19	20	21	12	13	14	15	16	17	18	19	20	21	16	17	18	19	20
27	28	29	30	31	24	25	26 DC	27	28	19	20	21	22	23	24	25	26	27	28	23	24	25 PS	26	27
										26	27	28 SD	29	30	31					30	31			
2024					**2024**					**2024**					**2024**					**2024**				
				1	1	2	3	4	5	3	4	5	6	7	1	2	3	4	5		1	2	3	4
4	5	6	7	8	8	9	10	11	12	10	11	12	13	14	8	9	10	11	12	7	8	9	10	11
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18	19	20	21	22	22	23	24 DC	25	26	24	25	26 BM	27	28	22	23	24	25	26	21	22	23	24	25
25	26	27	28	29	29	30									29	30	31			28	29	30	31	
																				4	5	6 DB	7	8