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NOVA SCOTIA COUNCIL ON ADMISSION & TRANSFER AWARDED 1ST PLACE IN 20TH BEST PRACTICES COMPETITION

MyTRANSCRIPTS

NOVA SCOTIA'S ELECTRONIC TRANSCRIPT & DATA EXCHANGE SYSTEM

Washington, D.C. The Board of Directors of PESC is pleased to announce the Nova Scotia Council on Admission & Transfer (NSCAT) as 1st Place Winner of PESC's 20th Annual Best Practices Competition for its submission, ***"MyTranscripts | Nova Scotia's Electronic Transcript & Data Exchange System."***

From the award winning submission,

"Nova Scotia is home to eleven universities and colleges, with 29 campuses located throughout the province. Each year over 13,000 students begin their post-secondary education journey at one of these institutions. Many of our students come from within the province, but over 40% are attracted here from elsewhere in Canada and over 145 countries worldwide. The MyTranscripts Hub is an integral part of the success of the MyTranscripts solution. It provides secure and reliable delivery of transcripts among the member institutions. MyTranscripts (Phase 1) is fully implemented at the ten institutions that admit students directly from high school."

"The Nova Scotia Council on Admission and Transfer is honoured to be awarded 1st Place in PESC's 20th Anniversary Best Practices Competition. We would like to thank all our project partners hard work and ongoing commitment, as well as the Government of Nova Scotia for their support of this initiative," states Ruth Blades, MLIS, PMP - Operations Manager, Nova Scotia Council on Admission & Transfer. ***"Our success would not be possible without the standards developed and maintained by PESC, and we look forward to continuing to support the development of these tools that facilitate post-secondary data exchange,"*** she continued.

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

Francisco Valines, Director of Financial Aid at Florida International University and PESC Board Member (former Board Chair), stated in scoring the submission with a perfect score, “Wonderfully organized...amazing to see what they’ve accomplished for their students!”

The award-winning submission made by NSCAT is posted on the PESC website with prior winners at <http://www.PESC.org>. An Awards Ceremony will be held during the General Sessions at PESC's Spring 2019 Data Summit being held May 7-10, 2019 in Washington DC at the Dupont Circle Hotel.

About NSCAT

Established in 2016, the Nova Scotia Council on Admission and Transfer (NSCAT) was created to develop and manage collaborative systems that support student enrolment, mobility and success. For more information about NSCAT, please contact visit <https://www.mynsfuture.ca/>.

About PESC

ESTABLISHED IN 1997 AT THE NATIONAL CENTER FOR HIGHER EDUCATION & HEADQUARTERED IN WASHINGTON DC, 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/provincial and federal government agencies; professional, commercial and non-profit organizations; and non-profit associations & foundations.

LEADING THE ESTABLISHMENT & ADOPTION OF TRUSTED, OPEN DATA 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.

PESC IS SPONSORED ANNUALLY by (Diamond) [Credentials Solutions](#), [Digitary](#), [National Student Clearinghouse](#), [Oracle](#) and [Parchment Inc.](#); (Gold) [DegreeData](#); (Silver) [ECE](#). PESC partners include [AACRAO](#), A4L Community, [APEREO](#), [ARUCC](#), DXtera Institute, [EMREX](#), [EWP](#), [Groningen Declaration Network](#), [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](#) of the National Center for Education Statistics (NCES) of the 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 of [AACRAO](#), of the [NCES National Forum on Education Statistics](#), and of the [Groningen Declaration Network](#).

PESC HAS A STRONG HISTORY that includes AACRAO, 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 to the education community online free of charge at www.PESC.org.

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.

About PESC & CANADA

The Canadian presence and influence within PESC has existed since the very formation of PESC. As Canadian students cross provincial and international borders to attain their education, the need for institutions, software providers and systems vendors that support Canadian and international markets to ensure mobility and interoperability has never been greater.

The formation of the Canadian PESC User Group (CanPESC) in 2011 solidified the importance of Canada's role within PESC and drew together many Canadians from across the country to work towards a common goal. Its main mission is twofold:

- To encourage participation in PESC workgroups developing PESC APPROVED STANDARDS
- To promote and educate Canadian stakeholders on the importance of data standards and interoperability, thereby avoiding duplication of efforts, costs and of data standards.

As the voice and official committee representing Canadian interests, CanPESC also serves in a liaison role. It coordinates and communicates its efforts across all provinces and territories, and works closely with Canadian organizations such as the Association of Registrars of the Universities and Colleges of Canada (ARUCC).

THE CANADIAN INFLUENCE AND HISTORY WITHIN PESC

- In 1999 for PESC's 1st Annual Best Practices Competition, the Ontario Universities' Application Centre (OUAC) was awarded 1st PLACE for its submission, "Ontario Universities Electronic Transcript System (OUETS): A Model of an Electronic Standardization Initiative."
- In 2007, for PESC's 10th Year Anniversary, the PESC Fall 2007 Data Summit was held at the Ritz-Carlton Hotel in Montreal.
- In 2011, at the PESC Fall 2011 Data Summit held October 26, 2011 in San Francisco, PESC launched the Canadian PESC User Group.
- In 2012, for PESC's 14th Annual Best Practices Competition, the Ontario College Application Service (OCAS) was awarded 1st PLACE for its submission, "OCAS XML Transcript Initiative."
- In 2012, for PESC's 15th Year Anniversary Year, the PESC Fall 2012 Data Summit was held at the Four Seasons Hotel in Vancouver.
- From 2013-2015, OCAS' William McKee served on the PESC Board of Directors,
- In 2013, through establishment of CanPESC, PESC entered into a formal MOU with ARUCC, allowing ARUCC and PESC to attend each other's events without charge, thereby fostering a closer working relationship.
- In 2013 and 2016, OUAC's Doug Holmes and OUAC's Leisa Wellsman, respectively, were recognized with PESC's Distinguished Service Award.
- In 2017, for PESC's 20th Year Anniversary, the PESC Fall 2017 Data Summit was held at the Radisson Waterfront Hotel in Toronto.
- In 2018, at the PESC Fall 2018 Data Summit in San Francisco, Charmaine Hack, ARUCC Past-President and Chair of the ARUCC-GDN Student Mobility Project, served as Keynote Speaker.

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MyTranscripts: Nova Scotia's Electronic Transcript and Data Exchange System

Submission to the PESC 2019 Best Practices Competition

Prepared by: Ruth Blades, Operations Manager, Nova Scotia Council on Admission & Transfer, and Ross MacDougall, President, Concertia Technologies Inc.

Introduction

Nova Scotia is home to eleven universities and colleges, with 29 campuses located throughout the province. Each year over 13,000 students begin their post-secondary education journey at one of these institutions. Many of our students come from within the province, but over 40% are attracted here from elsewhere in Canada and over 145 countries worldwide.

With this volume of enrolment comes a much higher volume of application processing with the accompanying quantities of paper documents. While all but one of the institutions have online/electronic application systems, much of the supporting documentation is still submitted in hard copy through the mail. Recognizing that time and resources could be better spent, the institutions received project funding from the Nova Scotia government to develop ways to improve application processes across the province.

The initial intent of the initiative was the development of a common application platform for all the universities in Nova Scotia; however, through consultation with application centres and institutions across Canada and New York, we quickly identified that building an electronic data exchange network would provide significant benefit to students and institutions, at much less cost. During the consultation process we were introduced to the PESC standards, and the benefits of using a format that would allow exchange beyond our borders.

Bringing all eleven post-secondary institutions together to work on this initiative was a primary goal of the project. However, as shown in the following table, the institutions vary greatly in size, programming, and technology platforms.

Through our support of NSCAT and the development of the MyTranscripts system, we are making it easier for students to apply to Nova Scotia post-secondary institutions, and easier for those institutions to get the information they need – quickly and easily – to make decisions on enrolment.

*Ava Czapalay
Senior Executive Director
Higher Education Branch
NS Labour and Advanced Education*

Institution (year founded)	Programming	SIS Platform	Enrolment (2018-19)
Acadia University (1838)	Undergraduate & Graduate	Ellucian Colleague	4,498
Atlantic School of Theology (1971)	Graduate – theological	Custom built	109
Cape Breton University (1974)	Undergraduate & Graduate	Ellucian Colleague	4,106
Dalhousie University (1818)	Undergraduate, Graduate & Professional (3 campuses)	Ellucian Banner	19,223
Mount Saint Vincent University (1873)	Undergraduate & Graduate	Ellucian Colleague	3,633
Nova Scotia Community College (1996)	Community college (13 campuses)	PeopleSoft Campus Solutions	10,720
NSCAD University (1887)	Undergraduate & Graduate - Fine Arts	Ellucian Colleague	910
Saint Mary's University (1802)	Undergraduate & Graduate	Ellucian Banner	7,030
St Francis Xavier University (1853)	Undergraduate & Graduate	Ellucian Banner	5,348
Université Sainte-Anne (1890)	Françophone – Undergraduate & Graduate university, and community college (5 campuses)	Blackbaud Student Information System	547
University of King's College (1789)	Undergraduate & Graduate – specializing in Journalism	Ellucian Banner	912

The speed with which any one institution can move to adopt new processes is impacted by its IT resource capacity and competing priorities within the institution. Therefore, the allocation of implementation support funds for each institution in the project budget ensured that all partners were able to participate and make use of this valuable new tool, without putting excess strain on their already tight budgets.

Collaboration

Collaboration is key to any initiative of this nature, and we would not have been successful without the committed and resourceful individuals that gave much time, expertise, and energy to the project.

A working group was established with representation from a variety of institutions: large and small; English and French; university and college; and urban and rural. We also included representatives from the Nova Scotia Department of Education and Early Childhood Development (NS EECD), as they were

the custodians of the NS public high school transcript data, and the Mi'kmaw Kina'matnewey schools' technology team (see Our Future below). This group worked through the technical specifications development, data mapping to the PESC XML schemas, system development, and user acceptance testing phases over the ensuing five years.

We also worked closely with our colleagues across the country, through many conference calls, emails, shared documents, discussions at meetings and conferences, and of course the CanPESC monthly calls. Without the support of others across the country we would still be thinking about how to move forward.

Concertia Technologies Inc., a locally owned and operated professional services company was contracted as our development partner. The team at Concertia helped us choose the best platform for our system, develop the necessary system code, support implementation at each institution, and ensured we adhered to the PESC standards throughout. They are invested in this system along with our institutions and will continue to support the ongoing growth of MyTranscripts.

Concertia is proud to have the opportunity to work with NSCAT in the development of the MyTranscripts solution – with a shared mission to deliver collaborative solutions for the benefit of student learners and post-secondary education institutions in the Atlantic region.

*Ross MacDougall
President
Concertia Technologies Inc.*

PESC – A Critical Success Factor

Our most important collaboration is with the Postsecondary Electronic Standards Council (PESC). The standards developed by PESC have allowed us to implement a systems integration pattern that affords us a great deal of flexibility, ease of use, and economies of scale for all stakeholder organizations. As a result, we believe that MyTranscripts is an excellent example of “innovation and ingenuity in the application and implementation of interoperable data standards for business needs”.

- **Flexibility** – Our MyTranscripts integration system employs a “hub and spoke” architecture with a canonical data model based on PESC’s approved standards. Member organizations map their data to the PESC schemas, which allows member organizations to perform the mapping once, as opposed to mapping multiple point-to-point interfaces for each institution. This level of flexibility also allows member organizations to join the network at their own pace.
- **Compatibility** – PESC’s standard definitions for High School Transcripts and College Transcripts, along with other supporting schemas, creates both a language and platform-neutral environment for data exchange. By employing PESC standards at the core of our integration hub, member institutions are insulated from the various technological implementations of the other member organizations.
- **Agility** – As more member organizations are brought onboard, our level of maturity in mapping data to and from the PESC standards increases allowing us to accelerate the rate of adoption in utilizing the MyTranscripts hub.

Without the standards that have been so thoughtfully and carefully developed, and updated by PESC,

our system would be isolated from the rest of the data exchange world. The open accessibility to the standards documentation provided our team with invaluable resources and a place to go back to whenever questions arose (and still arise). We can emphatically say that PESC is a key to our success.

Objectives

The original goal of MyTranscripts was to facilitate the application process, to encourage Nova Scotia's high school students to remain in the province to pursue post-secondary education. As it expands the system will also provide support to students looking for the best learning opportunities to meet their needs, regardless of where it is located. Ultimately, the system will enable the mobility of students, and their data, thereby making it more straightforward for them to pursue higher education, wherever that may take them.

MyTranscripts benefits everyone in the system:

- Students receive better service, with faster turnaround on decisions when applying to continue their education;
- Public schools and school boards have reduced costs associated with producing and sending paper transcripts (staff and supplies); and
- Post-secondary education institutions are:
 - making more timely decisions on applications;
 - freeing up staff/resources from entering data to providing more valuable services to students and applicants;
 - ensuring the receipt of accurate, valid data for students submitting applications for admission thereby eliminating the risk of fraud;
 - making decisions on accurate data without the risk of data entry errors; and
 - saving the costs associated with producing and sending paper transcripts (staff and supplies) to other institutions in Nova Scotia, and ultimately beyond our borders.

Through our recent partnership with the Council on Articulation and Transfer for New Brunswick (CATNB), and ongoing discussions with institutions in Prince Edward Island and Newfoundland and Labrador, we are also meeting our objective of increasing collaboration among post-secondary institutions in the Atlantic Canadian region.

The successful launch of the MyTranscripts initiative is a notable improvement to the post-secondary applicant experience across Nova Scotia. The use of technology to support information gathering is now more consistent and efficient, and it creates an opportunity for high schools and post-secondary institutions to partner on behalf of students in the progression of their learning.

Christine Arsenault
Director of Enrolment and Registrar
Nova Scotia Community College

Project Scope

Phase I – Public high school

The first phase of the project was focused on the exchange of Nova Scotia public high school records with the ten universities and colleges in Nova Scotia that admit students directly from high school (one institution is graduate level only, so is not participating in Phase I). All eleven institutions in the province participated, where appropriate, in the development, review, testing, and implementation of MyTranscripts.

This has been an incredible tool for our high school counsellors. The system offers an ease of function (secure network) that fully supports agency collaboration to the benefit of students.

*Maureen Banfield
Acting Guidance Specialist
NS Education and Early
Childhood Development*

In Nova Scotia, public school records are housed in eight instances of PowerSchool (one for each of the eight regional education centres in the province). The PowerSchool databases are all housed on servers at the NS Department of Education and Early Childhood Development (EECD). EECD undertook to build an integration database that extracts the relevant records from the eight PowerSchool instances, and serves as the “provider” of records. EECD also built their own interface for communicating with the hub that met their internal-to-government system requirements.

An information sharing agreement (ISA) was developed and signed by the twenty data exchange partners – the eight regional education centres, the NS Department of Education and Early Childhood Development, the ten participating, and the Nova Scotia Council on Admission and Transfer. The ISA is a key element in managing the privacy of Nova Scotia public high school students’ personal information in the exchange and admission process.

Other high schools in the province, including private, independent, and first nations, are currently not using the system, but the opportunity exists for any authenticated transcript provider to use the system for exchange of data. In some cases, the student body is too small to warrant the investment in getting the system set up; however, as our exchange reach expands to the rest of Canada there may be a greater incentive to participate. Our system has the flexibility to incorporate new methods of data submission, which could include a transcript submission portal for smaller institutions.

Phase II – Public post-secondary

The second phase of the project is focused on the exchange of official transcript data between the eleven post-secondary education institutions in Nova Scotia. As ten of the institutions are already receiving high school records through MyTranscripts, this next phase should require fewer resources and time.

In January 2019, NSCAT began working with the Council on Articulation and Transfer for New Brunswick (CATNB) to enable the use of MyTranscripts for exchange of official post-secondary transcript data in New Brunswick, among that organization’s eight member institutions:

- Collège communautaire du Nouveau-Brunswick;
- Crandall University;
- Mount Allison University;
- New Brunswick College of Craft & Design;
- New Brunswick Community College;
- St Thomas University;
- Université de Moncton; and
- University of New Brunswick.

CATNB is very pleased to partner with NSCAT on this interprovincial, collaborative initiative towards strengthening student mobility within the Atlantic region; this is one of the first agreements between jurisdictions of its kind in the country.

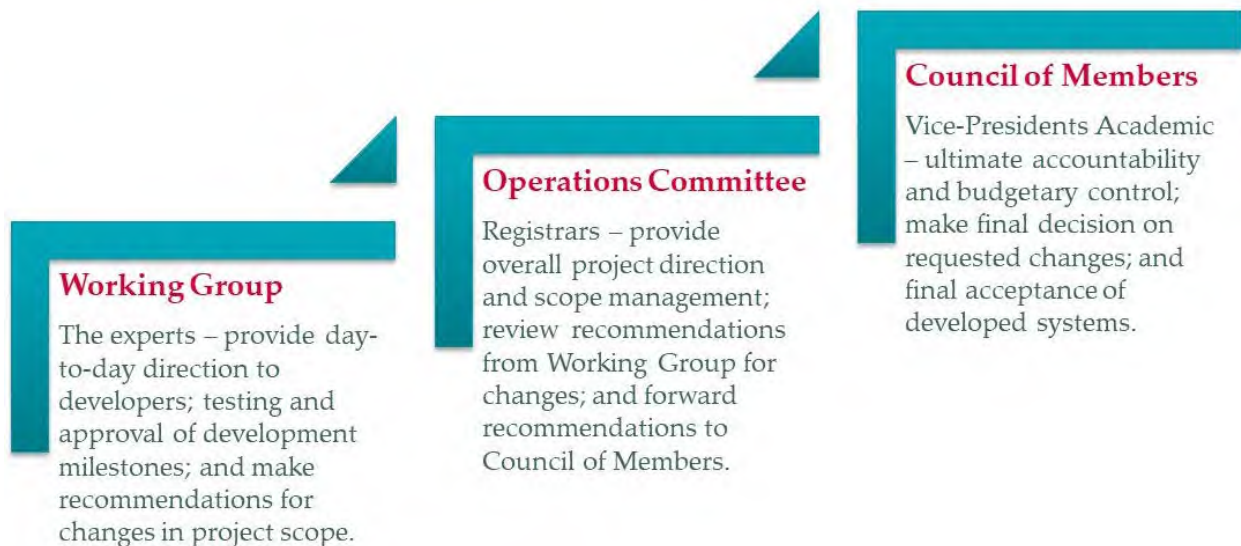
Phil Bélanger
Executive Director
CATNB

Inter-provincial exchange is an objective for this phase, and it will happen, but it may be 2020 before we begin crossing provincial borders with data. NSCAT and CATNB are both mandated to work towards keeping students in our provinces, therefore adjustments will need to be made to accommodate the broader exchange model. Information sharing agreements will need to be in place between each hub organization, their members, and between hub organizations to ensure responsibilities, privacy of personal information, and authorizations are clearly understood and approved.

Governance

Development

The development process for all NSCAT initiatives, including MyTranscripts, is managed through our governance structure:



A Management Committee, with members from both the Council of Members and Operations Committee, provides day-to-day direction to the Operations Manager on both development and operational matters and makes decisions on change requests. With significant overlap among these

groups, the communication of issues, challenges, opportunities, and resolutions is simplified.

All our work is coordinated by a single employee (Project/Operations Manager) who oversees all aspects of project development; manages project and organizational budgets; develops and implements marketing, promotion and communication activities; represents NSCAT nationally and internationally; coordinates meetings of all groups and committees; and provides hands-on support and day-to-day administration of our systems.

Development is also supported through Microsoft SharePoint © sites for each project, allowing easy access to documents, contacts, discussions, software releases and service requests. Each new project has a distinct site, to allow for differentiated user access.

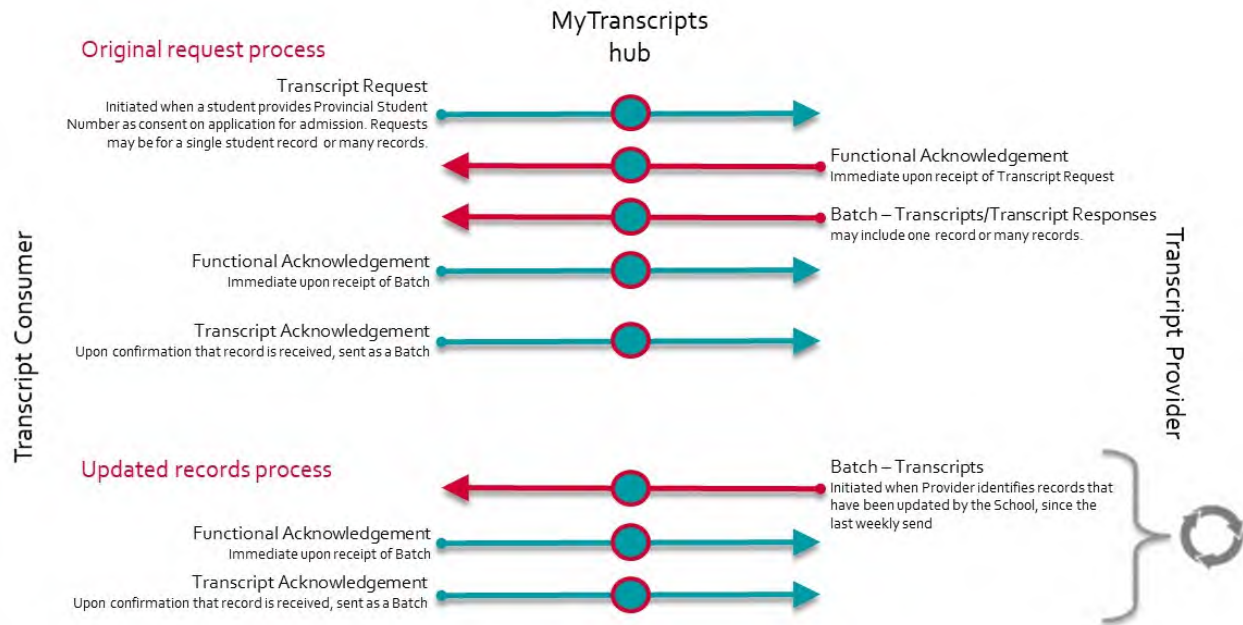
Operations

Now that the system is live, governance has moved into an operational mode. The Operations Committee reviews requests for system changes and makes recommendations, as appropriate, to the Council of Members which retains ultimate accountability for the system. The Microsoft SharePoint© site continues to be used as a means of communication with the member institutions, providing them with ongoing access to new software releases, and service requests. An annual meeting of all system participants is held in late May to review the successes and challenges of the past admissions cycle and make requests and recommendations for improvements to all parts of the process.

Process

Phase I – Public high school

Our process begins when a public high school student applies to a post-secondary institution. The student is asked to provide their Provincial Student Number (PSN) as a means of providing their consent for the institution to receive their record and any subsequent updates. The institution then creates a PESC XML formatted Transcript Request, and the process flows as shown in the following diagram:



- The Transcript Consumer (e.g. post-secondary institution) will create a Transcript Request with the correct headers and payload and send it to the MyTranscripts hub.
- The frequency of Transcript Requests is at the discretion of the institution; some submit a Transcript Request every day, while others submit a Transcript Request once a week, or even every two weeks. The frequency of requests is largely dependent on the volume of applications and can vary throughout the admissions cycle.
- The timing of Transcript Requests is also at the discretion of the institution. Most institutions submit their requests through an automated process at night, so the transcript files are waiting for them when they arrive the next morning. A few institutions run their requests during the day.
- The MyTranscripts hub will validate the Transcript Request headers, security tokens and whether the Request is compressed/encoded correctly. Once verified the hub sends the Request to the Transcript Provider.
- The Transcript Provider (e.g. EECD) will create a Functional Acknowledgment immediately upon receipt of the Transcript Request and send it to the MyTranscripts hub to indicate acknowledgement that it has received the request. This Functional Acknowledgement is in turn forwarded to the Transcript Consumer to indicate that the transcript request is being processed.
- EECD will match the students in the Transcript Request to student records in their database based on PSN and date of birth; if either do not match a Transcript Response is returned identifying the student for which no match could be obtained.
- The Transcript Provider will prepare an Academic Record Batch complete with either a Transcript or a Transcript Response for each record in the Transcript Request. The Transcript Provider will then send the Academic Record Batch back to the MyTranscripts hub which will

validate headers, security and whether the Batch is compressed/encoded correctly and send the Batch to the Transcript Consumer (e.g. the requesting post-secondary institution).

- Immediately upon receipt of the Academic Record Batch, the Transcript Consumer will create and send a Functional Acknowledgement to the MyTranscripts hub to acknowledge that it has received the Academic Record Batch. Once validated at the MyTranscripts hub, the Functional Acknowledgement is sent to the Transcript Provider to indicate receipt of the Academic Record Batch.
- The Transcript Consumer, upon successful decryption and validation of an individual transcript, will prepare a Transcript Acknowledgement for each individual transcript that is successfully processed, whether an original transcript or an automated transcript update. The Transcript Consumer will then send a Transcript Acknowledgment for each Transcript to the MyTranscripts hub as an Academic Record Batch. The MyTranscripts hub will validate the Transcript Acknowledgment and direct it to the Transcript Provider.
- The Transcript Provider, on a weekly basis, will prepare a transcript update for any previously delivered transcripts. The Transcript Provider will prepare a separate Academic Record Batch for each Transcript Consumer of all previously requested Transcripts that have been updated (e.g., changes in grades or courses). These transcript updates will have a TransmissionType of "Replace" to indicate that the transcript is an update.
- Immediately upon receipt of the Academic Record Batch, the Transcript Consumer will create and send a Functional Acknowledgement to the MyTranscripts hub to acknowledge receipt which is in turn forwarded to the Transcript Provider. Once the transcript update has been processed by the Transcript Consumer, a Transcript Acknowledgement is also sent.

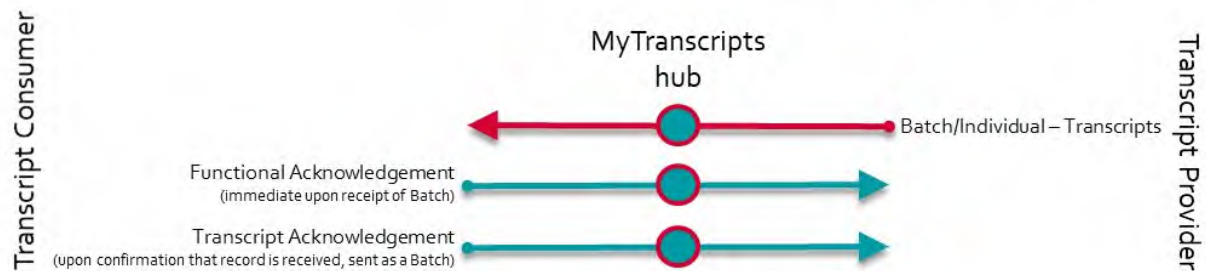
MyTranscripts allows us to automatically receive updated transcripts when new grades are available and at the end of the school year, without having to ask the applicants. As well, it allows us access to student records during the summer, when most schools are closed.

*Cynthia Robicheau
Registrar
Université Sainte-Anne*

Phase II – Public post-secondary data exchange

The process for exchange between post-secondary institutions is simpler than the high school process, with fewer steps and no automated updates. This process begins when a student makes a transcript request at the Transcript Provider and indicates that they want their record to be sent electronically to another post-secondary institution. The process then flows as follows:

Initiation – The process is initiated by the student when they request an electronic copy of their official data be sent to a Nova Scotian post-secondary institution

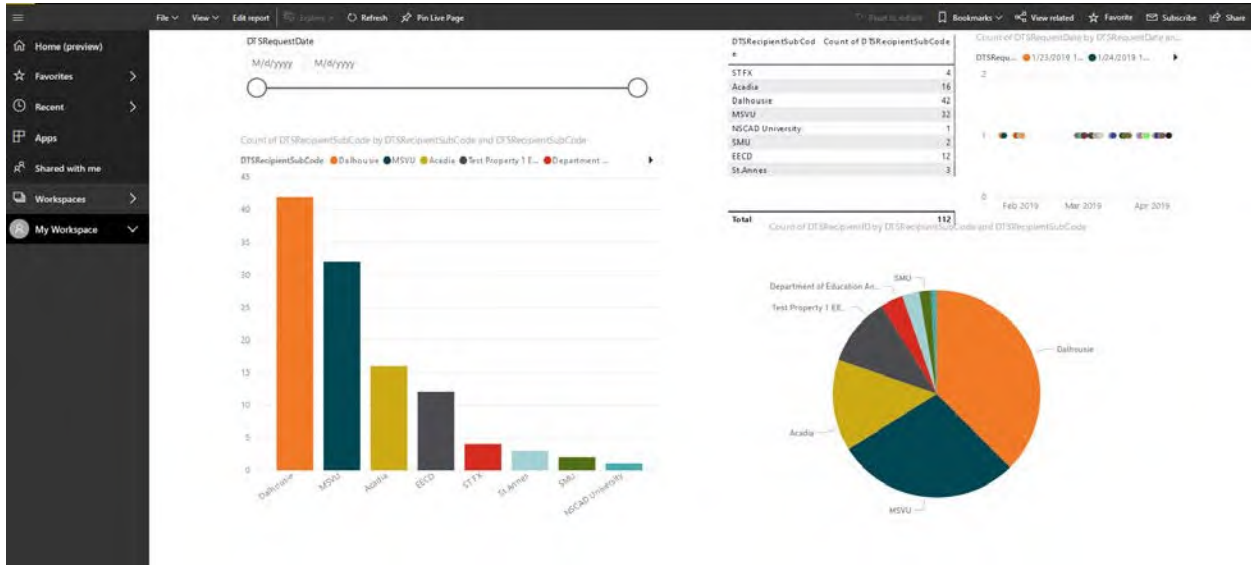


- The transcript exchange process is initiated at the Transcript Provider. The Transcript Provider will prepare an Academic Record Batch containing one or more transcripts. The Transcript Provider will then send the Academic Record Batch to the MyTranscripts hub which will validate the header, security token and whether the Batch is compressed/encoded correctly. Upon verification the MyTranscripts hub will then send the Academic Record Batch to the Transcript Consumer.
- Immediately upon receipt of the Academic Record Batch, the Transcript Consumer will create and send a Functional Acknowledgement to the MyTranscripts hub to acknowledge receipt of the Academic Record Batch which, following validation, is forwarded to the Transcript Provider.
- The Transcript Consumer, upon successful decryption and validation of an individual transcript, will prepare a Transcript Acknowledgement for each individual transcript that is successfully processed. The Transcript Consumer will then send a Transcript Acknowledgment for each Transcript to the MyTranscripts hub as an Academic Record Batch. The MyTranscripts hub will validate the Transcript Acknowledgment and send it to the Transcript Provider to indicate that the transcript has been received and processed.

MyTranscripts Hub

A key element of the MyTranscripts solution is the MyTranscripts hub, which is an integration server built using IBM Business Process Manager (BPM). IBM BPM supports the whole business process management lifecycle approach, which includes discover and document, plan, implement, deploy, manage, and optimize. IBM BPM was used during the initial stages of MyTranscripts Phase I to document the process, incorporating the PESC XML schemas and implementation models to help design the overall process flow. The MyTranscripts hub utilizes Business Process Execution Language (BPEL) flows to orchestrate the receipt, validation and forwarding of transcript requests and responses.

The MyTranscripts hub utilizes the capabilities of the BPM platform to manage all transcript request/response flows while maintaining the security and integrity of all end to end transcript flows. The hub provides central management visibility and control of all transcript requests and responses. With the implementation of Phase II, enhanced reporting will be supported by Microsoft Power BI ©, as demonstrated in the following simulated screenshot.

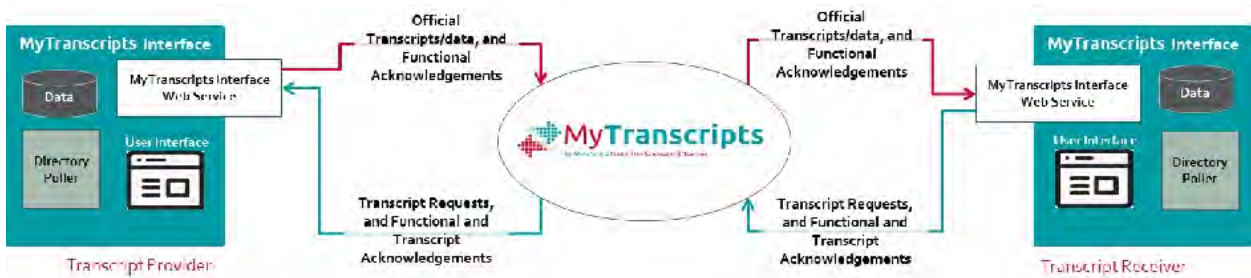


The MyTranscripts hub is currently situated in a secure computing facility located at the Dalhousie University Data Centre. All servers are virtualized and can be scaled to meet any throughput demand, as well as easily migrated to another data center facility as business needs change. Access to the server is secured via firewall and additional network routing protocols which restrict network access to the MyTranscripts Hub only to partner institutions. All MyTranscripts Hub webservices are secured using SSL encryption, and all MyTranscripts interfaces are secured Web Services Security (WS Security) to protect the web services from external attacks messages by implementing the principles of confidentiality, integrity and authentication.

The MyTranscripts Hub is an integral part of the success of the MyTranscripts solution. It provides secure and reliable delivery of transcripts among the member institutions.

MyTranscripts Interface

To facilitate easy communication between the hub and the post-secondary institutions, the MyTranscripts Interface was developed to allow for secure and reliable sending and receiving of transcripts among member institutions. Initially this interface is only being using by the post-secondary institutions, but in future it can be used by any transcript provider or receiver that is approved to connect to the MyTranscripts hub.



MyTranscripts allows partner institutions to send transcript requests and responses to the MyTranscripts hub, as well as receive batches of transcripts and acknowledgements. The Phase I

implementation allowed partner institutions to request and process high school transcripts through a command line interface. The Phase II implementation introduced the MyTranscripts Interface, which was a significant enhancement over the Phase I implementation, to provide a new user interface to track requests and responses, and added support for both high school and post-secondary transcripts.

The MyTranscripts Interface consists of a lightweight web service to allow for communication with the MyTranscripts hub together with a local web server application and database to allow each institution to view and manage their send and receive requests. The MyTranscripts Interface also includes a file transfer service (via secure ftp) to allow for ease of integration with the institution’s student information system. The Interface can be configured to receive transcript data as XML or convert the transcript data files to Adobe Portable Document Format (PDF) documents using a template, or an Excel file format.

The new user interface (as shown below) provides an enhanced view of transcript requests and responses. Users can securely view all transcripts, and filter based on the sending or receiving institution, as well as those that have been submitted, in progress, completed or any failed requests or responses. Users will also have the ability to select an individual record from a batch of records and download it locally, in their chosen format, which will be valuable during critical application deadline periods.

The screenshot shows the MyTranscripts web interface. At the top left is the logo with the text "MyTranscripts" and "To track and manage your transcript requests". Below the logo is a "Filters" section with the following controls:

- Dest:** A text input field containing "Destination".
- Type:** A dropdown menu set to "All".
- Time:** Two date pickers labeled "From:" and "To:" with the format "mm/dd/yyyy".
- Status:** Four radio buttons for "Submitted", "InProgress", "Completed", and "Failed".
- Buttons for "Apply Filters" (blue) and "Clear All Filters" (orange).

Below the filters is a "Refresh Table Data" button. The main content is a table with the following data:

Batch Id	Transcript Type	Source	Destination	Created On	Last Updated On	Status
0c1032e0-9e2b-11e7-9ce3-005056c00001	Inter University Transfer	Dalhousie	SMU	09/13/2018 12:40:29	09/17/2018 10:45:50	In Progress
0c1032e0-9e2b-11e7-9ce3-005056c00002	Inter University Transfer	Dalhousie	SMU	09/15/2018 21:23:26	09/15/2018 21:23:26	Submitted
0c2456e0-9e1x-11a6-9de3-005056c00002	Inter University Transfer	SMU	Dalhousie	09/15/2018 21:14:06	09/15/2018 21:14:06	Completed

The MyTranscripts Interface provides a high degree of flexibility to the institution:

- As transcripts are received at the institution, they can be directly imported into the Student Information System through a manual process or automatically imported through the secure ftp facility;
- Transcript requests and responses can be managed through the MyTranscripts user interface; and
- Transcripts are available in a variety of formats including PESC formatted XML, Adobe Portable Document Format (PDF), or Microsoft Excel.

The MyTranscripts interface is built in Java 8. It utilizes an Apache Tomcat application server and supports a variety of relational database formats including MySQL, Oracle and Microsoft SQL Server.

PESC Standards Employed

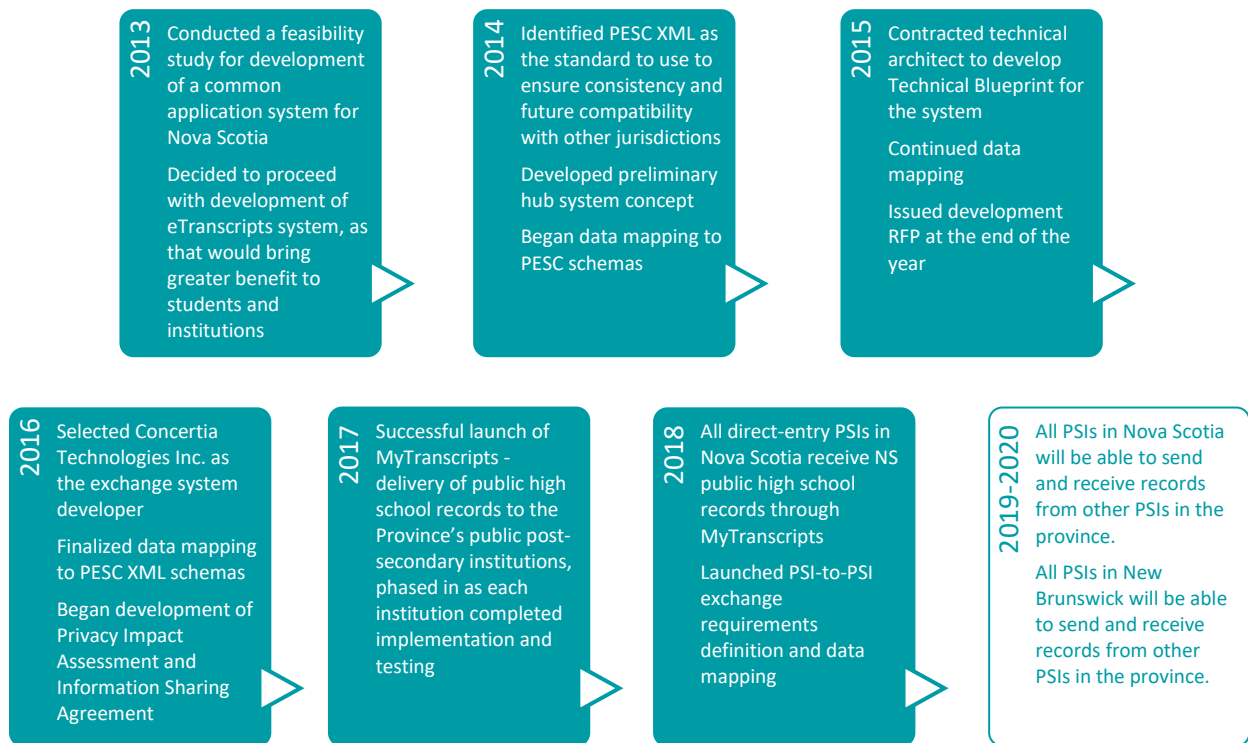
For Phase I – Public High School, which began in 2015, the following standards were used:

- High School Transcript - Version 1.5.0
- CoreMain - Version 1.14.0
- Academic Record Sector Library – Version 1.11.0
- Functional Acknowledgement - Version 1.2.0
- Request and Response of the XML Transcript - Version 1.4.0
- Batch XML Transcript - Version 2.1.0
- Data Transport Specification (DTS) - Version 2
- Data Transport Standard v 2.0 Specification

With the launch of Phase II – Public post-secondary, we are also using:

- College Transcript - Version 1.8.0

Milestones



Outcomes

Institution Status

As shown in the table below, Phase I of MyTranscripts is fully implemented at the ten institutions that admit students directly from high school. Phase II is progressing with our first two institutions now live with the new user interface, and the rest tentatively scheduled for the next two years. Work is currently underway with our first two institutions to develop the capability of formatting academic records in the PESC College Transcript XML schema and sending them between institutions.

Institution	Phase I: Receiving High School Transcripts	Phase II: Receiving College Transcripts	Phase II: Sending College Transcripts
Mount Saint Vincent University	Live	Live	Spring 2019
Saint Mary's University	Live	Live	Spring 2019
St Francis Xavier University	Live	Spring 2019	Summer 2019
Université Sainte-Anne	Live	Spring 2019	Summer 2019
NSCAD University	Live	Spring 2019	Fall 2019
Atlantic School of Theology	n/a	Summer 2019	Fall 2019
Dalhousie University	Live	Summer 2019	Fall 2019
University of King's College	Live	Summer 2019	Fall 2019
Acadia University	Live	Spring 2019	Fall 2020
Cape Breton University	Live	Spring 2019	Fall 2020
Nova Scotia Community College	Live	Summer 2020	Fall 2020

Return on Investment

After one full-year of operations it is difficult to identify any monetary return on investment for any specific institution. However, we know that between September 2017 and September 2018 over 11,500 high school records (including updates) were delivered to post-secondary institutions in Nova Scotia through MyTranscripts. So far in the 2018-2019 admissions cycle, 6,800 records (including updates) have been delivered through MyTranscripts, which would predict an increase of 20% over last year. With this volume of exchange, our objective of student retention in Nova Scotia is well on its way to being achieved.

Our schools are becoming reliant on electronic records. One has used this new service as an incentive to move from a paper-based file system to an electronic file system. Five institutions are loading the XML data directly into their student information systems, and one is pushing PDFs directly to their electronic file system, thereby eliminating the printing and filing of thousands of documents. While others are still printing the PDF transcripts, the electronic delivery has allowed them to improve the turnaround on applications for admission, reduce the volume of incomplete applications, and enable their staff to

focus on higher value services for students.

As we move forward with exchange between institutions, many of our schools are taking the opportunity to review the information included on their paper transcripts, reassess their transcript processes, and improve their policies with regard to release of records. In an environment of constant improvement, reduced budgets, and increasing demands, our institutions see the value of electronic data exchange, and how it can allow them to provide better service with minimal investment.

Our Future

MyTranscripts will continue to be expanded to include additional transcript providers and receivers, as well as new data types.

Mi'kmaw Kina'matnewey (MK) an organization of chiefs, staff, parents and educators who advocate on behalf of and represent the educational interests of their first nations communities, participated in the planning stages of Phase I of development. We will continue to work with MK over the coming years to enable students enrolled in MK managed high schools to use MyTranscripts to submit their transcripts to post-secondary institutions in Nova Scotia.

Enabling the exchange of transcript data, high school and post-secondary, among institutions in all Atlantic Canada is a major objective for the MyTranscripts system. The next step will be the exchange of post-secondary records between universities and colleges in Nova Scotia and those in New Brunswick, to be followed by the exchange of high-school records between the two provinces. We will also be working with universities and colleges, and providers of high school records in Prince Edward Island and Newfoundland & Labrador to bring them into the MyTranscripts exchange network.

Ultimately, the flexibility of MyTranscripts will allow the exchange of data with any authenticated provider or receiver. We have begun discussions with EducationPlannerBC to look at how universities and colleges in our two provinces can exchange data and will continue to have discussions with other hubs in Canada including the Ontario Universities' Application Centre (OUAC), Ontario College Application Service (OCAS), ApplyAlberta, and the Saskatchewan government – all of whom use the PESC standards for their data exchange activities.

Additionally, NSCAT is a supporter of the ARUCC Groningen and Student Mobility project and will continue to work towards the development of a national data exchange system for Canada.

Linking Nova Scotia's post-secondary institutions to those across Canada, and around the globe, will take time and effort, but in the long run it will bring immeasurable benefits to all our institutions and students; and PESC standards will be a key element of our ongoing growth and success.

By using the PESC standards, we have enabled our member institutions to improve service to students, ensure accuracy of information, and increase collaboration with each other. As we expand our reach to other provinces and beyond, the value of using PESC's well established and globally accepted standards will be incalculable.

Kevin B. Wamsley, Academic Vice President & Provost, St Francis Xavier University & Chair, NSCAT Council of Members

As a member of PESC, NSCAT looks forward to contributing to the ongoing development of the PESC approved standards and collaborating with other users around the world as we all work toward secure global data exchange.

About NSCAT

The Nova Scotia Council on Admission & Transfer (NSCAT) is a collaboration of the eleven publicly-funded universities and colleges in Nova Scotia, in partnership with the Nova Scotia Department of Labour and Advanced Education. NSCAT serves as the organization through which collaborative systems that support student enrolment, mobility, and success are managed.

The work of NSCAT has been guided by the following Mandate, Mission, and Vision.

MANDATE - NSCAT is a collaboration of the 11 publicly-funded universities and colleges in Nova Scotia, in partnership with the Department of Labour and Advanced Education. NSCAT serves as the organization through which collaborative systems that support student enrolment, mobility and success are managed.

MISSION - NSCAT promotes the use of its collaborative systems throughout the education sector in Nova Scotia – secondary and post-secondary – and works with its stakeholders for the benefit of learners to ensure smooth transitions from secondary to post-secondary and post-secondary to post-secondary.

VISION - Nova Scotia students and post-secondary institutions have access to systems that are easy to use, provide good processes, are cost effective, are easy to improve and flexible to change to match markets, and support mobility of students in their pursuit of post-secondary education.

GOVERNANCE

NSCAT is governed by a Council of Members which receives support from a Management Committee, an Operations Committee, and one full-time employee (Operations Manager).

The Council of Members serves as the main policy-making, strategy, and objective setting body. The Council is made up of the Vice-President Academic level (or designate) for each of the eleven publicly-funded universities and colleges in Nova Scotia.

The Management Committee is comprised of the Chair and Vice-Chair of the Council of Members, the Chair and two members of the Operations Committee, and *ex officio* members who provide specialized input. This Committee provides direction for day-to-day activities of NSCAT.

The Operations Committee is composed of the Registrar level (or designate) from the eleven participating universities and colleges. The Operations Committee works closely with, and is supported by, the Operations Manager in executing the projects and day-to-day activities of NSCAT. Working groups are formed as needed for specific projects and activities.

Learn more about NSCAT and our other systems and services at: www.mynsfuture.ca.