

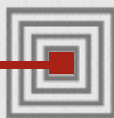
Standard

news and commentary on technology and standards in postsecondary education

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POSTSECONDARY
Electronic Standards Council



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The Standard is the electronic newsletter published monthly by The Postsecondary Electronic Standards Council (PESC). The Standard covers news and events that impact information technology and data exchange; and promotes PESC's goals of improving service, controlling costs, and attaining interoperability within higher education. For information about subscriptions, advertising, and article submissions, please visit www.PESC.org. © 2006 PESC

Volume 7 ~ Issue 10 ~ October 2006

PESC Launches Standards Make the Network! Campaign

The Board of Directors of the Postsecondary Electronic Standards Council (PESC) is very pleased to announce the launch of **Standards Make the Network!**, a year-long campaign that celebrates the 10 year anniversary of PESC. The campaign will launch in January, continue throughout 2007, and will culminate at PESC's Fall 2007 Workgroup Summit being held at the Ritz-Carlton Hotel in Montreal, Canada October 15 – 16, 2007.

The **Standards Make the Network!** Campaign is comprised of 4 elements:

- ❖ *Case Studies Highlighting the Value of Standards in Education* – Organizations that have adopted and implemented (or are in the process of adopting and implementing) PESC standards will be showcased in individual pamphlets and brochures. For example, with the High School and College Transcripts being paired together and implemented in the states of Georgia and Indiana, in the California Community College System, and throughout the province of Ontario Canada, a brochure highlighting how standards solve business problems and lead to operational efficiencies, will be produced for each of these organizations. The same approach will be taken for other PESC standards being implemented, like the Data Transport Standard (DTS) being implemented by AES and Nelnet. PESC will post all brochures on its website for use by the community and PESC will distribute them at various conferences, meetings, and events. These case studies can be viewed as best practices by other organizations that are looking to solve data and communications issues within their own organizations and with their trading partners.
- ❖ *Connecting Kids to College* – With a number of PESC standards focused on student transactions, the aggregation of these standards allows faster and easier processing so that students entering college or transferring from one to another have an easier experience. Specific pamphlets and brochures will be developed to communicate how PESC standards help connect kids to college and the overall importance of PESC standards for education.
- ❖ *Improving Institutional Performance* – For colleges and universities, PESC

See **Campaign**, Page 2

Campaign, from Page 1

standards allow faster processing while also ensuring higher rates of data integrity and quality. Institutions can streamline their data flows, eliminate redundant processes and proprietary formats, and free up human resources that can then focus on further enhancements and improvements. Specific pamphlets and brochures will be developed to communicate how PESC standards help improve institutional performance and the overall importance of PESC standards for education.

❖ *Investing in the Future* – For service providers and vendors, investing in standards now ensures that systems and applications will be interoperable as the next generation of technologies emerges. Plus colleges and universities can take comfort in knowing that service providers and vendors, in supporting and adopting standards, are helping improve their performance while making the processing of connecting to college easier for students. Specific pamphlets and brochures will be developed to communicate how PESC standards help service providers and vendors invest in the future and the overall importance of PESC standards for education.

All materials will be posted on the PESC website and distributed by PESC at all major functions, events, and conferences. The education community is encouraged to download and use these materials to help spread the work about the importance of standards.

History on PESC's 10th Anniversary

On August 18, 1997, 29 representatives of 16 higher education associations, administrative software vendors, the U.S. Department of Education, institutions, student financial aid lenders, secondary markets, guaranty agencies and servicers gathered at the National Center for Higher Education at One Dupont Circle in Washington, D.C. to explore the creation of a partnership to promote and facilitate the use of standards for data sharing. At that time, several major factors relating to standardization were emerging and the higher education community had reached the

point where centralized organization was needed. The words of A. Dallas Martin, President of the National Association of Student Financial Aid Administrators (NASFAA) and founding member of PESC's Board of Directors, from September 19, 1997 imprinted an indelible mark on higher education and still hold true today:

"We are at a critical juncture in the administration of higher education in this country. Over the past two years we have worked together on various industry task forces. One common point of agreement among ourselves during this process is that we must develop a way for the community to organize, negotiate, recommend, train and administer the numerous tasks needed to provide an open, common, integrated higher education administrative infrastructure for the benefit of students in this country."

Founding Membership Organizations of PESC include:

- ACT, Inc.
- American Association of Collegiate Registrars and Admissions Officers (AACRAO)
- American Association of State Colleges and Universities (AASCU)
- Citibank
- Coalition of Higher Education Assistance Organizations (COHEAO)
- College Board
- Educause
- Educational Testing Services (ETS)
- Education Finance Council (EFC)
- Harbinger
- KPMG
- Law School Admission Council (LSAC)
- National Association for College Admission Counseling (NACAC)
- National Association of College and University Business Officers (NACUBO)
- National Association of Student Financial Aid Administrators (NASFAA)
- National Council of Higher Education Loan Programs (NCHELP)
- Pearson Government Solutions
- Sallie Mae
- Student Loan Servicing Alliance (SLSA)
- SunGard Higher Education
- USA Funds
- U.S. Department of Education

Steering Committee Elections

With elections for the Steering Committee held during PESC's Fall 2006 Membership Meeting in San Diego on October 23, 2006, PESC is pleased to announce the results of that election. The seven nominees elected include:

- Paula Brower, SunGard Higher Education
- Adriana Farella, XAP Corporation
- Holly Hyland, Federal Student Aid, US Department of Education
- Robert King, Citibank
- Adele Marsh, AES
- Bruce Marton, University of Texas at Austin
- Eddie Upton, University of Mississippi

The Steering Committee is a seven member body that leads and provides oversight for the Standards Forum for Education and reports directly to the PESC Board of Directors. Representatives from MEMBER organizations (with dues paid current) are eligible to serve on the Steering Committee. The term of service is one year and runs January 1, 2007 – December 31, 2007.

How Does PESC's Design Choices Compare with Similar Efforts?

BY STEVE MARGENAU

Chair of the Technical Advisory Board of the Standards Forum for Education.

The W3C's XML Schema provides a number of design and modeling options for data formatted as XML. PESC began its research into schema design and modeling options in March of 2001, even before the official release of XML Schema version 1.0. PESC decided to concentrate on a specifications document addressing design issues affecting the output of the (then-named) XML Forum – what PESC schemas should look like, how they should be organized, how to use the analysis work done by the Core Components workgroup when creating schemas, etc.

A major source of information for this effort was (and continues to be) Roger Costello's Best Practices website - www.xfront.com. This website addresses the positives and negatives of many schema design options, as well as providing analysis of the why behind those pluses and minuses. Over time, PESC

has additionally made use of the work of Human Resources XML (HR-XML), the Association for Retail Technology Standards (ARTS), and of course the World Wide Web Consortium.

Version 1.0 of this specifications document, the PESC Technical Specification for Higher Education, was released in September of 2001. This document described the design and modeling options that PESC felt were best suited for the postsecondary domain (our audience at that time), and illustrated their use. This document also noted alternatives to the "best of breed" options and where they may and may NOT be appropriate, as well as design and modeling options to avoid. The objective of this initial specifications document was to keep the schema design toolset simple, but effective.

As the education community learned from their own experience and the shared knowledge of other consortia, the specifications were added to and changed

See [Comparison](#), Page 7

interview

Interview with Katie Blot

Katie Blot is Chief Information Officer (CIO) for Federal Student Aid at the U.S. Department of Education. As Chief Information Officer, she is responsible for promoting the effective use of technology to achieve Federal Student Aid's strategic objectives through sound technology planning and investments, integrated technology architecture and standards, effective systems development, and production support.

Q What is your background?

A Prior to becoming CIO for Federal Student Aid (FSA), I was the Deputy General Manager for Federal Student Aid's Application, School Eligibility and Delivery Services business area, which is responsible for processing over 14 million student applications for federal student aid and delivering over \$60 billion in Title IV grant and loan programs to over 10 million recipients through approximately 6,000 postsecondary institutions. In this position, I was responsible for the development, implementation, and operations of the systems and processes that support the application processing and delivery of funds to postsecondary institutions.

Prior to joining the Department of Education, I worked for 10 years as a consultant for Bearing-Point (formerly KPMG Consulting) in its higher education group. In this time, I worked with hundreds of postsecondary institutions advising on student services, in particular administration of the Title IV delivery process.

I have a Bachelors of Art in Economics from The Johns Hopkins University.

Q Tell us a little about FSA.

A With over 1,000 employees located in Washington, DC, and across 10 regional offices, Federal Student Aid is the largest principal office of the Department of Education. Within Federal Student Aid, the Office of the Chief Information Officer focuses on providing high-quality, reliable infrastructure operations, implementing flexible business and technical architectures, and implementing high-value, tactical improvements to security management and to support, indirectly through the Federal Student Aid business units, our external customers of students, their families, schools and their services, and our financial partners and their servicers.

We have over 50 systems, including 30 business applications, eight major supporting tools, and 12 major websites and associated systems and support.

Q Quantify the biggest issue you face--technology, budget...

A As a government agency, I think our biggest challenge is establishing an environment that allows for testing out new technologies and methods and adopting a 'learn and adapt as we go' approach. This can be difficult given our constraints in procuring services and IT resources, where most activities traditionally have been fairly well defined before procurement. We are currently working on an acquisition strategy that will help us address this issue and support our desire to become a more flexible IT organization.

Q How much is spent on technology?

A Annually Federal Student Aid spends over \$250M on information technology and related services.

Q What is your IT strategy? What are you trying to accomplish? What are the barriers?

A We have spent a lot of time over the last several years developing a comprehensive IT strategy, including our target state technical, application, and data architectures. All of these architectures are driven by our customer and business focused Target State Vision and focus on implementing an environment with increased flexibility that would allow us to adapt more readily to ever-changing customer expectations and legislative requirements. The major components of this IT strategy include:

1. Reengineering and integration of our business applications by employing a service oriented architecture;
2. Expanding our inventory of enterprise assets and implementing supporting processes required to support those assets;
3. Implementing enterprise master data management processes and tools, including enterprise-wide deployment of common identifiers and other key data management concepts; and

4. Implementing a robust business intelligence solution.

Q How do PESC standards help you achieve your goals and/or mission?

A PESC standards help Federal Student Aid achieve its goals by working with the community of interest to create an education taxonomy. This allows Federal Student Aid to focus on data and metadata as an asset - within Federal Student Aid and within the education community. The use and reuse of this collaborative work reduces costs, reduces risk, and increases the quality of our development projects.

Q Quantify savings gained by using standards.

A Unfortunately, we do not yet have enough hard data to quantify savings. But we know that we gain significant efficiencies by utilizing standards.

Q Quantify process efficiencies gained by using standards.

A I would say that increased speed of development is how we would quantify process efficiencies gained by using standards. We are a major IT development office. We run systems to process financial assistance that are used by students, parents, and trading partners. Adopting standards allows us to come to a mutual agreement prior to the start of a project - this allows us to work "ahead" or reuse previous work. Standards allow us to increase the speed of development.

Q Do you require standards in RFP language?

A Yes. Federal Student Aid has adopted many standards ranging from data exchange methods to standards for testing and other lifecycle requirements. These standards are included in applicable Requests for Proposals to ensure consistency in outsourced work.

Q How many trading partners do you have?

A Federal Student Aid partners with over 6,000 postsecondary institutions (colleges, universities, trade schools, etc.), 35 guarantee agencies, over 3,400 lenders as well as third-party services for schools and lenders. All institutions of higher education and guarantee agencies exchange electronic data with Federal Student Aid, along with certain government agencies, state organizations, and other entities such as credit bureaus.

Q How do you handle trading partner communications?

A We exchange data with our partners in a variety of ways. Our primary method for data exchange is via a mailbox infrastructure that allows files to be sent bi-directionally. It also allows our partners to send files via one process, regardless of which Federal Student Aid system will receive the files. We also have some exchanges that are done via direct FTP and still others done via tape exchange. We are, however, in the process of phasing out all tape exchanges. In addition, we are currently working on a strategy to enable real-time data exchange where appropriate.

In the area of data exchange, we fully support the work the community is doing to establish data transport standards and look forward to participating in the further development of these standards.

Q What are the biggest technological concerns we face in higher education?

A I think some of the biggest concerns are those not unique to higher education: how to ensure security and privacy in a continually more open technological environment, how to get a robust network backbone in place to support greater and greater demands on IT and how to get ahead of the expectations of a consumer population that continues to experience dramatic increases in their 'technology-savvy.'

One concern related directly to education is how to meet the challenge of supporting the increased volumes of and demand for distance learning. At many institutions this means a fairly significant overhaul of

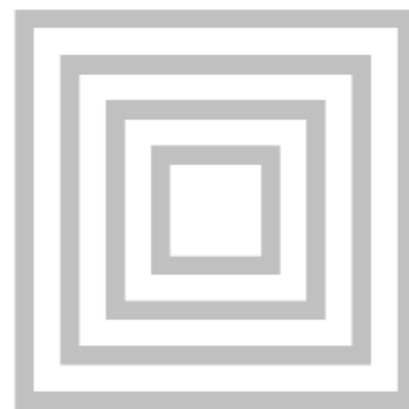
their existing technologies or an introduction of new technologies that need to be integrated into their environment.

Q How does FSA deal with privacy and security?

A As an organization entrusted with data about our customers and partners, privacy and security of that data is our top priority. We have robust controls across our entire information technology environment - data centers, infrastructure, and applications. We also have strong policies and procedures related to data access and data privacy, both at rest and in transit. Of course, the ever-changing nature of potential security risks means that you always have to be evolving your controls and methods of protection. We are constantly re-assessing our current environment and making improvements in this area, such as implementing stronger encryption standards and reducing the capacity for people to store data on mobile media. We are also in the process of creating a cyber-security unit within Federal Student Aid that will focus on proactively dealing with potential future data security issues.

Q Is interoperability achievable?

A Yes, I think we can achieve interoperability. The question is at what level - how far we can extend this? Regardless, one thing of which I am certain is that being a partner at the table with others who care about standards and are working to achieve interoperability benefits everyone.



Comparison, from Page 3

to reflect those experiences. Most features were found to be as good as was expected. However, some features turned out to be impractical to the point that few tools supported them (e.g. derivation by restriction), and their recommendation turned from “use” to “avoid”. The accumulated experience of the PESC community is reflected in both the version number (3) and title of our current specifications – the PESC Guidelines for XML Architecture and Data Modeling.

It is not hard to imagine that other standards groups and consortia have gone through a similar evolution of specifications. With that in mind, I’d like to relate to you some of the information from an article at XML.COM by Paul Kiel – “Profiling XML Schema”. For this article Mr. Kiel examined over 1,400 schemas from a number of organizations, some of which PESC consulted when developing its own specifications.

Mr. Kiel notes that only six design features are used in at least one-third of the schemas, indicating an inclination for simplicity. As stated previously, that was one of the original marching orders for the group developing the initial PESC technical specifications. However, 17 design features occur in 10 percent or less of those same schemas. Mr. Kiel offers that many of the designs showing little use would only be used in a highly-specialized situation. This is directly in line with PESC’s intent for its own specifications from the organization’s inception. PESC does not want to say “never” use something, nor will the organization espouse widespread use of complex or ambiguous design techniques. Some design features of XML Schema may not be appropriate for common use, but there may be something somewhere that we haven’t encountered yet where one of those techniques is the best fit.

Mr. Kiel also describes those schema design features for which tool support is not as widespread as other, more common, features. A summary of these design features follows.

“Avoided” Design Features

Of the 17 features listed in the article as “avoided”, PESC makes (rare) use of the five design features list-

ed below. Not a bad score at all!

SubstitutionGroup

substitutionGroups are used when defining a single structure for multiple loan types.

Nilable

This is used, for example, in cases where the need exists for the sender of an instance document to be able to indicate when an element that previously had a value, no longer has a value associated with it.

complexType restriction

A complexType restriction is used within the definition of a cosigner.

Abstract types

Abstract types are used when defining a single structure for multiple loan types.

Groups

Groups are used on three occasions – organization identifiers, addresses, and academic program codes.

THE SIX MOST COMMONLY USED DESIGN FEATURES

elementFormDefault=“qualified”

This provides namespace-qualified elements. PESC chose to use elementFormDefault=“unqualified”. This allows us to keep complexities related to namespace qualifications at the schema level, rather than at the instance document level. A PESC schema may import element definitions from a number of other schemas, but the format of the corresponding instance document is not affected, since the namespace of the element definitions is handled by the schema.

xsd:sequence

PESC schemas use this compositor most often, with xsd:choice being the second most frequently used compositor.

complexType extensions

PESC schemas make frequent use of complexType extensions since this allows re-use and extension of our data definitions. Note that PESC discourages the use of complexType restrictions.

See [Comparison, Page 8](#)

Comparison, from Page 7

Anonymous types

PESC schemas make little or no use of anonymous types, as named types lend themselves to extensibility and reuse.

simpleType restrictions

PESC schemas make frequent use of simpleType restrictions. For example, this feature is used when defining elements and restricting their data type to "string".

Enumerations

PESC makes use of enumerations (a defined list whose members are the only acceptable values for a data element) in cases where all of the values for an element are known and the range of values is fairly static.

PROBLEMS WITH TOOL SUPPORT

The following design features were found to be commonly used but might have problematic support among XML design tools. The features PESC schemas currently make use of are listed first. To date, no problems with the use of these features have been reported by the PESC community.

PESC schemas use the following out of the "commonly used but problematic tool support" category:

xsd:choice

Patterns PESC uses on 3 occasions

minInclusive

maxInclusive

whitespace PESC uses once with an explicit setting of "preserve" this is done mostly for documentation purposes.

fractionDigits

minLength

maxLength

PESC schemas do NOT currently use the following out of the "commonly used but problematic tool support" category:

attributeGroup

A default value for an element or attribute when a value is not provided

xsd:union

minExclusive

maxExclusive

length

xsd:list

CONCLUSION

In conclusion, PESC's choices of schema design features echo the conclusions in Paul Kiel's article. Simplicity has always been our primary goal. PESC continues to achieve this by the creation of reusable types that are accompanied by explicit facets (minLength, maxLength, fractionDigits), and where applicable, enumerated lists. In turn, these are put together in sequences that are appropriate to the education community. That has been, and will continue to be, one of the keys to our continuing success.

New Member

PESC Welcomes the following new organization to its membership.

Central Connecticut State University

The Member contact is Rich Bishop, director of financial aid/admissions

www.ccsu.edu

Technology Tidbits

and Standards Snippets

■ According to the Associated Press, about 35 states now run sites which collect details on state colleges, information on how to apply, and links to aid programs and state-sponsored scholarships. For some states, the Web portals are serious ventures: North Carolina spends about \$1-million a year to run its site, and more than 1.3 million people have registered for accounts.

■ A study, conducted by the American Library Association and the Bill & Melinda Gates Foundation, found that about 37 percent of libraries have wireless networks and 63 percent have high-speed Internet connections. The upsurge in bandwidth-hogging sites like YouTube has taxed libraries' Web connections, according to the study, and libraries without dedicated technologists aren't always sure how to satisfy their patrons' surfing needs.

■ Researchers from the University of California at Davis will use a \$750,000 grant to investigate why open-source projects produce clean code more quickly than proprietary software giants. The scholars plan to study several

UT Austin Internet Server 'SPEEDEs' Along

September 2006 volume included:

- 43,333 TS130 transcripts
up 23% over September 2005
- 34,620 TS131 acknowledgements
- 15,529 TS997 Functional acknowledgements
- 24,935 TS189 Admission Applications
- 5,520 TS138 test score reports
- 144,450 total transactions
Up 33% over September 2005

open-source projects in an attempt to discern how to avoid the pitfalls that slow down proprietary software development.

■ A report from the Pew Internet and American Life Project called "Teens and Technology" found that teenagers preferred new technology, like instant messaging or text messaging, for talking to friends and use e-mail to communicate with "old people." Along the same lines, students interviewed by The Chronicle say they still depend on e-mail to communicate with their professors. But many of the stu-

dents say they would rather send text messages to friends. See The Chronicle's full story. <http://chronicle.com/wiredcampus/index.php?id=1608>

■ **Princeton University has acquired three supercomputers which it placed in a research center.** Princeton's chemistry and genetics labs will now conduct research at the new center. Similarly, the University of Texas at Austin's Texas Advanced Computing Center will use a \$59-million grant from

the National Science Foundation to purchase and operate a new high-speed machine. The supercomputer is expected to be completed in 2007.

■ **OASIS members have approved the Reference Model for Service Oriented Architecture (SOA-RM) version 1.0 as an OASIS Standard.** SOA-RM provides an abstract framework for understanding significant entities and their relationships within a service-oriented environ-

SAVE THE DATE...

For the 4th Annual Conference on Technology and Standards, April 23-25, 2007 at the Wyndham Washington in Washington DC. With a spectacular line up of featured speakers already confirmed, next year's conference is already shaping up to be an event you cannot afford to miss.

Using Data to Improve Student Achievement

- *Aimee Guidera*, Director, Data Quality Campaign

Open Source, Learning and Patents

- *Michael Feldstein*, Assistant Director, Learning Network, State University of New York (SUNY)

Standards within the US Department of Education

- *Katie Blot*, Chief Information Officer, Chief Information Office, Federal Student Aid, US Dept of Education
- *Lee Hoffman*, National Center for Education Statistics, US Dept of Education
- *Ross Santy*, Deputy Assistant Secretary for Data and Information, Office of Planning, Evaluation & Policy Development, US Dept of Education

Data as a Resource - State Policymaker's Perspectives

- *Hans P. L'Orange*, Director, SHEEO/NCES Network and Director of Data and Information Management, State Higher Education Executive Officers

Bridging the Cultural Divide in Higher Education

- *Dr. Michael Zastrocky*, Vice President & Research Director for Academic Strategies, Gartner, Inc.

Learning Consortium, The e-Learning Environment

- *Rob Abel*, Chief Executive Officer, IMS Global

"I wanted to thank you and the entire sponsorship for the [Annual] Conference. This was the most interesting and useful conference I have ever attended. I have worked outside of student aid for approximately 11 years and my recent return was 3 weeks prior to this conference. I feel that this was excellent training for me...I am learning what systems [our partners] have in place in addition to the procedures we have here – then determining how we can make improvements or integrate programming to benefit the students and the schools.

-Conference Attendee, 3rd Annual Conference on Technology and Standards

FOR IMMEDIATE RELEASE

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National Transcript Center's Dr. Barbara Clements Appointed to PESC Board of Directors

Dr. Clements to Co-Chair New PESC Taxonomy Workgroup

October 9, 2005 (*Washington DC*) ~ The Board of Directors of the Postsecondary Electronic Standards Council (PESC) is very pleased to announce the appointment of Dr. Barbara Clements to its Board of Directors effective August 29, 2006. Dr. Clements, who serves as Chief Standards Officer at the National Transcript Center (NTC), is nationally recognized for her work with education information systems. Dr. Clements is regarded as a visionary leader in the development and implementation of data standards for both PK – 12 and postsecondary education. Prior to her position at NTC, Dr. Clements served as the Vice President for Education Services for ESP Solutions Group where she led the Federal Practice Group in Washington, DC. Prior to ESP, she served as project director for the Council of Chief State School Officers (CCSSO). Dr. Clements graduated from The University of Texas at Austin with a Ph.D. in Educational Psychology, Quantitative Methods and is a licensed Spanish teacher. She was the principal architect of NTC's data translation engine that facilitates the exchange of student record data when sending and receiving institutions use different data formats.

"You would be hard pressed to find a person that has made a bigger impact on the development and implementation of standards related to student records," said Mark Johnson, president of NTC. "Barbara Clements was there when SPEEDE/ExPRESS was created fifteen years ago, when schools needed help complying with the Family Educational Rights and Privacy Act (FERPA), and she's there today in the development and expansion of PESC's modern standards."

Dr. Clements' term on the PESC Board of Directors continues through June 30, 2007. Along with joining the PESC Board of Directors, Dr. Clements will simultaneously serve as Co-Chair of PESC's new Taxonomy Workgroup which is launching at the PESC Fall 2006 Summit on October 23 – 24, 2006 in San Diego, CA. The Taxonomy Workgroup will be Co-Chaired by Holly Hyland, Management Analyst with the US Department of Education's Federal Student Aid. The efforts of this group will be broken down into two phases: in phase one, the group will review the classifications of core components as listed in the XML Registry and Repository for the Education Community, to understand their structure and recommend any changes that may need to be made; in phase two, the group will expand the scope of their review to account for pK20 and recommend any changes that may need to be made.

For more information on the National Transcript Center, please visit www.TranscriptCenter.com.
For more information on PESC, please visit www.PESC.org.

About the National Transcript Center

The National Transcript Center was established to improve the efficiency, reliability, cost, and security of academic transcript exchange for K – 12 schools, state education agencies, colleges and universities, and co-academic organizations. Based in Austin, Texas, the National Transcript Center is a highly secure and highly scalable trading network. NTC offers privacy and identity protection that far exceeds today's offerings.

About PESC

Established in 1997 and located in Washington, D.C., the Postsecondary Electronic Standards Council (PESC) is a non-profit, community-based, umbrella association of colleges and universities; professional and commercial organizations; data, software and service providers; and state and federal government agencies. PESC's mission is to lead the establishment and adoption of data exchange standards in education. The goals of the mission are to enable the improvement of institutional performance and foster collaboration across educational communities in order to lower costs, improve service, and attain system interoperability.