

2017
EDITION



2017 ANNUAL SUMMARY & WRAP UP | SPRING & FALL DATA SUMMITS

THE STANDARD

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THE STANDARD

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TABLE OF CONTENTS

SPRING 2017 DATA SUMMIT
SUMMARY & WRAPUP

FALL 2017 DATA SUMMIT
SUMMARY & WRAPUP

TRUST THE VALUE OF PESC
COMMUNITY SOURCED
OPEN DATA STANDARDS

PESCINTEROP2018
JANUARY 16 - 17, 2018
SAN FRANCISCO

SAVE THE DATE
MAY 2-4, 2018



Stanford University's Mei Hung, Application Developer, receives PESC's Distinguished Achievement Award; iQ4's Peter Meehan, Head of International Partnerships, and National Student Clearinghouse's Doug Falk, VP & CIO, receive 1st Place Award in PESC's 18th Annual Best Practices Competition.



ARUCC President Charmaine Hack, Registrar at Ryerson University & ARUCC VP Romesh Vadivel, Assistant Registrar & Director SP, McGill University receive PESC's Distinguished Service Award



GLOBAL EDUCATION ORGANIZATION CODE



GEO CODE

A FREE, OPEN AND STANDARDIZED
ONLINE DIRECTORY OF
INSTITUTION CODES & IDENTIFIERS

FOR USE BY

EDUCATION INSTITUTIONS &
STAKEHOLDERS WORLDWIDE

ACTIVATING INTEROPERABILITY ACROSS THE EDUCATION DOMAIN

PESC Board '10 Year Service' DC May 3-5, 2017



GDN Board in Melbourne April 26-28, 2017



PESC in San Diego
October 14, 2016



PESC at GDN in
Melbourne April
26-28, 2017



PESC at GDN in
Melbourne April
26-28, 2017



PESC at GDN in Malaga May 4-6, 2015

PESC at NDIA/ADL in Alexandria August 1, 2017

EWP at PESC San Diego May 3-5, 2017



GDN at PESC DC April 13, 2016

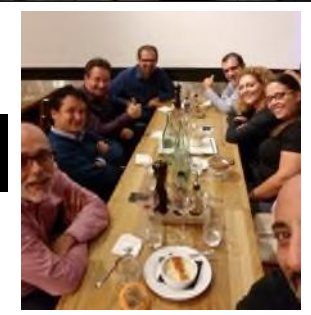


PESC in San Diego October 14, 2016

PESC at EWP in Brussels Sept 26, 2017



PESC at EWP in
Brussels
Sept 26, 2017



PESC at EAIE in
Glasgow
Sept 15, 2015



PESC at GDN in Melbourne April 26-28, 2017



PESC at GDN in
Cape Town
May 17-19, 2016



PESC at Blockchain Conference in Groningen Sept 5, 2017

DATA SYSTEMS ONLY DO WHAT YOU ASK THEM TO DO.

WHAT ARE YOU ASKING YOURS TO DO?

**SOLUTIONS ARE AVAILABLE.
NOW IS THE TIME. PESC IS THE PLACE.**

**FOR THE COMMUNITY.
BY THE COMMUNITY.**

 **PESC**[®]
MULTIPLE STAKEHOLDERS. ONE VISION.



EMPOWERING THE MOBILITY OF DIGITAL ACADEMIC CREDENTIALS



PROGRAM

SPRING 2017 DATA SUMMIT

WASHINGTON DC

MAY 3-5, 2017



PROGRAM COMMITTEE

Jeffrey Alderson

Principal Analyst, Enterprise Software, Eduventures

Helen Chen, Ph.D.,

Designing Education Lab, Department of Mechanical Engineering, Office of the Registrar, Student and Academic Services, Stanford University

Patrick Elliott

Senior Associate Registrar, University of Maryland University College

John Ittelson, Ph.D.

Professor Emeritus, School of Computing and Design, California State University Monterey Bay

Alex Jackl

CEO and President, Bardic Systems

James Kelly

Senior Director of Technology, ECE – Educational Credential Evaluators

David Moldoff

CEO and Founder, AcademyOne

Monterey Sims

Director of Admissions and Evaluation, University of Phoenix

DATA SUMMITS focus on access, integration & implementation of data systems; maintenance and promotion of data exchange standards; open, community-driven development and innovation of technology; mobility and overall interoperability; and other key factors driving global education data systems development and technology.

PESC leads the establishment & adoption of open, transparent, data standards development across the education domain.

Student mobility combined with emerging, innovative technologies and systems continues to transform learning and academic credentialing around the world. PESC began discussions in 2015 with its Membership and Board of Directors about this changing landscape and subsequently that year formed the Academic Credentialing and Experiential Learning Task Force.

This highly knowledgeable group of leaders and experts spanning education policy, practice and technology, has been meeting since to ensure that development efforts within PESC keep pace with the digital needs of institutions, their partners and service providers all driven by student mobility.

A number of community and industry credentialing initiatives have been established as well to facilitate and administer the integration of this digital transformation within the credentialing environment.

The supportive, complementary message to each initiative from PESC is that fostering collaboration across educational sectors to solve industry-shared problems brings much needed clarity & coherence to the education eco-system.

For the Spring 2017 Data Summit | Best Practices in Education Data Systems, PESC underscores this message and elevates this need to the forefront by showcasing many of these initiatives under one common theme: *Empowering the Mobility of Digital Academic Credentials.*

The goals of the Spring 2017 Data Summit include educating and informing attendees on current initiatives and emerging best practices impacting technology & standards; and promoting innovative, collaborative solutions that employ automated, reusable and sustainable technologies in order to improve institutional performance, service delivery, and overall connectivity between stakeholders.

To accomplish this task, the Summit will showcase leaders and experts who will present and discuss Digital Academic Credentials from various perspectives, including: Admissions & Registrar, Marketplace Supply & Demand, Policy & Research, International, and Systems & Technology.

PESC IS SPONSORED ANNUALLY BY

Credentials Solutions, National Student Clearinghouse, Oracle and Parchment Inc. The Spring 2017 Data Summit is co-sponsored by Connecting Credentials.

Leading the
**ESTABLISHMENT & ADOPTION OF
DATA EXCHANGE STANDARDS
ACROSS EDUCATION**



ADMISSIONS AND REGISTRAR

Long gone are the days of the 'traditional student.' According to recent data reported by AASCU, "As few as 16% of college students..." are traditional¹. If when students access higher education has dramatically and overwhelmingly shifted, so too has the why, the how, and the what students are looking to achieve through an education.

Transcript data, for the most part, has supported the needs of students and institutions. Many worked hard to continue to ensure those needs were being met by advancing transcript technology from EDI, to XML and even PDF, all PESC Approved Standards being used widely across the USA and Canada. Transcripts and transcript data will continue to be needed and play a vital role in the lifecycle of a student.

Transcript data does not, however, portray the holistic view or profile of the student and the student's skills, knowledge and abilities. Capturing this holistic view in an interoperable, portable, and digital form requires collaboration across educational sectors and across industries.

Underlying this collaboration is the realization that the higher education lifecycle, and learning itself, is expanding into a lifelong lifecycle. There may never be another traditional student. How do institutions meet needs that seem to be ever changing?

¹Defined as individuals between the ages of 18-22 who received parental financial support and lived on campus: What Does "Traditional Student" Even Mean in America Today?

ADMISSIONS AND REGISTRAR

SPEAKERS & PRESENTERS

MICHAEL REILLY

EXECUTIVE DIRECTOR, AACRAO

PAUL ROBINSON

ASSOCIATE VICE PROVOST AND UNIVERSITY REGISTRAR,
UNIVERSITY OF MICHIGAN - ANN ARBOR

DAVID SHIPPEN

DIRECTOR, STATEWIDE PROGRAMS - STUDENT SERVICES,
CALIFORNIA COMMUNITY COLLEGES

INSIYA BREAM

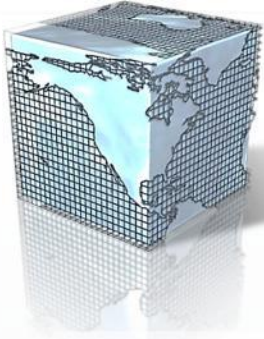
ASSISTANT VICE PROVOST, REGISTRAR STRATEGIC
OPERATIONS, UNIVERSITY OF MARYLAND UNIVERSITY
COLLEGE

THOMAS BLACK

ASSOCIATE VICE PROVOST FOR STUDENT AFFAIRS AND
UNIVERSITY REGISTRAR, STANFORD UNIVERSITY

PLEASE VISIT www.PESC.org
FOR PRESENTATIONS & FULL INFORMATION ON
THE SPRING 2017 DATA SUMMIT

PLEASE VISIT
<http://www.AACRAO.org/resources/record>
FOR INFORMATION ON AACRAO'S
COMPREHENSIVE STUDENT RECORD,
IN PARTNERSHIP WITH NASPA &
FUNDED BY THE LUMINA FOUNDATION



INTERNATIONAL

For students traveling internationally for their education, a myriad of new challenges are presented. Most prominent is the need to communicate or translate from one language to another. Without a standard language or guidelines for a common, shared vocabulary, simple translation can become labor intensive, costly and prone to errors.

While credential evaluation is a fundamental and essential piece of the process, the lack of common data standards and technical protocols can lead to confusion and delays in delivery and exchange of data.

These factors all contribute to significant risk of fraud and abuse. Unfortunate consequences of poor data quality exacerbate the process, not to mention legal and monetary penalties that may also ensue.

Under the Groningen Declaration Network, stakeholders in credential evaluation have been organizing and collaborating to improve this process. The main question remains on how to organize a global effort to address these concerns and build a long-term process that will endure as the number of students traveling internationally for education increases exponentially each year.

SPEAKERS & PRESENTERS

DAVID MOLDOFF

CEO & FOUNDER, ACADEMYONE

JAMES KELLY

SENIOR DIRECTOR OF TECHNOLOGY, ECE

PLEASE VISIT

<http://www.GroningenDeclaration.org>

FOR INFORMATION ON GLOBAL TASK FORCES,
PILOTS AND UPCOMING MEETINGS & EVENTS

SYSTEMS & TECHNOLOGY

New technologies have enabled creativity and innovation in academic credentialing. While the need to improve the portability of data and credentials is commonly agreed upon, mobility also raises the priority and need to authenticate and validate credentials.

Enterprise-wide initiatives provide comprehensive solutions for all stakeholders and many are beginning to firmly establish themselves. Yet a major gap exists in capturing skills, knowledge and abilities leaving many to piece together processes to meet student demands. In what seems like an ever-changing environment, the challenge for systems and technology is what to build or develop, how development should be conducted and when products and/or services are needed.

A close relationship is necessary between institutions, technology and systems providers, students and labor and workforce sectors. Open, transparent collaboration is the key to success in order to maximize the value of technology and systems. The main question in this sector revolves around the availability of 'off the shelf' solutions, how interoperable they are, and their integration into the existing processes.

SPEAKERS & PRESENTERS

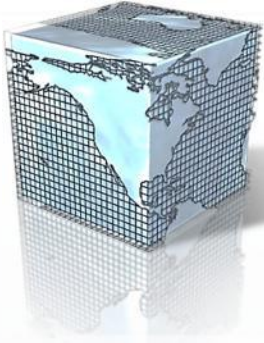
GREGORY NADEAU

MANAGER, PCG EDUCATION

JOEL HERNANDEZ

CEO, eLUMEN

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POLICY & RESEARCH

Stakeholders in policy and research are tackling many vast and intricate issues related to credentialing. Why students look to educate themselves and more prominently, how and when they do look to education has vastly changed over the years.

All stakeholders, including state, provincial and government agencies, are tracking and analyzing changing student behaviors. New concepts like micro credentials, badges and even loan and grant models are undergoing re-evaluation and experimentation.

The main questions here include what policy and research is most important? If the traditional student model is obsolete, what factors are driving a new model?

SPEAKERS & PRESENTERS

DOUGLAS SHAPIRO

PH.D., EXECUTIVE RESEARCH DIRECTOR, NATIONAL STUDENT CLEARINGHOUSE RESEARCH CENTER

JOELLEN SHENDY

ASSOCIATE VICE PROVOST & REGISTRAR AT UNIVERSITY OF MARYLAND UNIVERSITY COLLEGE

RAJEEV ARORA

SENIOR VICE PRESIDENT OF PRODUCTS, PARCHMENT

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FOR PRESENTATIONS & FULL INFORMATION ON
THE SPRING 2017 DATA SUMMIT

MARKETPLACE SUPPLY AND DEMAND

Unlike prior initiatives, which generally developed from an idea to a paper process, mobility requires digital data and electronic communications. Many stakeholders across the spectrum from institutions and students to evaluators and employers will touch the same credential. With this broad usage of credentials, new credentialing models need to satisfy all stakeholders. Underscoring these factors is the morphing of perspectives and disposition to a 'student-centric' model.

Students can now better match what they need to learn with what they hope to achieve, whether it be after education or for a career. Many labor sectors have significant deficits in filling jobs and many overinflate the job requirements to ensure applicants have the skills, knowledge and abilities needed.

Now more than ever, all stakeholders must understand the need to operate in a global eco-system in which all the stakeholders play a vital and important role. The major challenge here is how to manage and encourage credentials that are needed in this eco-system to ensure steady and consistent supply and demand.

SPEAKERS & PRESENTERS

EVELYN GANZGLASS

CO-DIRECTOR, CONNECTING CREDENTIALS

KATHLEEN DELASKI

FOUNDER & PRESIDENT, EDUCATION DESIGN LAB

ROBERT SHEETS

PH.D., RESEARCH PROFESSOR, INSTITUTE OF PUBLIC POLICY, GEORGE WASHINGTON UNIVERSITY; CREDENTIAL ENGINE INTERIM MANAGEMENT TEAM

JEANNE THERESE KITCHENS

ASSOCIATE DIRECTOR, CENTER FOR WORKFORCE DEVELOPMENT, SOUTHERN ILLINOIS UNIVERSITY CARBONDALE

RODNEY PETERSEN

DIRECTOR OF NATIONAL INITIATIVE FOR CYBERSECURITY EDUCATION (NICE), NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (NIST), US DEPARTMENT OF COMMERCE



18th ANNUAL BEST PRACTICES 1st PLACE WINNER

iQ4 & National Student Clearinghouse

EXTENDING THE CAPACITY OF HIGHER EDUCATION TO SCALE THE OUTPUT OF VERIFIED WORKFORCE-READY GRADUATES

The award-winning submission received high praise from PESC for its open and broad collaborative approach, sophisticated automation, transparent capacity, use of national standards and innovative technology employed, & for the positive results & outcomes it immediately produces.

The overall goal of this initiative is “to scale the next generation workforce by accelerating technology risk and cybersecurity skills training,” and is accomplished through a financial, industry-driven coalition, the Cybersecurity Workforce Alliance (CWA). The CWA originally formed in 2015 with iQ4, City University of New York (CUNY), John Jay College of Criminal Justice, the State University of New York, University at Albany, and eight senior cybersecurity executives, and now has 500+ members. CWA members “virtually mentor the college student workforce in solving scenario-based cybersecurity business problems to accelerate awareness, experience readiness and scale the student workforce, so they are more attractive to hire and can provide almost immediate value to the private sector by improving a company’s technology and security capabilities globally.”

The competency-based model, proven in the cybersecurity sector, is transportable across all faculty, disciplines and industry sectors, and leverages the NIST Critical Infrastructure Framework and the National Initiative for Cybersecurity Education (NICE Workforce Framework), now automated on the iQ4 Workforce Risk and Mobility platform and made available as open source.

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20th YEAR ANNIVERSARY ACHIEVEMENT AWARD

MEI HUNG
Stanford University

PLEASE VISIT www.PESC.org
TO READ THE FULL EXECUTIVE BRIEFING

**“EXTENDING THE CAPACITY OF
HIGHER EDUCATION TO SCALE
THE OUTPUT OF VERIFIED
WORKFORCE-READY GRADUATES”**



Leading the ESTABLISHMENT AND ADOPTION OF DATA EXCHANGE STANDARDS ACROSS EDUCATION

WHO WE ARE

Established in 1997 at the National Center for Higher Education and headquartered in Washington, D.C., PESC is an international, 501 (c)(3) non-profit, community-based, umbrella association of data, software and education technology service providers; schools, districts, colleges and universities; college, university and state/provincial systems; local, state/province and federal government agencies; professional, commercial and non-profit organizations; and non-profit associations & foundations.

OUR MISSION

Through open and transparent community participation, PESC produces Approved Standards, free without charge, that enable cost effective connectivity between data systems, accelerate performance and service, simplify data access and research and improve data quality along the education lifecycle.

OUR VISION

PESC envisions global interoperability within the education domain, supported by a trustworthy, interconnected network built by and between communities of interest in which data flows digitally and seamlessly from one community or system to another and throughout the entire eco-system when and where needed without compatibility barriers but in a safe, secure, reliable, legal, and efficient manner.

ABOUT PRIVACY

While PESC promotes the implementation and usage of data exchange standards, PESC does not set (create or establish) policies related to privacy and security. Organizations and entities using PESC Approved Standards and services should ensure they comply with FERPA and all local, state, federal and international rules on privacy and security as applicable. For more information, see www.pesc.org.

- **ACADEMIC ePORTFOLIO**
- **ADMISSIONS APPLICATION**
- **COLLEGE TRANSCRIPT**
- **COMMON CREDENTIAL**
- **EDI**



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WASHINGTON DC 20036
202.261.6516 P
202.261.6517 F

- **EDUCATION COURSE INVENTORY**
- **EDUCATION TEST SCORE REPORTING**
- **FUNCTIONAL ACKNOWLEDGMENT**
- **HIGH SCHOOL TRANSCRIPT**
- **PDF ATTACHMENT**

E D E X C H A N G E

**A NEUTRAL DATA
EXCHANGE PLATFORM
ENABLING THE ELECTRONIC
EXCHANGE OF STANDARDS-
BASED DIGITAL DOCUMENTS
AND DATA BETWEEN
ACADEMIC INSTITUTIONS &
THEIR SERVICE PROVIDERS.**

**ACHIEVED THROUGH
AN OPEN WEB SERVICES
ARCHITECTURE & ASSOCIATED
STANDARDS.**

**DESIGNED AS A
PEER-TO-PEER NETWORK
PROMOTING SECURE, RELIABLE,
& DIRECT CONNECTIONS
BETWEEN INSTITUTIONS
WHILE AVOIDING FILE-BASED
TECHNOLOGY.**

CANADIAN PESC USER GROUP

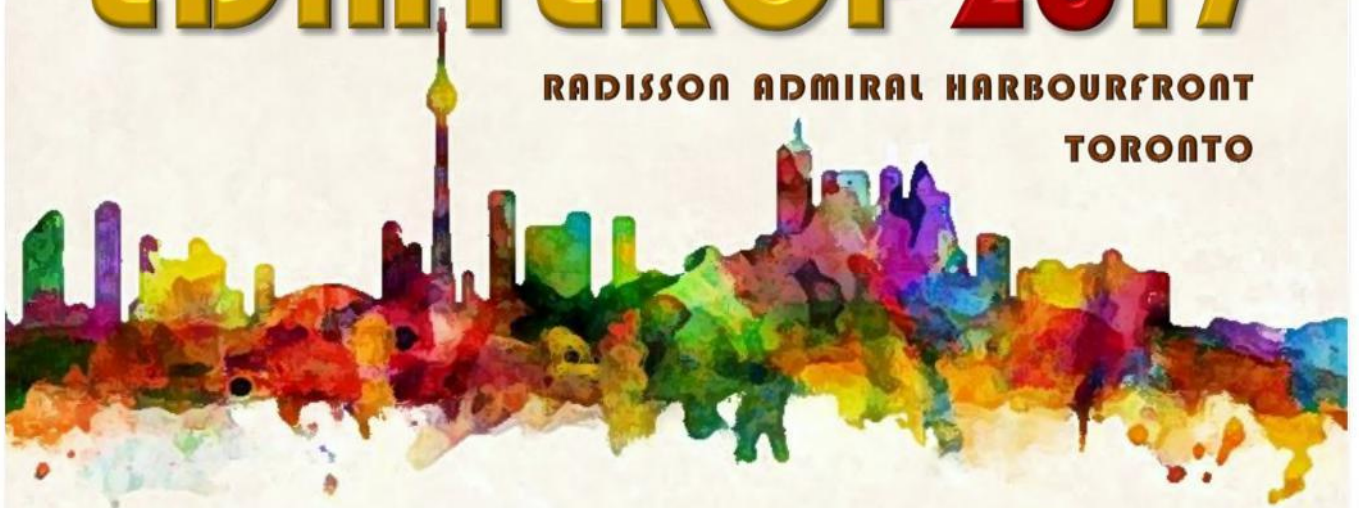


**AN OPEN, COLLABORATIVE GROUP
OF CANADIAN STAKEHOLDERS THAT ENSURES
PESC'S MISSION AND ALL PESC DELIVERABLES, INCLUDING
THE DEVELOPMENT AND RELEASE OF PESC APPROVED STANDARDS,
SUPPORTS AND INCORPORATES THE NEEDS AND INTERESTS
OF CANADIAN STUDENTS, INSTITUTIONS AND
CANADIAN-BASED STAKEHOLDERS**



EDiINTEROP2017

RADISSON ADMIRAL HARBOURFRONT
TORONTO



FALL 2017 SYMPOSIUM & DATA SUMMIT
OCTOBER 25-27, 2017 WWW.PESC.ORG

SUMMARY & WRAP UP

ADVANCING STUDENT MOBILITY IN A DIGITAL WORLD
FALL 2017 DATA SUMMIT





SUMMIT COMMITTEE

Leisa Wellsman Co-Chair

Associate Registrar, Records, Registration & Enrolment Reporting, Conestoga College

Cathy van Soest Co-Chair

Manager, EducationPlannerBC, Transcript Services

Brian Patton

Manager, Application Systems, OUAC - Ontario Universities' Application Centre

Joanne Duklas President

Duklas Cornerstone Consulting

Ruth Blades

Operations Manager, Nova Scotia Council on Admission & Transfer

Susan Stein

Executive Director, Alberta Post-Secondary Application System

Romesh Vadivel

Assistant Registrar and Director, Service Point, Enrolment Services, McGill University

DATA SUMMITS focus on access, integration & implementation of data systems; maintenance and promotion of data exchange standards; open, community-driven development and innovation of technology; mobility and overall interoperability; & other key factors that drive global education data systems development and technology.

PESC leads the establishment & adoption of open, transparent, data standards development across the education domain.

ADVANCING STUDENT MOBILITY IN A DIGITAL WORLD

At PESC's Fall 2017 Data Summit, the education community convenes to provide education and information to attendees on current initiatives and emerging best practices impacting technology & standards; and to promote innovative, collaborative, real solutions that maximize automated, reusable and sustainable technologies in order to improve institutional performance, student and service delivery & overall connectivity between stakeholders.

Speakers and Presenters in General Sessions are leaders and experts spanning education policy, practice and technology. In Breakout Sessions, groups focus on a specific topic of interest (Canadian PESC User Group, Academic Credentialing, Blockchain, JSON Task Force) – check the program for the complete list.

Education, in all its facets, is highly complex. The PESC Fall 2017 Data Summit focuses on DATA and attracts all the major stakeholders dedicated to student mobility and digitalization of student records. Attendees will learn from the tremendous amount of resources provided and be connected through PESC to a growing global community.

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DIAMOND SPONSORS: Credentials Solutions, National Student Clearinghouse, Oracle and Parchment Inc.

SILVER SPONSOR: Educational Credential Evaluators

PESC PARTNERS INCLUDE

AACRAO, APEREO, ARUCC, EMREX, EWP, Groningen Declaration Network, HR Open Standards, Internet2, SHEEO, and the US Department of Education's Common Education Data Standards (CEDS) Initiative.

PESC IS A PROUD EXHIBITOR AT

AACRAO's Annual Meeting, ARUCC's Annual Meeting, and the Annual STATS-DC Conference, National Center for Education Statistics (NCES), US Department of Education.

PESC IS A PROUD SPONSOR OF

AIR's Annual Conference and of the Annual California Electronic Transcripts Workshop and CCCApply.

PESC IS A PROUD MEMBER/AFFILIATE/SIGNATORY

AACRAO, of the NCES National Forum on Education Statistics, and of the Groningen Declaration Network.

PESC HAS A STRONG HISTORY THAT INCLUDES

SPEEDE, EDI, ANSI, X12, Canada, the US Department of Education and Y2K. Read more at www.PESC.org.

IN FULFILLING ITS NON-PROFIT MISSION,

All PESC Approved Standards are available online free of charge at www.PESC.org.

Leading the
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ACROSS EDUCATION**



STUDENT MOBILITY ACROSS CANADA

Members of the ARUCC Groningen and Student Mobility Task Force spent many months in 2016 consulting with the Canadian postsecondary stakeholder community with two goals in mind: to raise awareness about the Groningen initiative and to identify future participation in provincial and/or pan-Canadian data exchange initiatives, particularly the development of a Canadian model for exchanging digital postsecondary student information, such as transcript data.

In 2015 and 2016, the ARUCC Groningen and Student Mobility Task Force invited institutions to participate in a consultation process about the creation of a Canadian model for sharing digital postsecondary student information among postsecondary institutions, with the goal of enhancing student mobility across Canada and internationally.

ARUCC became the first Canadian Signatory to the Groningen Declaration Network, attends Annual Meetings and is continuing its outreach and research toward a Canadian model.

SPEAKER/PRESENTER

KATHLEEN MASSEY

ASSISTANT VICE PRESIDENT (STUDENTS)
UNIVERSITY OF LETHBRIDGE

GDN: CONNECTING DIGITAL DATA DEPOSITORIES

The Groningen Declaration Network, now a formally established organization, aims to advance mobility, to foster development of best practices and globally accepted standards for the secure, citizen centered consultation of educational data allowing globally mobile citizens to share their authentic educational data with whomever they want, whenever they want, wherever.

Originally signed on April 16, 2002 at the closure of the Global Founding Seminar: 'Digital Student Data Depositories Worldwide' in the Netherlands, this inaugural convening was broadened in 2013 with a meeting in Beijing; in 2014 at Georgetown University in Washington, D.C.; in 2015 at the University of Malaga in Spain; in 2016 in Cape Town, South Africa; and in 2017 at the University of Melbourne, Australia.

Herman de Leeuw, Executive Director, first addressed the PESC community at the Fall 2015 Data Summit as Keynote Speaker, following PESC's joining the Groningen Declaration Network as Signatory. In two years since, the number of signatories has vastly expanded, the mission is resonating around the world, and plans are being made for the next annual meeting for 2018 in Paris.

SPEAKER/PRESENTER

HERMAN DE LEEUW

EXECUTIVE DIRECTOR
GRONINGEN DECLARATION NETWORK

PLEASE VISIT www.GroningenDeclaration.org
FOR MORE INFORMATION ON THE
GRONINGEN DECLARATION NETWORK

PLEASE VISIT www.ARUCC.ca
FOR MORE INFORMATION ON ARUCC AND THE
ARUCC GRONINGEN PROJECT

PLEASE VISIT www.PESC.org
FOR PRESENTATIONS & FULL INFORMATION ON
THE FALL 2017 DATA SUMMIT



VIEW FROM DOWN UNDER: AUSTRALIA & NEW ZEALAND

At the Groningen Declaration Annual Meeting in April 2017 in Melbourne, MY eQUALS was launched. My eQUALS is a shared platform that is owned by the participants and the digital documents that are accessible through the platform are provisioned by the participants themselves.

Forty-six universities across Australia and New Zealand are planning to implement the My eQUALS platform in 2017-2018, providing this service to more than 95% of the student population. My eQUALS initiative is led by Higher Education Services (the professional services arm of Universities Australia) in partnership with Digitary.

SPEAKERS & PRESENTERS

DR. ANDREW TRNACEK
CEO, HIGHER EDUCATION SERVICES

ANDY DOWLING
CEO, DIGITARY

PLEASE VISIT www.MyEQUALS.edu.au
FOR MORE INFORMATION ON MY eQUALS

PLEASE VISIT www.PESCC.org
FOR PRESENTATIONS & FULL INFORMATION ON
THE FALL 2017 DATA SUMMIT

MCGILL UNIVERSITY, NATIONAL STUDENT CLEARINGHOUSE & CHESICC

Through the Network of the Groningen Declaration, McGill University & the National Student Clearinghouse partnered in a digital data exchange and matching pilot initiative. The first of its kind, an overview of the purpose and value of this pilot initiative, other current pilots and next steps are included.

SPEAKERS & PRESENTERS

ROMESH VADIVEL
ASSISTANT REGISTRAR AND DIRECTOR SERVICE POINT,
ENROLMENT SERVICES, MCGILL UNIVERSITY

RICARDO TORRES
PRESIDENT & CEO, NATIONAL STUDENT CLEARINGHOUSE

INTRODUCTION TO BLOCKCHAIN

The blockchain revolution has recently come to the education sector with the promise of providing a tamper-proof infrastructure to facilitate ownership and use of academic records. This means student can share their official records directly with anyone and have them easily verified as authentic. These records no longer have to be transmitted by a third party, which is a fundamental break from the typical vendor-controlled ecosystems where rents must be paid to use or transit official records.

SPEAKER/PRESENTER

CHRIS JAGERS
CEO, LEARNING MACHINE



EVOLUTION OF ACADEMIC CREDENTIALING

Academic Credentialing itself is experiencing an overall enterprise-wide re-engineering. While student mobility continues to drive many technologies and applications ensuring privacy, security, authenticity and underlying trust remain a challenge. Many institutions are experimenting with emerging technologies and applications and collaborating with labor and workforce sectors, while numerous groups are now actively engaging including PESC's Academic Credentialing and Experiential Learning Task Force, AACRAO, C-BEN, CAEL, Connecting Credentials, and Credential Engine among many others.

SPEAKERS & PRESENTERS

JOELLEN SHENDY

ASSOCIATE VICE PROVOST & REGISTRAR
UNIVERSITY OF MARYLAND UNIVERSITY COLLEGE

SIMONE RAVAIOLI

BUSINESS DEVELOPMENT EXECUTIVE

W. MATT BEMIS

ASSOCIATE REGISTRAR
UNIVERSITY OF SOUTHERN CALIFORNIA

RAJEEV ARORA

SENIOR VP, PRODUCTS, PARCHMENT

JAMES KELLY

SENIOR DIRECTOR OF TECHNOLOGY, ECE

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FOR PRESENTATIONS & FULL INFORMATION ON
THE FALL 2017 DATA SUMMIT

DIPLOMA SUPPLEMENT

Recently the European Union released its final report on the Digitalisation of the Diploma Supplement. The Diploma Supplement, defined by the EU, is a document accompanying a higher education diploma, providing a standardised description of the nature, level, context, content and status of the studies completed by its holder. It is produced by the higher education institutions according to standards agreed by the European Commission, the council of Europe and UNESCO. With the need for a new digital document, the impact, timelines and potential roles for PESC are included.

EDEXCHANGE

EdExchange is a data exchange service offered and operated by PESC and directly managed by PESC Members. The foundation of the service is a directory 'look up' server that lists institutions, service providers and others that are able to exchange data electronically. The server itemizes the technical capacity of each, which document types are supported electronically and additional identifier data. To exchange data, users then connect directly with the respective recipient. Achieved through an open web service architecture and associated standards, EdExchange is designed as a peer-to-peer network providing a secure reliable and direct connection between users avoiding file-based technologies.

PESC GEO CODE

GEO Code is a 'look-up' service offered and operated by PESC and directly managed by PESC Members. The foundation of the service is a directory 'look-up' server that lists active and inactive institutions, including historical data plus additional demographic and identifier data. This new trusted code is currently in pilot phase with University of Southern California and IERF. Countries currently listed: ANTARCTICA, ARGENTINA, AUSTRALIA, CANADA, BRAZIL, CHINA, FRANCE, INDIA, NEW ZEALAND, PEOPLES' REPUBLIC OF CHINA, PROVINCE OF TAIWAN, POLAND, UNITED KINGDOM AND THE UNITED STATES OF AMERICA



ASSESSMENT & RECOGNITION A PAN-CANADIAN PERSPECTIVE

CICIC will focus on providing a broad overview of assessment and recognition mechanisms at the Pan-Canadian level. This will include international legal instruments that support student mobility and recognition, within the context of provincial and territorial responsibilities over education in Canada. The implementation of these legal instruments has also led to the establishment of Pan-Canadian standards, where digitization issues may need to be addressed to ensure progressive assessment policies are adopted by organizations in Canada. The diversity of assessment services and recognition bodies will be explored in the context of data hubs and data solicitors. How can two parallel approaches support digitization efforts in Canada, from the legal and best practices perspectives. Finally, CICIC's mandate and the services it provides will also be highlighted.

SPEAKER/PRESENTER

MICHAEL RINGUETTE

CICIC COORDINATOR
CANADIAN INFORMATION CENTRE FOR
INTERNATIONAL CREDENTIALS (CICIC)
COUNCIL OF MINISTERS OF EDUCATION,
CANADA (CMEC)

DATA EXCHANGE IN QUEBEC

Quebec universities have long been exchanging data with the help of the Office of Interuniversity Cooperation also known as BCI. This presentation will provide an overview of the different types of practices and data exchange taking in Quebec, what support BCI provides and what upcoming projects are in the works.

SPEAKER/PRESENTER

HEIDI EMAMI

ASSOCIATE REGISTRAR, MANAGEMENT JOF
ACADEMIC RECORDS AND EXAMINATIONS,
ENROLMENT SERVICES, MCGILL UNIVERSITY

WHAT'S HAPPENING ACROSS CANADA

The purpose of the Pan-Canadian Consortium on Admissions and Transfer (PCCAT) is to help develop and implement policies and practices that support student mobility and grant transfer credit – both within and among Canada's provinces and territories – in order to improve access to postsecondary education in Canada. This panel presentation presents Pan-Canadian and provincial perspectives on: the current activities of the seven councils across Canada, how they are working together and independently to facilitate student mobility, and what they see as the future of student mobility in Canada; the results of extensive research and analysis which will describe the current state of student mobility across Canada, and identify new areas of collaborative research that are in pursued by PCCAT; and, a discussion of the future of student mobility, including non-traditional sources of student and records, the expanding types of records used in student assessment, and the impact of electronic records exchange in the admission and assessment process.

SPEAKERS & PRESENTERS

DR. ROB FLEMING

EXECUTIVE DIRECTOR AND CO-CHAIR
BC COUNCIL ON ADMISSIONS AND TRANSFER
(BCCAT)

PHIL BELANGER

EXECUTIVE DIRECTOR
COUNCIL ON ARTICULATIONS AND
TRANSFER NEW BRUNSWICK (CATNB)

LIA QUICKERT

EXECUTIVE DIRECTOR (INTERIM)
ONTARIO COUNCIL ON
ARTICULATION AND TRANSFER (ONCAT)

PLEASE VISIT www.CICIC.ca
FOR MORE INFORMATION ON CICIC

PLEASE VISIT www.PCCATweb.org
FOR MORE INFORMATION ON PCCAT

PLEASE VISIT www.PESC.org
FOR PRESENTATIONS & FULL INFORMATION
ON THE FALL 2017 DATA SUMMIT



INTERNATIONAL PANEL CONNECTING THE DOTS FOR GLOBAL STUDENT MOBILITY

In closing the general session portion of the data summit, this panel connects the dots between digitization, best practices, and global student mobility; identifies thematic trends heard at the conference that resonated; and highlight any other opportunities and challenges to consider. Where do we see digitization and data mobility heading in the next ten years? How might best practice inform next states? What do institutions, allied organization, and potentially governments need to do to support and advance moving in to this net phase?

SPEAKERS & PRESENTERS

DR. ROB FLEMING

EXECUTIVE DIRECTOR AND CO-CHAIR
BC COUNCIL ON ADMISSIONS AND TRANSFER (BCCAT)

HERMAN DE LEEUW

EXECUTIVE DIRECTOR
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CHARMAINE HACK

REGISTRAR, RYERSON UNIVERSITY
PRESIDENT, ARUCC

PESC 20th YEAR ANNIVERSARY

DISTINGUISHED SERVICE AWARD

ASSOCIATION OF REGISTRARS OF THE UNIVERSITIES AND COLLEGES OF CANADA





20th YEAR ANNIVERSARY EDITION



THE STANDARD

news and commentary on technology and standards in education

XML SOA EDI EDX PDF JSON C++ OPEN SOURCE COBOL HTML XSLT DLL JAVA SSL TCP/IP BASIC AACRAO ARUCC SHEEO DQC INTERNET2 INCOMMON GRONINGEN DECLARATION NETWORK USED SIFA ADMISSIONS APPLICATION COURSE CATALOG EDUCATION TEST SCORE REPORT FINANCIAL AID HIGH SCHOOL TRANSCRIPT COLLEGE TRANSCRIPT IPEDS NSLDS PDF ATTACHMENT ACADEMIC EPORTFOLIO CREDENTIALS SOLUTIONS NATIONAL STUDENT CLEARINGHOUSE ORACLE PARCHMENT USA FUNDS



TRUST: THE VALUE OF PEOSC

COMMUNITY SOURCED OPEN DATA STANDARDS

ENABLING COST-EFFECTIVE CONNECTIVITY BETWEEN DATA SYSTEMS IN ORDER TO ACCELERATE PERFORMANCE AND SERVICE, TO SIMPLIFY DATA ACCESS AND RESEARCH, AND TO IMPROVE DATA QUALITY ALONG THE LEARNER LIFECYCLE



TRUST: THE VALUE OF PESC

COMMUNITY SOURCED OPEN DATA STANDARDS

COLLABORATION FOR THE GREATER COMMON GOOD OF LEARNER ACHIEVEMENT

In fulfilling its 501 (c)(3) non-profit mission, all PESC APPROVED STANDARDS and technical information are made available to the education community online free of charge.

PESC APPROVED STANDARDS & TECHNOLOGY

PESC TECHNOLOGY and PESC APPROVED STANDARDS are community-sourced and driven by PESC serving as an incubator to pilot and launch data standards using an open, transparent and collaborative process; and serving as an open data standards-development and open data standards-setting body governing resource mapping and maintenance of education eco-system taxonomies, schemas and shared code sets in various technologies (EDI, XML, PDFxml, JSON) produced as PESC APPROVED STANDARDS.

PESC APPROVED STANDARDS are platform and application neutral; adopted and integrated in systems, networks, applications, products and services; support a transaction or business process, and; can be implemented or used one independently from another.

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MICHAEL D. SESSA
PESC PRESIDENT & CEO
OCTOBER 14, 2017
V.O.1

WHO WE ARE



Established in 1997 at the National Center for Higher Education, PESC is an international 501(c)(3) non-profit, community-based, umbrella association with headquarters in Washington, D.C. of:

Application Centers

Assessment & Testing Agencies

Colleges & Universities

*College, University & State/
Provincial Systems*

Credential Service Providers

*Data, Software & Technology
Service Providers*

*Local, State/Provincial & Federal
Government Offices*

*Non-Profit Associations,
Foundations & Organizations*

*Professional & Commercial
Organizations*

*Student Information System
(SIS) Vendors*



ORGANIZATIONS TRUST PESC APPROVED STANDARDS TO EXCHANGE, EQUATE, LINK/ AND COMPARE DATA

As a new technology emerges, the PESC Community develops and produces a corresponding PESC APPROVED STANDARD to support that technology. This approach provides more tools and options for users and implementers with various needs or limited technical capacity, bridges sectors that may prefer one technology over another, and provides a trusted solution in which the value, integrity, meaning and identification protocols of the data content are identical regardless of which technology is preferred. Table 1 below illustrates how preferences in technology have driven the evolutionary development of PESC APPROVED STANDARDS.

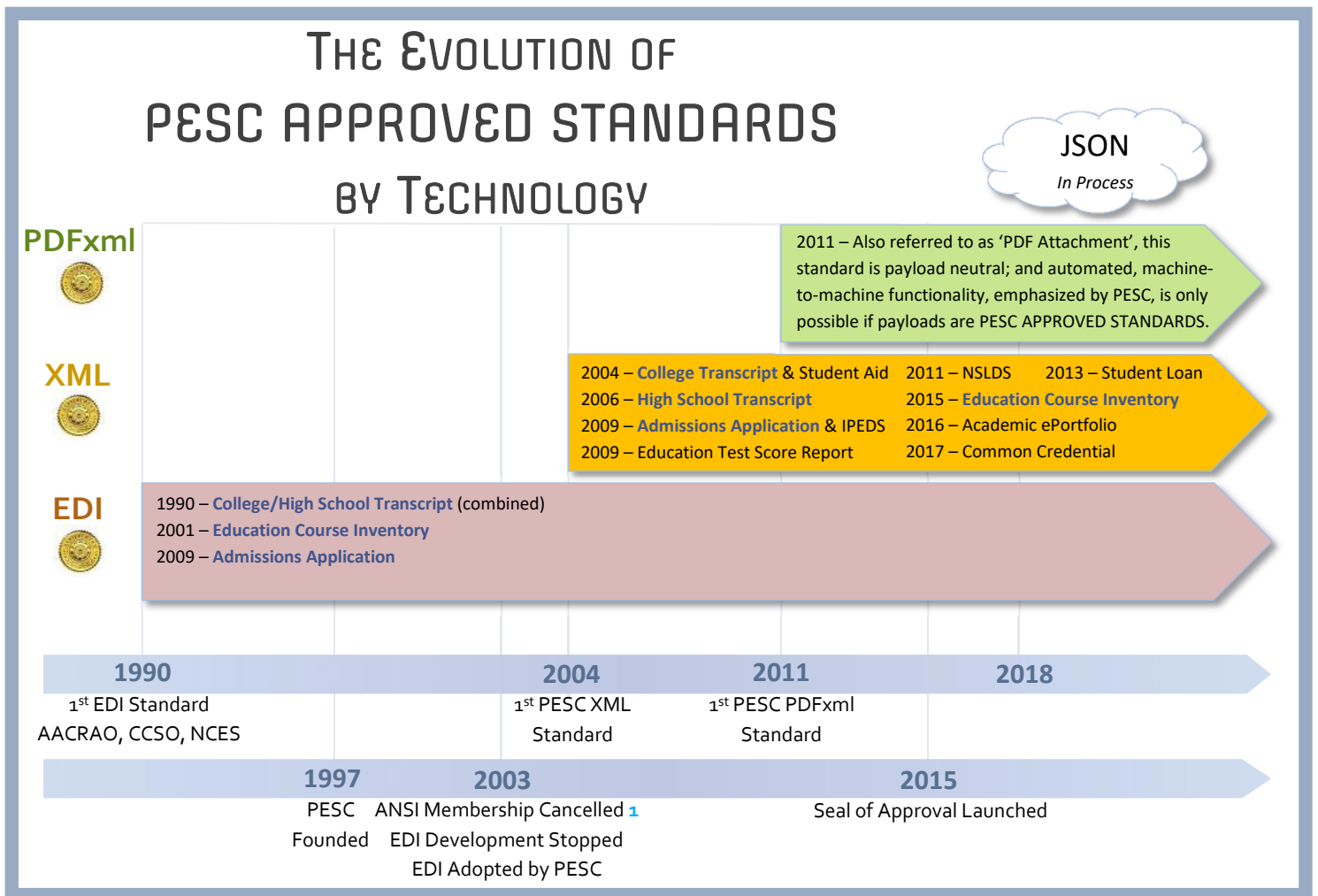


Table 1. The Evolution of PESC APPROVED STANDARDS by Technology

As the community adopts a new technology, PESC develops and produces a corresponding PESC APPROVED STANDARD in that technology. Data contained in a PESC APPROVED STANDARD in one technology is equal in value and integrity to the same PESC APPROVED STANDARD in a different technology. For example, one organization using the PESC APPROVED College Transcript in EDI can trust another organization using the PESC APPROVED College Transcript in XML as development and production (through mapping) use the same definitions, taxonomies and code sets.

GLOSSARY OF TERMS

AACRAO	American Association of Collegiate Registrars & Admissions Officers	JSON	JavaScript Object Notation JSON - LD (Linked Data)
ANSI	American National Standards Institute, US Chamber of Commerce	NCES	National Center for Education Statistics, US Dept. of Education
CCSSO	Council of Chief State School Officers	NSLDS	National Student Loan Data System
EDI	Electronic Data Interchange	PDFxml	Portable Data Format XML data embedded
IPEDS	Integrated Postsecondary Education Data System	XML	eXtensible Markup Language



TRUST IN THE PESC STANDARDS DEVELOPMENT, APPROVAL AND MAINTENANCE POLICIES AND PROCEDURES

PESC is governed by an open, rigorous, disciplined and consistent process governed by PESC Members through the Standards Development Forum for Education, which is comprised of the Change Control Board, Technical Advisory Board, Standards Development Workgroups and a Steering Committee. These groups work in coordination with all PESC development, have inter-organizational representation, and together determine and propose all candidates for approval by PESC Members as official standards. Important milestones to note along the development, approval and maintenance process:

- To ensure openness, transparency and ‘co-opetition’ (equal cooperation among competitors), all PESC development must initiate with a formal **Letter of Intent**. The *Letter of Intent*:
 - Submitted by at least two PESC Members interested in developing and using PESC for production of an industry-based data standard.
 - Includes use or business case(s), appropriate justifications and articulations on why development and usage of an industry-based data standard are needed and/or required.
 - Issued publicly to allow all stakeholders the opportunity to participate before development starts.
- The **Launch** of a PESC workgroup to develop the proposed candidate for standardization is announced publicly again to allow other stakeholders the opportunity to participate in development.
- Once development is complete, the proposed candidate for standardization is released to the general public for a formal thirty-day **Public Comment Period** after which all comments are reviewed, considered and assessed for inclusion in the proposed candidate.
- With development and a thorough series of opportunities for public inclusion completed, PESC processes the candidate for **Approval, Ratification and Release** as a PESC APPROVED STANDARD. All PESC APPROVED STANDARDS include:
 - XML schema that outline data file design and structure
 - Implementation Guides that help explain and describe adoption and use
 - Instance Documents that display examples based on sample data
- **Maintenance and Release Management** of PESC APPROVED STANDARDS are conducted through PESC User Groups and the Standards Development Forum for Education.

PESC APPROVED STANDARDS by Technology	EDI	XML	PDFxml
<i>Academic College Transcript</i>	x	x	x
<i>Academic ePortfolio</i>		x	x
<i>Academic High School Transcript</i>	x	x	x
<i>Admissions Application</i>	x	x	x
<i>Common Credential for Certificates, Degrees & Diplomas</i>		x	x
<i>Education Course Inventory (Catalog)</i>	x	x	x
<i>Education Test Score Reporting</i>		x	x
<i>IPEDS & NSLDS</i>		x	x
<i>Student Financial Aid</i>		x	x

Table 2. PESC APPROVED STANDARDS by Technology. Development is driven by PESC Members.

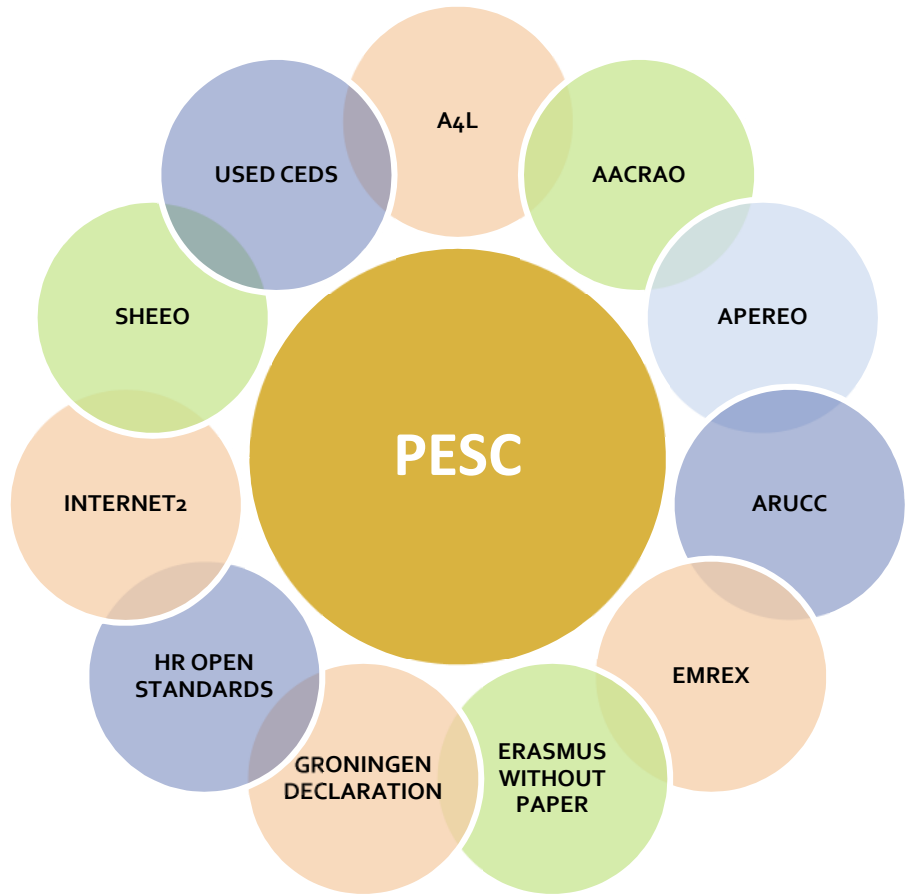


LEADING THE ESTABLISHMENT AND ADOPTION OF OPEN DATA STANDARDS ACROSS THE EDUCATION DOMAIN

PESC Partnerships, Affiliations and a User Community are developed and maintained by PESC to ensure coordination and interoperability across education and industry sectors.

PESC Partnership and Affiliations

- Access 4 Learning (PK12)
- American Association of Collegiate Registrars and Admissions Officers
- APEREO (Open Source)
- Association of Registrars of the Universities and Colleges of Canada
- EMREX (Europe)
- Erasmus Without Paper (Europe)
- Groningen Declaration Network
- HR Open Standards
- Internet2
- State Higher Education Executive Officers
- U.S. Department of Education’s Common Education Data Standards Initiative



The PESC User Community

comprised of leaders and experts spanning policy, practice and technology at all levels from among the PESC Membership – ensure a holistic, pragmatic approach in believing that fostering open, transparent collaboration across educational communities to solve common and industry-shared problems brings much needed clarity, education and coherence to the education eco-system.





CURRENT AND FUTURE CONSIDERATIONS

Factors that are currently under consideration by PESC due to their potential future impact on PESC's Partners, Members, Affiliates and/or Users:

JSON and JSON-LD

Several PESC Members have begun transforming PESC APPROVED XML STANDARDS to JSON, a 'lightweight data-interchange format often offered as an alternative to XML' (*Google*), due to its compatibility with web services. In response to the emergence of JSON, PESC formed a JSON Task Force to develop and recommend the guidelines in using JSON as a PESC APPROVED STANDARD. Factors that are currently being considered by the JSON Task Force:

- 1) With a number of tools available (e.g. JAXB – Java Architecture for XML Binding), should the output of the PESC APPROVED STANDARD be **Guidelines and Rules for Transforming XML to JSON** (which would include additional supporting documentation, such as an XSLT stylesheet)?
- 2) In researching the utility and application of **JSON-LD** (JSON for Linked Data), the Task Force has received mixed messages. What impact is JSON-LD having in the industry and what role should it play in PESC development?
- 3) PESC Partner Access 4 Learning (A4L), primarily in the PK12 education space, is also considering the identical factors in addressing its approach to JSON. PESC and A4L have agreed to partner on their approach to JSON to ensure continued collaboration and interoperability. What other organizations would be appropriate for partnership?

Diploma Supplement

The final guidelines for the **Diploma Supplement** were recently released by the European Commission and are required to be followed. The Diploma Supplement compliments the *Transcript of Record* (used in Europe as well – similar to the PESC APPROVED College Transcript) but adds new specific data elements. Europe's adoption of the Diploma Supplement will impact many other regions of the world, including Canada, Australia, New Zealand, the USA and others. Factors that are currently being considered by PESC as a result of the new guidelines for the Diploma Supplement:

- 1) Will Europe develop their own standard? If so, is there demand from the PESC Community and should PESC develop a corresponding PESC APPROVED STANDARD to bridge the European Diploma Supplement Standard? If not, should PESC organize a development workgroup, through Members and partnerships with AACRAO, the Groningen Declaration Network, Credential Engine, among others, to develop a PESC APPROVED STANDARD for adoption and implementation in Europe, Canada, Australia and New Zealand?
- 2) What impact might **Blockchain** have on the development of the Diploma Supplement and how is that to be tracked or monitored?
- 3) Can funding be obtained to support this development? If yes, which organizations are the stakeholders? If not, can PESC support development without funding?



PESC EdExchange

PESC EdExchange is a neutral data exchange platform and digital look-up service, (Application Platform as a Service – aPaaS or PaaS), designed as a peer-to-peer network providing a secure, reliable and direct connection between users avoiding file-based technologies. EdExchange is operated by PESC and directly managed by PESC Members. The foundation of the service is a directory 'look up' server that lists institutions, service providers and others that are able to exchange data electronically. The server itemizes the technical capacity of each, which document types are supported electronically and additional identifier data. To exchange data, users then connect directly with the respective recipient.

Several pilots for EdExchange (California Community Colleges and Parchment) have been successfully completed and EdExchange is ready to progress to the next level. Organizations in Europe and Canada have expressed high interest in EdExchange and PESC is investigating establishing corresponding pilots due to this interest. Factors that are currently being considered by PESC as a result of the interest in EdExchange:

- 1) How can PESC establish pilots with EMREX and/or Erasmus Without Paper? Both European initiatives are focused on data sharing and exchange and are at the same stage in the product development lifecycle.
- 2) Can funding be obtained to support these pilots? If yes, which organizations are the stakeholder? If not, can PESC support establishment of these pilots without funding?

1 Background on PESC and ANSI: At the time of founding in 1997, PESC's identity as a data standards-setting body had not been established; yet, the community acknowledged the need for a formal standards body to review and approve any development work conducted under PESC. The solution implemented was for PESC and all the founding PESC Member organizations (AACRAO, Citibank, NASFAA, NCHELP, U.S. Department of Education, etc.) to join ANSI's X12 Committee, a cross-industry committee developing and producing ANSI Approved EDI Standards, and establish *Subcommittee A on Education*, of which PESC served as Chair. Two EDI standards were developed and produced with ANSI approval: the combined EDI High School/College Transcript and the EDI Education Course Inventory. ANSI's approach to the emergence of XML, however, was not viewed favorably by many in the Education Subcommittee, and coupled with a new ANSI approval process, which in a best-case scenario was projected to be a minimum of 3 years, lead all organizations within the Education Subcommittee to terminate membership in ANSI (which also dissolved the Education Subcommittee), and nurture PESC so that it could establish itself as a data standards-development and data standards-setting body. With knowledge garnered from the ANSI standards approval process combined with experience in standards development in student financial aid, PESC developed open, transparent ANSI-inspired *Policies and Procedures* for its newly established Standards Development Forum for Education, a PESC member-driven committee to develop and present candidates for standardization to PESC Members for approval and ratification.



Attachments

1. Sample of Letter of Intent

Common Credential for Certificates, Degrees & Diplomas

2. Sample of Announcement to Launch Development

Common Credential for Certificates, Degrees & Diplomas

3. Sample of Announcement for 30-Day Public Comment Period

Common Credential for Certificates, Degrees & Diplomas

4. Sample of Announcement of Approval and Ratification

Common Credential for Certificates, Degrees & Diplomas

5. PESC Footprint

6. The Value of Standards

7. Annual PESC Best Practices Competition 1st Place Winner 2016

iQ4 and National Student Clearinghouse | Extending the Capacity of Higher Education to Scale the Output of Verified Workforce-Ready Graduates

**STANFORD
UNIVERSITY**

**UNIVERSITY OF MARYLAND
UNIVERSITY COLLEGE**

**UNIVERSITY OF
SOUTHERN CALIFORNIA**

AACRAO

LETTER OF INTENT

COMMON CREDENTIAL FOR CERTIFICATES, DEGREES & DIPLOMAS

March 22, 2016

Michael Sessa
PESC President & CEO
1250 Connecticut Ave NW
Suite 200
Washington, D.C. 20036

We are pleased to submit to PESC this Letter of Intent (LOI) to communicate that Stanford University, the University of Maryland University College, the University of Southern California and AACRAO intend to work openly, transparently and collaboratively with the education community through PESC to develop an XML-based data standard: Common Credential for Certificates, Degrees and Diplomas.

We propose development, submission and consideration of this Common Credential as a PESC Approved Standard. This proposed standard can be used by any organization, school, college and university, district and state and/or service provider to fully communicate degrees, certifications and other similar credentials obtained by the student. Our deliverables will include the XML Schema, an Implementation Guide, and Instance Documentation.

While the traditional transcript contains comprehensive information about a student's educational experience, in some instances only a simple verification of a degree, diploma, certification or other credential is needed. While this standard does not propose to replace the traditional transcript, we look to meet the growing demand, now emerging across the landscape but especially in transfer, labor and workforce sectors, to verify credentials. A brief business case and justification is attached.

We are pleased to collaborate on this Letter of Intent and look forward to preparing and using an international data standard that will greatly enhance the process of communicating and verifying credentials.

Sincerely,

TOM BLACK
ASSOCIATE VICE PROVOST
& UNIVERSITY REGISTRAR
STANFORD UNIVERSITY

TUAN ANH DO
PESC BOARD OF DIRECTORS
REPRESENTING THE
AMERICAN ASSOCIATION OF
COLLEGIATE REGISTRARS &
ADMISSIONS OFFICERS

PATRICK ELLIOTT
PESC BOARD OF DIRECTORS
ASSOCIATE REGISTRAR
UNIVERSITY OF MARYLAND
UNIVERSITY COLLEGE

W. MATT BEMIS
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ASSOCIATE REGISTRAR
UNIVERSITY OF
SOUTHERN CALIFORNIA

The Business Case for the Development of a PESC Standard in XML for Supporting Credentialing and Experiential Learning Records and for Enhancing Data Exchange Mobility

Overview

The current transcript, designed to record learning in the form of course enrollments, courses credits and grades, is no longer a sufficiently robust approach to satisfy the needs of the modern learner. The current transcript standard was designed to record learning in the form of course enrollments, courses credits and grades. Higher Education institutions have long adopted the Carnegie Unit as policy which specifies that learning be recorded in the form of time. The GPA (grade point average), a calculation based on that standard, was commonly used to demonstrate a student's achievement. While the transcript and the Carnegie Unit have served the academy well for over a hundred years, changes in pedagogy and technology have caused a greater awareness that learning should not be measured just as course credits and grades, but should be more descriptive. Learning outcomes and a variety of other assessment methods are a means to describe learning more in the form of skills, capacities and abilities mastered, in addition to content knowledge acquired.

While there are new ideas about what should be recorded, Higher Education has not coalesced around a single approach, or even a handful of approaches. It will take time to settle on the best way to describe and record the learning that takes place on campuses. Further, non-curricular or experiential learning, arguably counting among the most important activities in which students can engage, is increasingly considered worthy of noting and recording, alongside the curricular learning that leads to majors and minors and ultimately degrees.

Starting over twenty-five years ago, transcript and course inventory standards were promulgated to enable the portability of the established records of the academy as data. EDI, XML and PDF formats have been employed in a variety of use cases to make data exchange quite common at least within Higher Education. Certainly many students benefit from the ease with which courses and credit information have transferred between institutions. And, the use of the PDF format has made it easier for the exchange of student achievement information with third parties outside Higher Education.

It is not too early to think about how to capture and convey learning data that describes experiential learning alongside one of its most common expressions of acknowledgement, the certificate credential. Paper certificate credentials have been in existence for centuries and are used by many organizations and institutions to recognize participation, completion or achievement. However, there is no standard at present enabling the exchange of information related to the certificate credential. Thus, it is

hereby proposed that the following XML standard begin to serve as a means both to create the digital form of the certificate credential and to embed within it the information that the certificate credential recognizes. Certainly this credential standard could be adopted to convey diploma information as well. The principal value proposition for a digital credential is to convey to the learner what (s)he has learned or achieved, but it must also provide a standardized form for the learner so that the personal data it contains may be more easily controlled and shared with others using certification and authorization technology commonly available today.

Credentialing and Experiential Learning Records Standard Description

The standard is designed for both electronic certification production and recording credential learning records. The design of new standard incorporates current PESC standards. The new standard composes in 3 main sections:

1. *Transmission Data Section:* This section uses the existing PESC Request and Response of the XML Transcript standard. It describes the requesting source, i.e., in this use case, the organization or institution, and it also describes the destination, i.e., in this use case, the service provider for credential creation. It serves the same purpose as the PESC PDF (Portable Document Format) attachment standard, which is to make data exchange effective and machine-readable.
2. *Document Production Section:* This section has information for digital certificate file production. The data is used for presenting a statement of learning achievement levels and learning result recognition. The section also describes the data format requested, such as XML, PDF, or PDF with attachment.
3. *Credential Learning Record Detail Section:* This section describes acknowledgment of credential learning records and expression of learning that is more explicit in terms of intellectual skills, outcomes, goals or capacities. It adopts PESC Core Main Components, Education Course Inventory and College Transcript standards. This section is used in PDF attachments for better description and for machine-readable learning records.

Business Process Supports the Standard

The new proposed standard supports the following business process scenarios:

Scenario 1:

The organization or institution produces an XML file that follows the standard when a learner participates, completes or achieves success in a supervised activity or program.

Scenario 2:

The XML file is transmitted from the organization or institution to a service provider, the destination, for the creation of a digital artifact or credential—usually rendered in PDF format—using information from the Transmission Data Section.

Scenario 3:

The service provider takes information from the Document Production Section to generate a digital artifact (usually per PESC PDF standard) as specified by the organization or institution. Credential Learning Record Detail Section relays comprehensive information about the supervised activity or program that is appended as an attachment file to the PDF artifact.

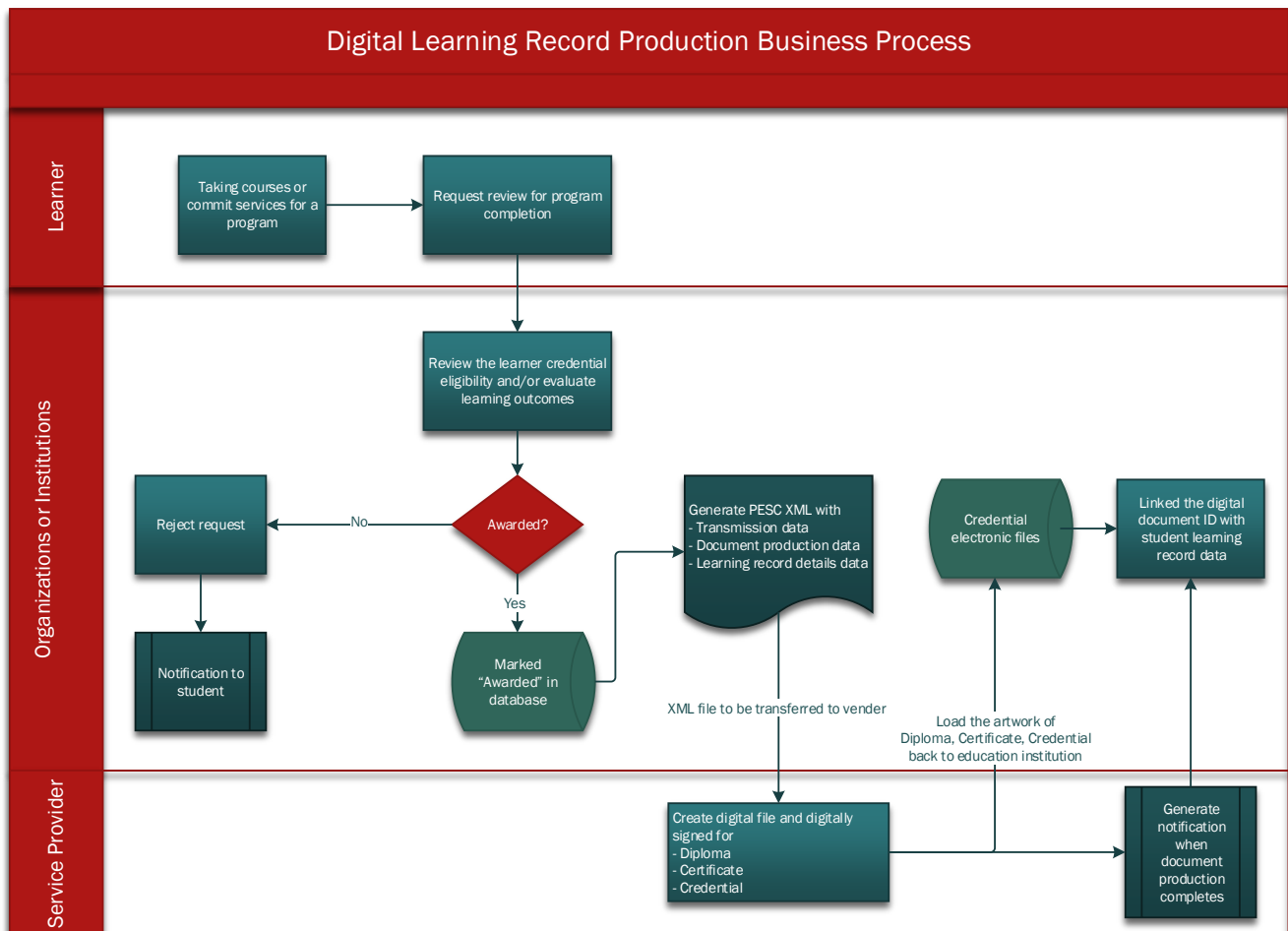
Scenario 4:

The organization or institution provides both digital versions of the artifact file and the appended detailed credential learning records to learners who in turn can make these available to other authorized third parties that request access.

Scenario 5:

The learner also exports such digital artifacts and appended information to a variety of software locally hosted, on mobile devices or in the cloud. Any authorized third parties viewing these data via the Internet can validate the detailed learning records. The new standard can be used for better data presentation in either a contextual or graphical way.

Digital Learning Record Production Business Process Diagram



Planned Collaboration for Developing the Standard

The work group is composed of staff from professional education enterprise system consulting firms, representatives from postsecondary institutions including members of AACRAO, representatives of educational software and service providers, representatives of state and federal agencies interested in credentialing and experiential learning records, and any others interested in the project.



FOR IMMEDIATE RELEASE

April 12, 2016

Contact:

Jennifer Kim

PESC Membership Services Director

+1.202.261.6516

COMMON XML CREDENTIAL DATA STANDARD FOR CERTIFICATES, DEGREES AND DIPLOMAS LAUNCHED BY PESC

(Washington DC) – PESC is pleased to announce that leaders from Stanford University, University of Maryland University College, University of Southern California, and the Association of American Collegiate and Admissions Officers (AACRAO) are collaborating through PESC to develop a **COMMON CREDENTIAL DATA STANDARD** for certificates, degrees and diplomas.

According to the Letter of Intent submitted on March 22, 2016, “the proposed standard can be used by any organization, school, college and university, district and state/province and/or service provider to fully communicate degrees, certifications and other similar credentials obtained by the student.”

“By creating a standard credential data schema that provides more explicit expression of learning, it is hoped that in addition to helping learners to become more self-aware, third parties with whom the learners share this information could use it to further benefit the learners or the enterprises with which the learners are engaged.”

-Tom Black, Associate Vice Provost & University Registrar, Student and Academic Services at Stanford University and Chair of PESC’s Academic Credentialing and Experiential Learning Task Force.



FROM THE LETTER OF INTENT: While the traditional transcript contains comprehensive information about a student’s educational experience, in some instances only a simple verification of a degree, diploma, certification or other credential is needed. While this standard does not propose to replace the traditional transcript, we look to meet the growing demand, now emerging across the landscape but especially in transfer, labor and workforce sectors, to verify credentials.

Development of the Common Credential will officially begin at the PESC Spring 2016 Data Summit. Leaders from PESC's Academic Credentialing and Experiential Learning Task Force will present ***Evolution of Data Records Management for Credentialing and Experiential Learning Parts I & II*** to attendees; and in subsequent concurrent sessions, at which the Task Force meets, will continue discussions of this emerging work and continue the dialogue from its quarterly Task Force meetings.

PESC's Task Force and list for the Academic Credentialing and Experiential Learning are open to the general public. Registration for ***Best Practices in Education Data Systems | PESC's Spring 2016 Data Summit*** is still available. Please check www.pesc.org for more information.

***NOTE:** The Letter of Intent, required by PESC's strict Policies and Procedures Manual for development under the Standards Forum for Education, serves as the foundational artifact in open, community-based efforts and communicates transparently to the education technology community at-large to ensure alignment and interoperability with all other technology and data initiatives. Once development work is completed, the PESC Change Control Board will authorize release of the proposed Common Credential standard for a 30-day public comment period, followed by a PESC Member vote, and then ratification by the PESC Board of Directors as ratification as a PESC Approved Standard.*

ABOUT PESC

Established in 1997 and headquartered in Washington, D.C., PESC is an international, 501 (c)(3) non-profit, community-based, umbrella association of data, software and education technology service providers; local, state/province & federal government agencies; schools, districts, colleges and universities; college, university and state/province systems; professional, commercial and non-profit organizations; and non-profit associations and foundations.

Through open and transparent community participation, PESC enables cost-effective connectivity between data systems to accelerate performance and service, to simplify data access and research, and to improve data quality along the Education lifecycle. PESC envisions global interoperability within the Education domain, supported by a trustworthy, inter-connected network we call *EdUnify* - built by and between communities of interest in which data flows digitally and seamlessly from one community or system to another and throughout the entire eco-system when and where needed without compatibility barriers but in a safe, secure, reliable, legal, and efficient manner.

While PESC promotes the implementation and usage of data exchange standards, PESC does not set (create or establish) policies related to privacy and security. Organizations and entities using PESC Approved Standards and services should ensure they comply with FERPA and all local, state, federal and international rules on privacy and security as applicable. For more information, see www.PESC.org.

#



FOR IMMEDIATE RELEASE

January 23, 2017

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COMMON CREDENTIAL PROPOSED STANDARD RELEASED FOR 30 DAY PUBLIC COMMENT PERIOD

UPDATED XML TECHNICAL SPECIFICATION INCLUDED FOR COMMENT

Washington DC – The Board of Directors of PESC is pleased to announce the release of the *Common Credential for Certificates, Degrees and Diplomas*, a proposed standard, for a 30 day public comment period. The XML development work which started in early 2016, has been meticulous, collaborative and transparent, and leaders have worked painstakingly to ensure major stakeholders participated in the development, analyzed and evaluated development work, and contributed to a more robust and usable standard.

“This credential standard will promote interoperability where presently there is none for credentials that serve as alternatives to the academic transcript,” states Thomas Black, Associate Vice Provost & University Registrar, Student and Academic Services at Stanford University and Chair of PESC’s Academic Credentialing and Experiential Learning Task Force. “There is great potential to innovate using this standard, and now it is time for our respective communities to embrace the ideas and concepts that are incorporated in the standard for the betterment and prosperity of our students and graduates holding these credentials,” Mr. Black continues.

The PESC directive that launched this development concluded that while the traditional transcript contains comprehensive information about a student’s educational experience, in some instances only a simple verification of a degree, diploma, certification or other credential is needed. While this standard does not propose to replace the traditional transcript, the PESC community looks to meet the growing demand, now emerging across the landscape but especially in transfer, labor and workforce sectors, to verify credentials.

“In true collaboration, PESC’s Technical Advisory Board has also released an updated version of PESC’s XML Technical Specification, on which the Common Credential is based, and we’re asking for public comment on the XML Technical Specification as well,” states Michael Sessa, PESC President & CEO. “The XML Technical Specification is the result of merging PESC’s original specification with that of the U.S. Department of Education’s specification in 2003, a major milestone in the history of PESC, as with a combined, single XML Technical Specification, technical interoperability is now baseline enabling applications and data to flow throughout the education network,” Mr. Sessa continued.

**THE 30 DAY PUBLIC COMMENT PERIOD OPENS TODAY JANUARY 23, 2017
AND EXPIRES AT THE CLOSE OF BUSINESS ON FEBRUARY 21, 2017.**

The proposed standard is posted at www.PESC.org. Included as the 'standard' are the Implementation Guide, XML Schema and Sample Instance Document. The PESC community is also asked to review and comment on the newly updated *PESC XML Technical Specification*. All comments from the PESC community and the general public must be made by e-mail to PESC President & CEO at Michael.Sessa@PESC.org. Public comments can address any and/or all part of the standard being proposed. The comment e-mail should clearly identify the:

- 1) Responder full name and appropriate contact information (phone, email, organization, etc);
- 2) Source of the comments, i.e., whether the comments are individual or originate from a group the responder represents;
- 3) Nature of the responder's interest in the standard (what is the issue and why is it important?);
- 4) Element(s) of the proposed standard with which issue is taken;
- 5) Changes suggested resolving the issue(s).

The Process for PESC APPROVED STANDARDS

Within 30 calendar days after the close of the public comment period, the Change Control Board (CCB) of PESC's Standards Forum for Education will address and consider all public comments and make, in consultation with the Academic Credentialing and Experiential Learning Workgroup any necessary revisions. All public comments will be posted to the PESC website during the review process. The CCB's consideration/revision period expires on March 23, 2017 unless extenuating circumstances exist which require further deliberation.

Once any changes resulting from the public comment period have been incorporated, the CCB will recommend to the PESC Board of Directors that the proposed Common Credential standard be submitted to a vote by the PESC members. The PESC office will issue electronic ballots to the official contacts of PESC member organizations. Completed ballots, including the reason(s) for any rejection, must be returned to the PESC office via e-mail attachment, fax, overnight delivery, or U.S. Postal Service within ten (10) business days.

Acceptance of the specification as a PESC APPROVED STANDARD requires an affirmative vote of at least 80% of all votes cast. Once the PESC members accept and approve the specification, the PESC Board of Directors will within seven (7) calendar days ratify the vote or refer it back to the CCB with specific instructions for further work.

PESC staff is responsible for the administrative process, including tabulation of the ballots, publication and posting of all necessary documents and communications, and implement version control on all documents, as needed. PESC APPROVED STANDARDS are freely accessible at www.PESC.org.

ABOUT PESC

Established in 1997 at the National Center for Higher Education and headquartered in Washington, D.C., PESC is an international, 501 (c)(3) non-profit, community-based, umbrella association of data, software and education technology service providers; schools, districts, colleges and universities; college, university and state systems; local, state/province and federal government agencies; professional, commercial and non-profit organizations; and non-profit associations & foundations.

Through open and transparent community participation, PESC enables cost-effective connectivity between data systems to accelerate performance and service, to simplify data access and research, and to improve data quality along the education lifecycle. PESC envisions global interoperability within the Education domain, supported by a trustworthy, inter-connected network built by and between communities of interest (systems, states, districts, etc.) in which data flows seamlessly from one system to another and throughout the entire eco-system when and where needed without compatibility barriers but in a safe, secure, reliable, and efficient manner.

To achieve its mission and vision, PESC organizes committees, activities and events to: accelerate performance and service, reduce cost, lead collaborative development, set and maintain common data standards, promote best practices, link public and private sectors, and serve as data experts.

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What is PUBLIC COMMENT and why is it important?

Under the PESC development, approval and maintenance policies and procedures process for PESC Approved Standards, public comment period is a necessary and critical step. Organizations use PESC (a 501c3 non-profit) as a neutral link to the education community to ensure an open, transparent process when new electronic reporting or digital formats for data exchange are needed.

With collaboration at its core and an ANSI foundation, this process requires mandatory, proactive efforts be made by PESC to ensure the public and all education stakeholders have equal, sufficient time and preparation in knowing about upcoming standardization initiatives that may directly or indirectly impact their business and/or their processes.

The public process starts when two or more PESC members submit an open *Letter of Intent* requesting that PESC establish a workgroup for development of a standard. PESC publishes this *Letter of Intent* so that PESC members can join the development workgroup; and non-members (the public) can prepare to use the standard once completed (all PESC Approved Standards are open and free to the public.)

Prior to completion, the second primary public effort made by PESC is asking the public to comment on the proposed standard *before* it is released as an international standard. The standard, once approved and released, will stipulate how reporting should be performed electronically, what data elements are included, and will include supporting documentation to describe how the electronic reporting or digital process should be implemented.

In asking the public for comment *now*, we seek the public's opinion on the proposed documentation (e.g. XML Schemas, Implementation Guides, Instance Documents, etc.) to ensure that when used together the proposed standard, if implemented according to how it is described, will serve the need that is envisioned. In providing comment, the public can recommend improvements and/or edits so that the standard once finalized and released is that much more improved. If no public comments are made, then the proposed standard in most cases becomes the final approved and released standard.



MULTIPLE STAKEHOLDERS. ONE VISION.

FOR IMMEDIATE RELEASE

MARCH 31, 2017

Contact:

JENNIFER KIM

PESC MEMBERSHIP SERVICES DIRECTOR

+1.202.261.6516

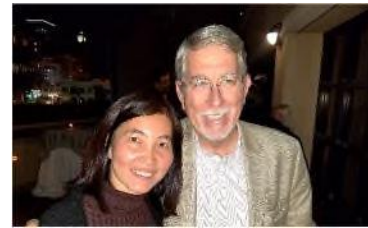
COMMON CREDENTIAL FOR CERTIFICATES, DEGREES & DIPLOMAS RATIFIED AS PESC APPROVED STANDARD XML TECHNICAL SPECIFICATION v 2.2 RELEASED

(Washington DC) – The Board of Directors of PESC is pleased to announce the release of the *Common Credential for Certificates, Degrees and Diplomas* as a PESC Approved Standard, ratified through PESC’s development, approval & maintenance process. Now approved and released to the general public, this *Common Credential XML Data Standard* is expected to be used by any organization, college, university, school, district, state, province, and/or service provider to fully communicate degrees, certifications and other similar credentials obtained by the student.

“This standard does not propose to replace the traditional transcript, but to meet the growing demand, now emerging across the landscape, but especially in transfer, labor and workforce sectors, to verify credentials.”

- Letter of Intent March 22, 2016

- AACRAO
- Stanford University
- University of Maryland University College
- University of Southern California



Tom Black and Mei Hung of Stanford University directed the efforts and team, completing the technical development segment in 10 months.

PESC Members that approved the Common Credential:

- AACRAO
- AcademyOne
- ACT
- Alberta Postsecondary Application System
- Bardic Systems
- California Community Colleges
- College Board
- Credentials Solutions
- ECE
- Ellucian
- Florida International University
- Georgetown University
- IERF
- Indiana State University
- NASLA
- National Student Clearinghouse
- Oracle
- Paradigm
- Parchment
- San Francisco State University
- Stanford University
- Student Connections
- University of Denver
- University of Maryland University College
- University of Missouri System
- University of Phoenix
- University of Southern California
- University of Texas at Austin

Documentation for this newly PESC Approved Standard is posted on the PESC website at www.PESC.org. Organizations looking to communicate their use of this or any other PESC Approved Standard should contact the PESC offices at 202.261.6516.

(continues)

ACTIVATING INTEROPERABILITY ACROSS THE EDUCATION DOMAIN

“By creating a standard credential data schema that provides more explicit expression of learning, it is hoped that in addition to helping learners to become more self-aware, third parties with whom the learners share this information could use it to further benefit the learners or the enterprises with which the learners are engaged.”

- Tom Black, Associate Vice Provost for Student Affairs and University Registrar, Stanford University

PESC's Academic Credentialing and Experiential Learning Task Force formed and convened for its inaugural meeting at PESC's Fall 2015 Data Summit in Washington, D.C. With Tom Black, Associate Vice Provost for Student Affairs & University Registrar at Stanford University, as Task Force Chair, and Co-Chairs Joellen Shendy, Associate Vice Provost and Registrar at the University of Maryland University College and Alex Jackl, CEO and Founder of Bardic Systems, the Task Force committed to monitoring and tracking current initiatives, providing speakers and presenters at several industry-leading conferences and events, serving as a clearinghouse for information, and ensuring PESC is prepared for standards development work as the community is reaching the point in which standards are needed.

Community development on the Common Credential for Certificates, Degrees & Diplomas initiated at PESC's Spring 2016 Data Summit held April 13, 2016. The entire development cycle and release to the public of this newly PESC Approved Standard (from origination through the joint Letter of Intent, through broad-based testing and open evaluation and vetting, and finalizing with public comment period and approval by the Change Control Board, PESC Members and PESC Board of Directors) took exactly one year.

In continuing to its supportive, complementary message to each initiative that fostering collaboration across educational sectors to solve industry-shared problems brings much needed clarity and coherence to the education eco-system, PESC's Spring 2017 Data Summit is dedicated to *Empowering the Mobility of Digital Academic Credentials*.

PESC is pleased to recently announce the addition of *Connecting Credentials* as co-sponsor for *Empowering the Mobility of Digital Academic Credentials*. *Connecting Credentials*' Co-Director Evelyn Ganzglass joins the PESC program as a featured speaker and will discuss the Marketplace Supply and Demand including the upcoming roll out of new workgroups and initiatives under *Connecting Credentials*.

For more information about the *Empowering the Mobility of Digital Academic Credentials* including registration, see www.PESC.org or tweet us @PESCupdates using #PESCspring17summit.

For more information about *Connecting Credentials*, see www.ConnectingCredentials.org.

PESC is sponsored annually by Credentials Solutions, National Student Clearinghouse, Oracle and Parchment Inc. PESC partners include AACRAO, APEREO, ARUCC, EMREX, EWP, Groningen Declaration Network, Internet2, SHEEO, and the US Department of Education's Common Education Data Standards (CEDs) Initiative.

PESC is a proud exhibitor at AACRAO's Annual Meeting and the Annual STATS-DC Conference of the National Center for Education Statistics (NCES) of the US Department of Education and is a proud Affiliate of the NCES National Forum on Education Statistics.

PESC is a proud sponsor of AIR's Annual Conference and of the Annual California Electronic Transcripts Workshop and CCCApply.

PESC is celebrating its 20th Year Anniversary at EDiINTEROP | PESC Fall 2018 Symposium and Data Summit being held in October 2017 in Toronto. A Program Committee is being organized

ACTIVATING INTEROPERABILITY ACROSS THE EDUCATION DOMAIN

under the Canadian PESC User Group and a separate announcement will be issued with details and information.

ABOUT PESC

ESTABLISHED IN 1997 AT THE NATIONAL CENTER FOR HIGHER EDUCATION & HEADQUARTERED IN WASHINGTON, D.C., PESC is an international, 501 (c)(3) non-profit, community-based, umbrella association of data, software and education technology service providers; schools, districts, colleges and universities; college, university and state systems; local, state/province and federal government agencies; professional, commercial and non-profit organizations; and non-profit associations & foundations.

LEADING THE ESTABLISHMENT AND ADOPTION OF DATA EXCHANGE STANDARDS ACROSS THE EDUCATION DOMAIN.

Through open and transparent community participation, PESC enables cost-effective connectivity between data systems to accelerate performance and service, to simplify data access and research, and to improve data quality along the Education lifecycle. PESC envisions global interoperability within the Education domain, supported by a trustworthy, inter-connected network built by and between communities of interest in which data flows digitally and seamlessly from one community or system to another and throughout the entire eco-system when and where needed without compatibility barriers but in a safe, secure, reliable, legal, and efficient manner.

ABOUT PRIVACY While PESC promotes the implementation and usage of data exchange standards, PESC does not set (create or establish) policies related to privacy and security. Organizations and entities using PESC Approved Standards and services should ensure they comply with FERPA and all local, state, federal and international rules on privacy and security as applicable. For more information, see www.PESC.org.

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It takes many organizations working together to support students and learning throughout the entire education eco-system and no single organization can do it all alone by itself. PESC, with an open, transparent community-based approach, the cornerstone principle of efforts & initiatives, therefore, seeks out ingenuity, innovators, best practices and organizations with common interests and missions with which to collaborate.

We partnered with the **Office of Federal Student Aid (FSA)** of the U.S. Department of Education early on and merged our separate technical XML architecture and data modeling guidelines into one combined set. With the deployment of FSA's Common Origination and Disbursement System, which included **Common Record** (one combined record to include all federal grants, loans and work-study), **Common Record** became a **PESC APPROVED STANDARD**.

Since then, all federal grant, loan and work-study files have been issued to and between every college & university financial aid office in the country ⁽¹⁾ in **Common Record**.

Since then as well, we continued with FSA to make **Enrollment Reporting** in the **National Student Loan Data System (NSLDS)** a **PESC APPROVED STANDARD**.

The **Gainful Employment Reporting standards** are expected to be submitted by FSA in the near future.

We partnered with the U.S. Department of Education's **National Center for Education Statistics (NCES)** to make five components of student reporting into the **Integrated Postsecondary Education Data System (IPEDS)** a PESC Approved Standard. Through NCES Reporting, we know that at least 29 states support **PESC Approved Standards**, while we've heard from at least 6 Canadian provinces directly about full adoption of **PESC APPROVED STANDARDS**.

PESC continues to foster new and innovate paths and strengthen our partnerships across sectors and systems to expand our footprint worldwide:

- We are collaborating with stakeholders in Canada through the **Canadian PESC User Group** to promote and adopt interoperability throughout each province.
- With **Internet2** and **InCommon** we partnered and joined forces to launch the **Common Identity & Trust (CommIT) Collaborative** to bring sustainable, reliable *single sign-on* services to the education domain.
- With **ARUCC**, we exchanged memberships allowing each to access the resources and networks of the other.
- We launched **EdExchange** to provide a useful service for data exchange.
- We launched **Single Institution Code** to help manage institutions codes and identifiers.

- With the **Data Quality Campaign (DQC)**, we are affiliates as we support the DQC in the efforts to ensure the use, sharing & exchange of quality data.
- With **State Higher Education Executive Officers (SHEEO)**, we are partners as over 29 states reported their support of **PESC APPROVED STANDARDS** to NCES.
- With the **Institute of Education Sciences (IES)** of the U.S. Department of Education, PESC has been appointed an Affiliate Member of the **National Forum for Education Statistics**.
- We're working with PESC Member **Smarter Balanced Assessment Consortium** to ensure **PESC APPROVED STANDARDS** satisfy state needs.
- As a global leader, PESC has been appointed full signatory to the **Groningen Declaration Network** which furthers the European partnership we established with the Rome Student Systems and Standards Group (RS3G).

To support the development and adoption of **Common Education Data Standards (CEDS)**, PESC partnered with **NCES of the U.S. Department of Education, Council of Chief State School Officers (CCSSO), DQC, the Dell Foundation, the Gates Foundation, Schools Interoperability Framework Association (SIFA) and State Higher Education Executive Officers (SHEEO)**.

The **Common Education Data Standards (CEDS)** span the full student lifecycle from early learning, elementary, secondary, postsecondary and into the workforce and **PESC APPROVED STANDARDS** remain in full alignment with **CEDS**.

With Founding Member **AACRAO**, due to common missions PESC has hosted the **AACRAO SPEEDE Committee** since PESC's formation. AACRAO hosted and nurtured PESC, its activities and events, until formally established.

The **AACRAO** and the **SPEEDE Committee** collaborated with **NCES** and **CCSSO** in the early 1990's to develop admissions and registrar standards in **EDI**, now used by thousands of organizations internationally both through peer-to-peer and through hub models like the **SPEEDE Server**. With PESC's growth, these **EDI standards**, which served as the foundation for PESC's XML-based data standards, are now **PESC APPROVED STANDARDS** as well.

(1) Every college & university receiving federal aid.



With tremendous support from AACRAO and our founders to establish & support PESC; from our members, sponsors and partners; to institutions, colleges and universities, state and province systems; service providers and government agencies that implement and use PESC APPROVED STANDARDS; with our roots in ANSI; with a meticulously, highly-disciplined and transparent standards-development and maintenance process, and with a strong, powerful and vibrant community-based approach to all of its efforts and initiatives, PESC has become a world leader for interoperability.



PESCinterop**2018**

COORDINATING PESC TECHNOLOGY & SERVICES

SAN FRANCISCO JANUARY 16–17, 2018 MARRIOTT HOTEL



COMMUNITY SOURCED. OPEN DATA STANDARDS.

WWW.PESC.ORG

PESCinterop2018

COORDINATING PESC TECHNOLOGY & SERVICES

SAN FRANCISCO JANUARY 16-17, 2018 MARRIOTT HOTEL

PESCinterop2018 is a no-frills, interim convening of PESC Member organizations to openly discuss, plan, coordinate, learn, synchronize & strategize their work efforts as they relate to:

- strategic and emerging IT topics and initiatives (like open source, JSON-LD, blockchain, etc.);
- the impact and development of PESC Approved Standards, Services and Data Summits.

Originally started in January 2015 at an impromptu meeting in Sacramento, CA called solely to ramp up EdExchange, the goals of **PESCinterop2018**, now expanding, are to:

- 1) *educate one another* on major PESC initiatives to ensure level understanding and efficient coordination and use of project and volunteer resources
- 2) *maximize in-person convening time* (Crowd Power!) to advance projects and meet timelines
- 3) *identify inter-project opportunities* for synchronization, convergence and alignment
- 4) *share and coordinate timelines*, action items & deliverables
- 5) *present and showcase new projects*, pilots or ideas
- 6) *propose new PESC workgroups*, events or partnerships for development
- 7) *introduce new topics or speakers* for PESC activities, events and Data Summits
- 8) *help formulate and shape PESC's 3 Year strategy* for IT and services

Location:

- San Francisco Union Square **or** Fisherman's Wharf

Date & Time

- Tues Jan 16, 2018 - Wed Jan 17, 2018

- Attendees: PESC Members & Invited Guests
- Expenses: Hotel on Your Own, All Food & Beverage on Your Own, Breaks on Your Own
- Dress code: Casual
- Hotel Meeting Room Setup: PESC meeting room w/ speakerphone/projector/wifi
- Registration: \$125 registration/person (for \$1000/day x 2 for meeting room & AV)
- Webinar/Dial-In for PESC Members: Free & Open to All PESC Members
- Webinar/Dial-In for General Public: JSON TASK FORCE

PESCinterop2018

COORDINATING PESC TECHNOLOGY & SERVICES

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Program

P D T	Tuesday January 16, 2018	Wednesday January 17, 2018
9.00am – 10.00am	Meet & Greet – Bring Your Coffee	GEO CODE 1.0 – Ramp Up -Enhancements & Development Cycles -Defining 1.0
10.00am - Noon	JSON TASK FORCE -Partnership Approach & Outreach -Mission & Vision -Impact on PESC by XML & JSON-LD -JSON/XML or JSON Standalone -Deliverables & Timelines	-Steering Committee Terms & Elections -Deliverables & Timelines -Outreach & Events -PESC Spring 2018 Data Summit
Noon – 1.00pm Lunch On Your Own	Working Lunch Topic (Optional) REQUEST/RESPONSE FOR ALL PESC APPROVED STANDARDS	Working Lunch Topic (Optional) DEMOS & PILOTS -15 minute slots -Present Your Pilot or Project or Idea
1.00pm – 6pm	EDEXCHANGE 1.0 – Ramp Up -Infiniti & Apereo & Open Source -Legal & Marketing -Steering Committee Terms & Elections -Defining 1.0 & Pricing -Stimulating Pilots -Deliverables & Timelines -Outreach & Events -PESC Spring 2018 Data Summit	Academic Credentialing & Credential Mapping, Credential Engine, US Chamber -Value Proposition of Credential Mapping -PESC's Role -Potential Role of Blockchain -Update on Credential Engine -Update on US Chamber of Commerce -Outreach & Events -Deliverables & Timelines -PESC Spring 2018 Data Summit
7pm	Group Dinner on Your Own	Adjourn

PESCinterop2018

COORDINATING PESC TECHNOLOGY & SERVICES

SAN FRANCISCO JANUARY 16-17, 2018 MARRIOTT HOTEL



PESCinterop2018

JANUARY 16-17, 2017

HOTEL
ADDRESS
CITY STATE ZIP
PHONE WEBSITE

YES, I will attend. **IN PERSON*** **DIAL IN/WEB**

Your Primary Interest(s):

- ALL JSON EDEXCHANGE GEO CODE REQUEST/RESPONSE
- DEMOS/PILOTS CREDENTIAL MAPPING CREDENTIAL ENGINE BLOCKCHAIN OTHER _____

> _____

Attendee Full Name

> _____

Title and Organization

> _____

Street Address

> _____

City, State and Zip

> _____

Phone

E-mail Address

> _____

Signature

Date

**Registration is required. Please complete this form & send it along with a check for \$125:*

PESC | 1250 Connecticut Avenue, NW, Suite 200 | Washington DC 20036
Email: Michael.Sessa@PESC.org | Fax: 202-261-6517 | TAX ID: 52-2179499

This meeting is open to PESC Members attending both in-person and electronically.
* In-Person Registration fee is \$125; while there is no registration required for dial in/web.
To pay by credit card, please call Jennifer Kim at 202.261.6516.
Hotel and all food and beverage expenses are on your own.

- **Potential In-Person Attendees Active in JSON, EdExchange, GEO Code and/or Credential Mapping:** Michael Morris, James Whetstone, Mei Hung, Mark Cohen, Sam Allen, Matt Samuels, Rajeev Arora, Doug Falk, Jim Kelly, Monterey Sims, Jack Weber, Tuan Do, Dave Landry, Matt Bemis, Rick Skeel, Dave Moldoff, Susan McCrackin, Kristi Blabaum, Alex Jackl, Cary Brown +

PESC CEOs	PESC ASSOCIATIONS	PESC COLLEGES & UNIVERSITIES
AcademyOne Dave Moldoff	AACRAO Mike Reilly	California Community Colleges Mark Cohen
Bardic Systems Alex Jackl	ARUCC Charmaine Jack	Elon University Rodney Parks
Credentials Solutions Tom McKechny	A4L Larry Fruth	OCAS Marc Provencher
Digitary Andy Dowling	GDN Herman de Leeuw	OUAC Brian Patton
IERF Susan Beidl	College Board	Stanford University Mei Hung
iQ4 Frank Cicio	Common App Dana Mikelson	UMUC Joellen Shendy
National Student Clearinghouse Rick Torres	FSMB	University of Missouri System Jeff Elliott
Paragidm Chris Jackson		University of Oregon Jim Bouse
Parchment Matt Pittinsky		University of Texas Shelby Stanfield
Smart Catalogue Anne Valentine		



EDEXCHANGE USER GROUP

EdExchange is a data exchange platform enabling the electronic exchange of standards-based data and digital documents between academic institutions and their service providers. Achieved through an open web services architecture and associated standards, **EdExchange** is designed as a peer-to-peer network providing a secure, reliable and direct connection between institutions (whether direct or through their service providers) avoiding file-based technologies.

EdExchange began as the principal project of PESC's Common Data Services (CDS) Task Force and participation in **EdExchange User Group** meetings is welcome, encouraged and open to representatives of PESC Members.

EdExchange User Group meetings occur via conference call every Thursday at 12noon EDT (9am PST, 5pm GREENWICH) and communications are supported by a PESC list.

EdExchange User Group & Steering Committee Co-Chairs

- **Mark Cohen**, Product Manager, Technology Center, California Community Colleges
- **Tuan Ahn Do**, Director of Enrollment Management Technology, San Francisco State University; Liaison, PESC Board of Directors

EdExchange Steering Committee

While **EdExchange** is ultimately governed by the PESC Board of Directors, an **EdExchange** Steering Committee administers more direct management, oversight and strategic planning. The Steering Committee meetings occur via conference call every 1st Thursday at 12.30pm (9.30am PST).

- **Rajeev Arora**, Senior Vice President, Products, Parchment
6263 North Scottsdale Road, Suite 330, Scottsdale AZ 85250
rarora@parchment.com
- **Mark Cohen**, Product Manager, Technology Center, California Community Colleges
mcohen@ccctechcenter.org
- **Tuan Anh Do**, Director of Enrollment Management Technology, San Francisco State University; Liaison, PESC Board of Directors
doey@sfsu.edu
- **Doug Falk**, Vice President & CIO, National Student Clearinghouse
2300 Dulles Station Blvd, Herndon VA 20171
falk@studentclearinghouse.org
- **Jim Kelly**, Senior Director of Technology, Educational Credential Evaluators
PO Box 514070, Milwaukee WI 53203-3470
jkelly@ece.org
- **Michael Sessa**, President & CEO, PESC
41250 Connecticut Ave NW Suite 200 Washington DC 20036
michael.sessa@pesc.org
- **Monterey Sims**, Director of Admissions and Evaluation, University of Phoenix
4025 S. Riverpoint Parkway, Phoenix AZ 85040
monterey.sims@phoenix.edu
- **Jack Weber**, Executive Vice President, Credentials Solutions
One Northfield Plaza, Suite 501, Northfield IL 60093
weber2@credentialssolutions.net

HISTORY: As you may know, since the Common Data Services (CDS) Task Force launched under PESC at the Fall 2011 Data Summit, CDS representatives have been busy at work. Over the years they have analyzed the technical landscape, monitored the political climate and adopted a specific mission:

"to improve security, reliability, efficiency and speed in the transfer of all educational data types by developing an open web services network and associated standards to benefit the education of students, streamline processes for institutions, and facilitate the advancement of services offered for education..."

Leaders within the California Community College System requested this community development through PESC and have remained consistent leaders to this day. After over five years, we are pleased to be advancing a major initiative developed under CDS - ***EdExchange***. ***EdExchange*** is simply an open, data exchange network for the education community.

The concept is that the ***EdExchange*** specification become a PESC Approved Standard, and then stakeholders implement and offer this standard specification, alongside their other digital services and applications, to exchange data among themselves.

With a consistent, reliable cross-sector standardized exchange, those that use, collect or exchange data can now have this option available to them. Whether connecting directly or through use of a third party service provider, ***EdExchange*** could provide data exchange services for all educational needs.

GOVERNANCE: The Steering Committee is made up of nine (9) PESC member representatives that have been active in the development of ***EdExchange***. The Steering Committee will be diverse, representing the various sectors across education; semi-autonomous, and will continue to report directly to the PESC Board of Directors, and; responsible for the overall governance and operation of ***EdExchange***.

Each seat will have one (1) equal vote, simple majority will rule, terms are one (1) year becoming effective March 1, 2016 and terminating April 30, 2017, and the Steering Committee will establish its own roles, responsibilities, schedule and leadership. At the discretion of PESC, current terms have been extended through April 30, 2018 and through October 2018 to align with forthcoming elections for Steering Committee seats from the full PESC Membership in October 2018.

ORGANIZATIONS IN PESC EDEXCHANGE PILOT

APRIL 1, 2016

California Community Colleges

Credentials Solutions

Educational Credential Evaluators

National Student Clearinghouse

Parchment

University of Phoenix

Annual Member Dues & Services

Valid through June 30, 2019 (payable in U.S. Dollars)

LOCAL EDUCATION AGENCY, DISTRICT, SCHOOL (ELEMENTARY & SECONDARY)	MEMBER DUES	EDEXCHANGE
- < 1,000 students	\$500	\$250 USER (PESC Member)
- 1,000 < 10,000 students	\$750	
- 10,000 < 50,000 students	\$1,000	
- 50,000+ students	\$2,500	
COLLEGE OR UNIVERSITY		
<u>Non-Profit</u>		
- 1 campus	\$500	\$1250 GENERAL PUBLIC (non-Member)
- 2 - 10 campuses	\$750	
- 11+ campuses	\$1,000	
<u>For-Profit</u>		
- < 1,000 students	\$500	
- 1,000 < 10,000 students	\$750	
- 10,000 < 50,000 students	\$1,000	
- 50,000+ students	\$2,500	
GOVERNMENT		
- Individual State or Province Agency or Office	\$1,000	
- State- or Province- Wide	\$10,000	
- Country	\$50,000	
NON-PROFIT ORGANIZATION, AGENCY with REVENUE		
- < \$500,000	\$1,000	\$750 SUPER USER (PESC Member)
- \$500,000 < \$1 million	\$2,500	
- \$1 million < \$10 million	\$5,000	
- \$10 million < \$100 million	\$7,500	
- \$100 million < \$1 billion	\$15,000	
- \$1 billion+	\$25,000	
COMMERCIAL ORGANIZATION, VENDOR with REVENUE		
- < \$250,000	\$1,000	\$2500 GENERAL PUBLIC (non-Member)
- \$250,000 < \$500,000	\$2,500	
- \$500,000 < \$1 million	\$5,000	
- \$1 million < \$10 million	\$7,500	
- \$10 million < \$100 million	\$15,000	
- \$100 million < \$1 billion	\$25,000	
- \$1 billion+	\$30,000	
NON-PROFIT ASSOCIATION*	\$5,000	

GEO CODE USER GROUP

GEO Code is a free, open and standardized online directory of codes and identifiers of education organizations for use by institutions & stakeholders worldwide. **GEO Code** is a 'look-up' service offered and operated by PESC and directly managed by PESC Members. The foundation of the service is a directory 'look up' server that lists active and inactive institutions, including historical data plus additional demographic and identifier data.

GEO Code began as the principal project of PESC's Global Data Mobility User Group (GDM launched at Spring 2016 Data Summit). At its first meeting, the need for a global institution code set surfaced as one of the highest priorities. **GEO Code User Group** meetings, in partnership with AACRAO and Signatories of the Groningen Declaration Network, are open and participation is encouraged and open.

GEO Code User Group meetings occur on two levels: A Workgroup (including many members of the Steering Committee) meets every other Friday at 1pm EDT (10am PDT); while a more formal, community-based meeting is held quarterly to provide updates and communications. All meetings are held via conference call and communications are supported by a PESC list.

GEO Code User Group & Steering Committee Chair

- **Rick Skeel**, Director of Product Management, Ellucian
rick.skeel@ellucian.com

GEO Code Steering Committee

While **GEO Code** is ultimately governed by the PESC Board of Directors, a **GEO Code** Steering Committee administers more direct management, oversight and strategic planning. The Steering Committee meetings are part of the Workgroup meeting every other Friday at 1pm EDT (10.00am PST).

- **Rajeev Arora**, Senior Vice President, Products, Parchment
6263 North Scottsdale Road, Suite 330, Scottsdale AZ 85250
rarora@parchment.com
- **Matt Bemis**, Associate Registrar, University of Southern California
wbemis@usc.edu
- **Melanie Gottlieb**, Deputy Executive Director, AACRAO
One Dupont Circle NW Suite 500 Washington DC 20036
gottlieb@aacrao.org
- **Jim Kelly**, Senior Director of Technology, Educational Credential Evaluators
PO Box 514070, Milwaukee WI 53203-3470
jkelly@ece.org
- **Dave Landry**, Director of Data Exchange Services, National Student Clearinghouse
landry@studentclearinghouse.org
- **Herman de Leeuw**, Executive Director, Groningen Declaration Network
herman.deleeuw@duo.nl
- **Dave Moldoff**, CEO & Founder, AcademyOne
dmoldoff@academyone.com
- **Michael Sessa**, President & CEO, PESC
1250 Connecticut Ave NW Suite 200 Washington DC 20036
michael.sessa@pesc.org
- **Rick Skeel**, Director of Product Management, Ellucian
rick.skeel@ellucian.com

HISTORY: GEO CODE is a project of PESC's Global Data Mobility User Group (GDM launched at Spring 2016 Data Summit). At its first meeting, the need for a global institution code set surfaced as one of the highest priorities. Today's technological innovation with open, transparent collaboration (the cornerstone of PESC's foundation and guiding principle) and having finally reached the tipping point whereby most experts agree that such a code set is not only needed, but now impacts data quality, cost and fraud, all contribute to the conclusion that such a list is now a necessity.

GOVERNANCE: The Steering Committee is made up of nine (9) PESC member representatives that have been active in the development of *GEO Code*. The Steering Committee will be diverse, representing the various sectors across education; semi-autonomous, and will continue to report directly to the PESC Board of Directors, and; responsible for the overall governance and operation of *GEO Code*.

Each seat will have one (1) equal vote, simple majority will rule, terms are one (1) year becoming effective May 3, 2017 and terminating May 3, 2018, and the Steering Committee will establish its own roles, responsibilities, schedule and leadership. At the discretion of PESC, current terms may be extended through October 2018 to align with forthcoming elections for Steering Committee seats from the full PESC Membership in October 2018.

ORGANIZATIONS IN GEO CODE PILOT

OCTOBER 27, 2017

University of Southern California & IERF



EdExchange

Interim Meeting

Embassy Suites Riverfront
100 Capitol Mall - Sacramento, CA 95814
January 19, 2015

Agenda

By Zoom: from PC, Mac, Linux, iOS or Android: <https://zoom.us/j/383779957>

By phone: +1 415 762 9988 (US Toll) or +1 646 568 7788 (US Toll)

Meeting ID: 383 779 957

International numbers available:

https://zoom.us/join?j=383779957&pwd=091727WYE2H0EpW-pc6BYj8OEH_ENCr

Meeting Objectives:

COMPLETED

- 1. Agree in theory on the mission, vision and scope of EdExchange**
- 2. Agree on Phase 1 functionality - what's in who's in and when, who is doing what and why, what's next, are there restrictions? what do we call it?**
- 3. Identify and agree on what a USER is for Phase 1 - what does that mean? what is required or needed?**
- 4. Identify, agree and roll out Phase 1 support - finance, governance, IT support, legal?**
- 5. Develop timeline for future Phases and functionality – what's required by PESC & Apereo?**

Dinner Information (Optional):

- Monday, January 18, 2016 at 6:45 pm – Meet @ Restaurant
- Il Fornaio Italian Restaurant, 400 Capitol Mall, Sacramento, CA 95814 (@4th St.) (916) 446-4100 <http://ilfornaio.com/sacramento> GLUTEN FREE - FRIENDLY
- Sponsored by PESC – Call Michael w/ questions 617.694.2716

8:30AM **CONNECT REMOTE PARTICIPANTS (ONLINE AND CONFERENCE CALL)**

8:45AM **REMOTE PARTICIPANT WELCOME & INTRODUCTIONS**

COMPLETED

1. **Welcome, Introductions and EdExchange Overview (9-10AM)**
 - a. Introductions
 - b. Outline of meeting objectives
 - i. Agree on the mission, vision, and scope of EdExchange.
 - ii. Agree on Phase 1 functionality.
 - iii. Agree on what a User is (for Phase 1)
 - iv. Identify what is needed to roll out Phase 1 (finance, governance, IT support, legal, etc.)
 - v. Develop timeline for enhancements to EdExchange functionality
 - c. Review of EdExchange vision, objectives and functionality
 - d. Review process of becoming a PESC standard (List of ?)
 - e. Overview of Apereo license
 - f. Time for Remote Participants
2. **EdExchange Users (10-11AM)**
 - a. Review proposed structure of Users and Super-Users
 - i. Resolve who may be a user (limit to academic institutions and service providers, or open to individuals and businesses that receive/request education data)
 - ii. Roles (send, receive, request)
 - iii. Authentication of users and a review of how service providers handle verification within their networks)
3. **Costs and Fees (11-12PM)**
 - a. Review of estimated costs
 - i. Authentication process
 - ii. Hosting & bandwidth
 - iii. Administrative costs
 - b. Proposed fee structure
 - i. One-time fees (authentication/set-up) for Users and Super-Users
 - ii. Annual fees for Users and Super-Users
4. **LUNCH (12-1PM) – Lunch will be provided by the CCC Technology Center**
Governance (1-2:30PM)
 - a. Model for oversight and governance of EdExchange
 - i. What will governance look like
 - ii. How will individuals or institutions be selected
5. **Functionality (2:30-4PM)**
 - a. Technical Overview
 - i. Architecture
 - ii. Functionality of servers
 - b. Pilot status and timing
 - c. Phase 1 functionality
 - i. Supported User roles
 - ii. Supported document types
 - iii. Planned enhancements
 - d. Status of development and backlog review (if time allows)
6. **Adjourn 4:30PM**

First Name	Last Name	Organization	Email Address	In Person	Dial In		Dinner	Date
Rajeev	Arora	Parchment	rarora@parchment.com	√			√	12/30/15
Tim	Calhoon	CCC Technology Center	timcalhoon@ccctechcenter.org	√				12/18/15
Mark	Cohen	CCC Technology Center	mcohen@ccctechcenter.org	√			√	12/28/15
Louis	Delzompo	CCC Technology Center	ldelzompo@ccctechcenter.org	√				12/18/15
Andy	Dowling	Digitary	andy.dowling@digitary.net		√			01/05/16
Doug	Falk	National Student Clearinghouse	falk@studentclearinghouse.org	√			√	12/22/15
Robbie	Gehbauer	CCC Technology Center	rgehbauer@ccctechcenter.org	√			√	12/21/15
Doug	Holmes	OUAC	doug@ouac.on.ca		√			12/18/15
Meichen	Hung	Stanford University	meihung@stanford.edu	√				01/05/16
Alexander	Jackl	Bardic Systems	alex@bardicsystems.com		√			01/06/16
Jim	Kelly	ECE	jkelly@ece.org	√			√	12/28/15
Thomas	McKechney	Credentials Solutions	mckechney1@credentialssolutions.net	√			√	12/21/15
Brian	Patton	OUAC	patton@ouac.on.ca		√			12/18/15
Lenny	Robison	CCC Technology Center	lenny.robison@sbcglobal.net	√			√	12/18/15
Michael	Sessa	PESC	michael.sessa@pesc.org	√			√	12/23/15
Monterey	Sims	University of Phoenix	Monterey.Sims@phoenix.edu		√			12/21/15
Robert	Tritt	XAP	rtritt@xap.com		√			01/15/16
Jack	Weber	Credentials Solutions	weber2@credentialssolutions.net				√	12/29/15
Leisa	Wellsman	OUAC	leisa@ouac.on.ca		√			12/18/15

COMPLETED

SUPPORT

STUDENT MOBILITY

JOIN PESC FOR ONE YEAR!

PESC MEMBER ANNUAL DUES, AS THE PRIMARY SOURCE OF FUNDING, SUPPORT ALL OPEN DATA STANDARDS AND SPECIFICATIONS DEVELOPMENT, ISSUANCE AND MAINTENANCE OF OPEN PESC APPROVED STANDARDS; ALL PESC COMMUNICATIONS AND OUTREACH ACTIVITIES; AND PESC EVENTS & GROUPS.

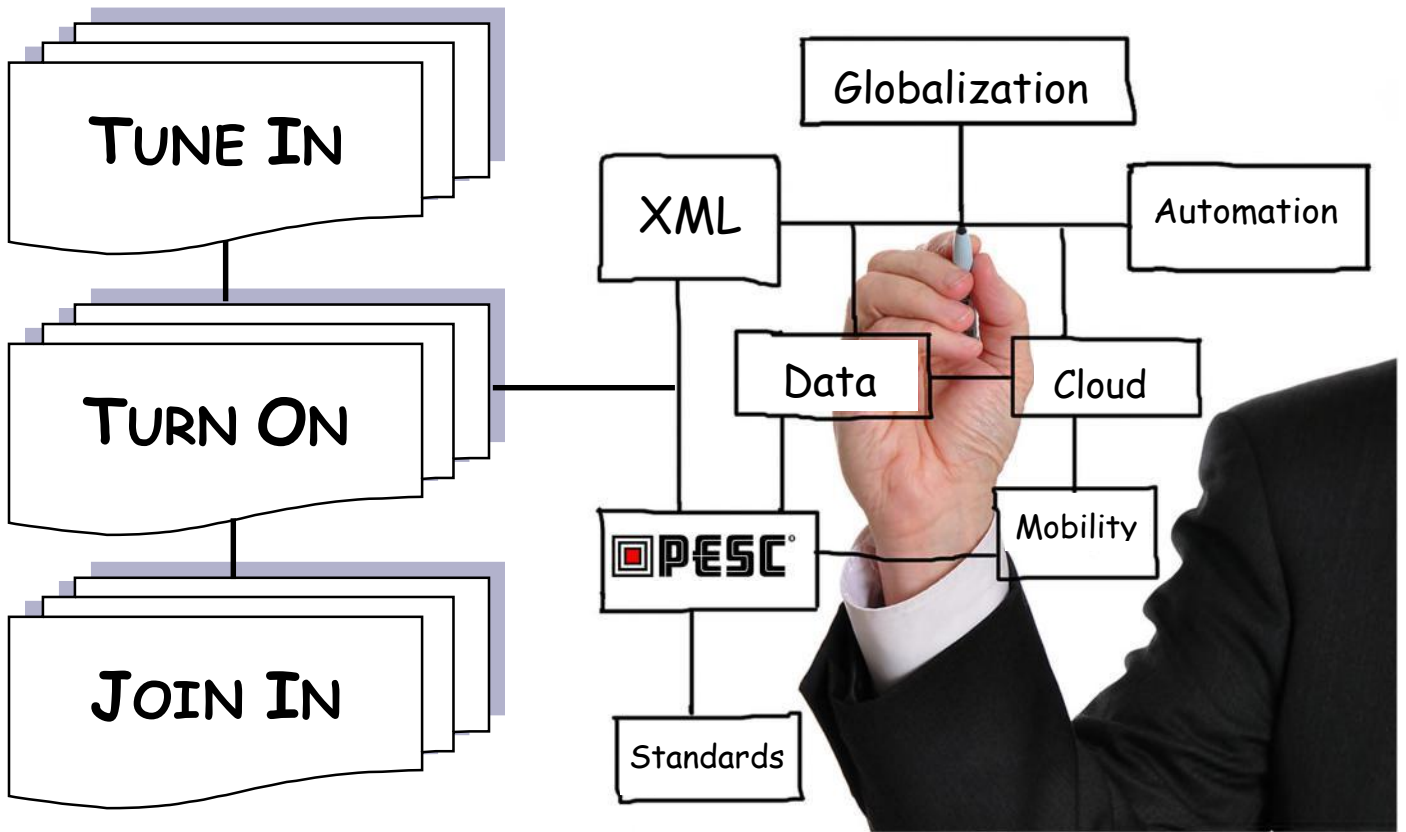
PLEASE CONSIDER JOINING PESC NOW AS A MEMBER OR AS A SPONSOR AND JOIN YOUR COLLEAGUES IN PESC'S MISSION TO RAISE THE ENTIRE EDUCATION DOMAIN TO A NEW STANDARD OF COLLABORATION, DIGITAL MOBILITY AND INTEROPERABILITY!

WWW.PESC.ORG



UNLOCK THE MOBILITY OF EDUCATION DATA
WITH PESC APPROVED STANDARDS





MEMBER LISTS

Representatives of PESC Membership organizations can join any and all of PESC's *Member* email and communication lists. Lists are used for open, public emails sent by and between list members to discuss ideas & issues related to the topic of the list. Please review the list below and indicate which list you'd like to join:

- EDXCHANGE USER GROUP
- EDUCATION RECORD USER GROUP (ERUG)
- TECHNICAL ADVISORY BOARD (TAB)

PUBLIC LISTS

Any representative within the education community can join all of PESC's *Public* email and communication lists. Lists are used for open, public emails sent by and between list members to discuss ideas and issues related to the topic of the list.

- ACADEMIC CREDENTIALING AND EXPERIENTIAL LEARNING (ACXL) TASK FORCE
- CANADIAN PESC USER GROUP (CANPESC)
- GLOBAL EDUCATION ORGANIZATION (GEO) CODE WORKGROUP
- JSON TASK FORCE

GENERAL ANNOUNCEMENT LIST

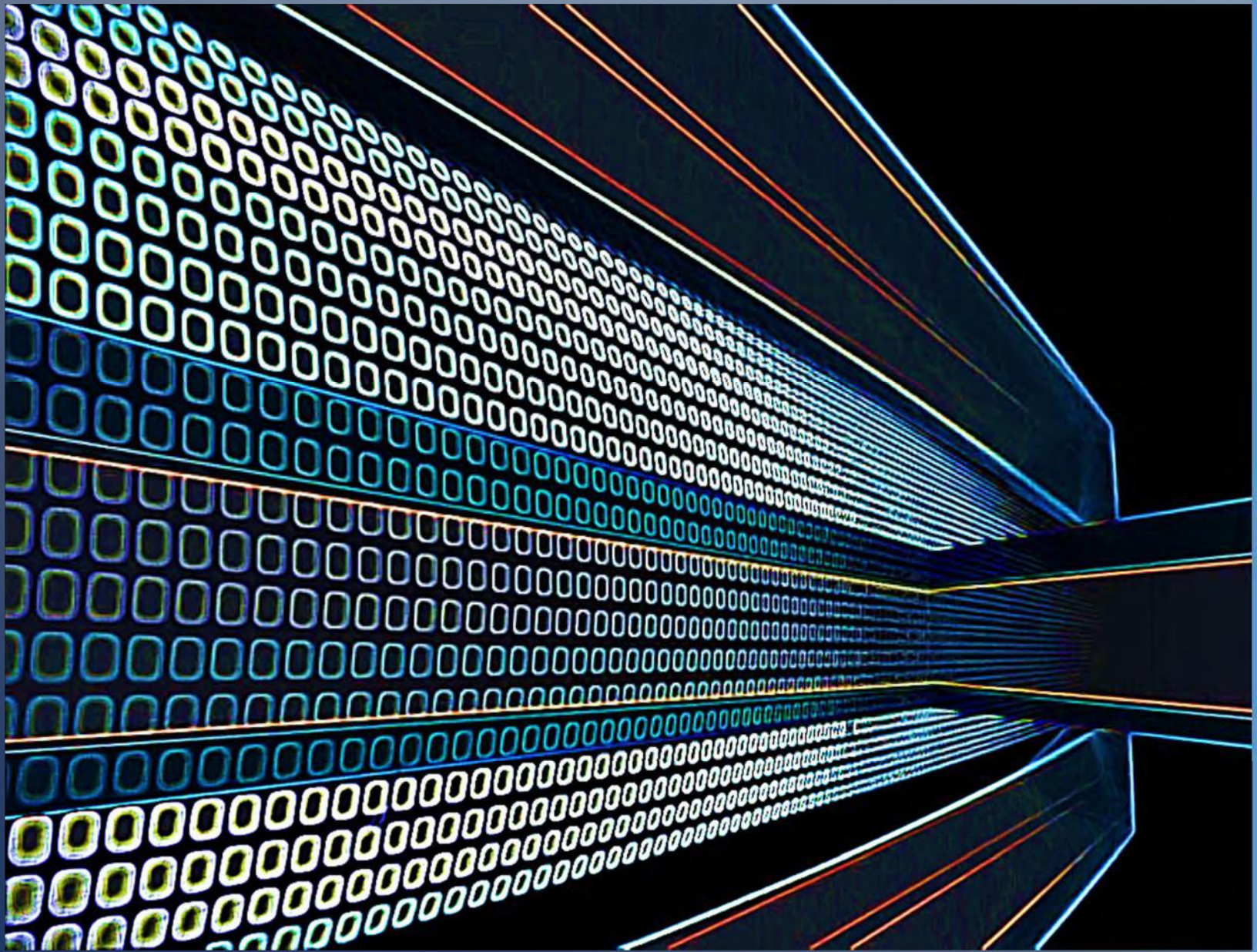
Any representative within the education community can join PESC's *General Interest* list to receive major announcements & communications.

- GENERAL INTEREST

Your Name (please print)	Your Email (please print)	Your Organization (please print)

PESC hosts additional lists for: [Board of Directors](#), [Change Control Board \(CCB\)](#), [Members & Seal of Approval Board](#). Joining these lists is by appointment only. Please see PESC to join. PESC does not share or sell lists.

PLEASE COMPLETE THIS FORM AND EMAIL IT TO JENNIFER.KIM@PESC.ORG OR FAX IT TO 202.261.6517.



Leading the

ESTABLISHMENT & ADOPTION
OF OPEN DATA STANDARDS
ACROSS THE EDUCATION DOMAIN

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