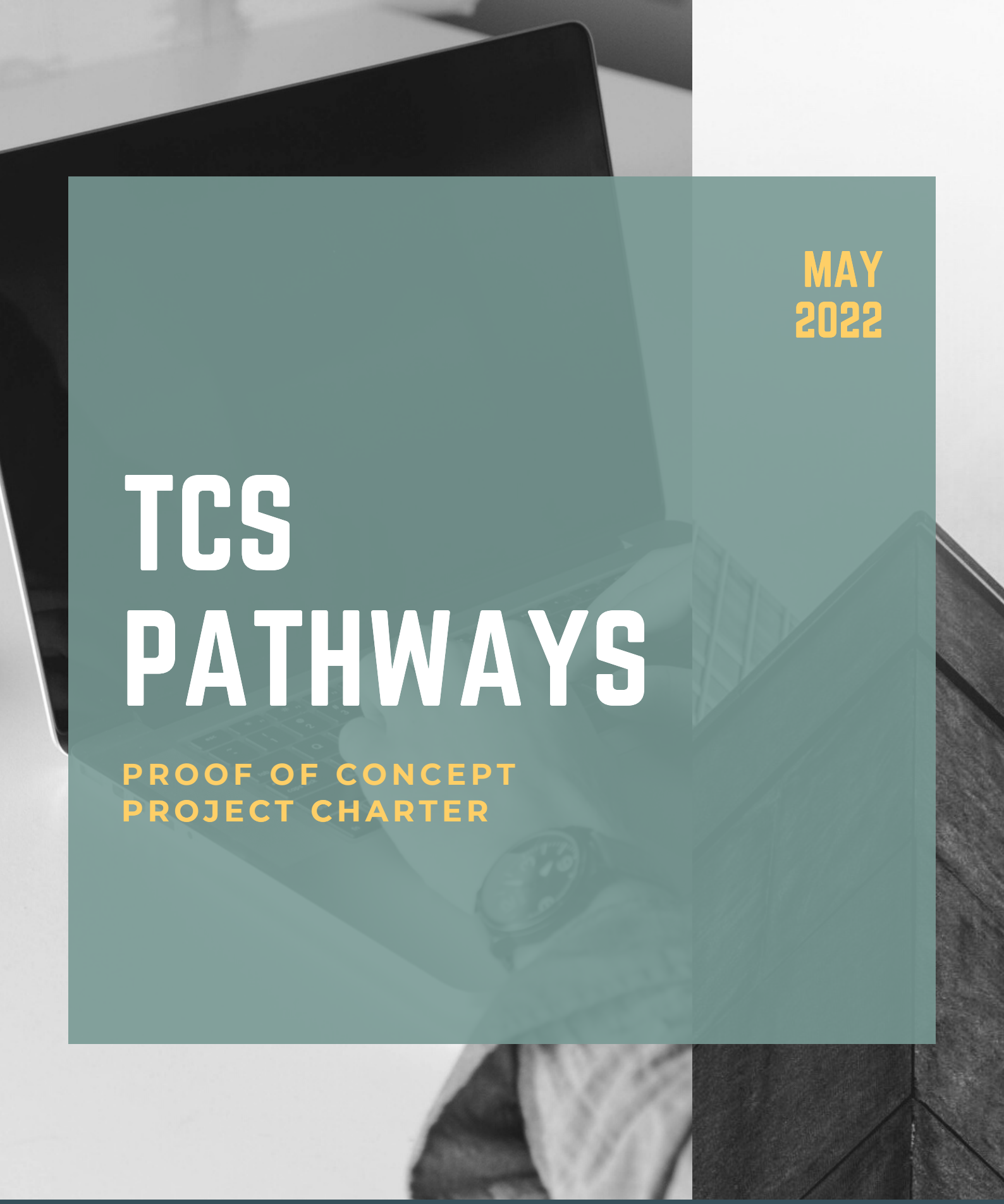

MAY
2022

TCS PATHWAYS

PROOF OF CONCEPT PROJECT CHARTER

BCCAT
BRITISH COLUMBIA COUNCIL ON ADMISSIONS & TRANSFER

Prepared by BCCAT

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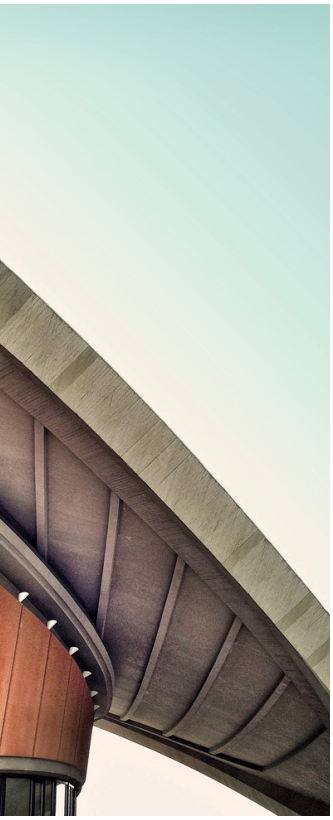


SUMMARY

BCCAT is an integral link between the BC post-secondary institutions, education ministries, and public and private education sectors. The Council's mandate includes facilitating admission, articulation, and transfer arrangements among BC Transfer System member institutions and managing online resources to assist institutions in creating transfer agreements and supporting students in their education planning. Their online resources enable students, and post-secondary faculty and staff to understand the requirements and constraints associated with such transfers. In support of this, BCCAT's Transfer Credit System (TCS) is the application that is used to manage articulations and BCCAT's BC Transfer Guide (BCTG) is the public website used to publish those articulations.

With the objective of promoting bridging and laddering opportunities for student achievement, and education pathways to and among PSIs, this document outlines the challenges and contexts which face our transfer students, our partner institutions, the Ministry of Advanced Education & Skills Training, and places "pathway options" with respect to other existing capabilities, such as Block Transfers, or Course-to-Course agreements. This report then considers the technology implications, and the subsequent next steps of how one option, the "Program Pathway" through the extension of the Transfer Credit System may be used as a mechanism to facilitate pathway creation and promotion. The Program Pathway solution sets the foundation for the technology work that could support other future projects, namely transition pathways, such as those between Indigenous and public post-secondary institutions, and non-credential pathways as well.

DOCUMENT AUDIENCE

The audience for this document is primarily:

- BCCAT
- Ministry of Advanced Education and Skills Training
- Pathway project stakeholders

WHAT IS THE PROBLEM?

AEST's digital service delivery identifies the following target outcomes for development of digital services and provide the lens in which we identify and assess pathway development work:

- Easy for everyone to access post-secondary education, skills training, and career opportunities.
- Individuals and employers make informed decisions that connect education and skills training to career journeys and opportunities.
- AEST can sustain ongoing improvements to its digital services based on a shared vision and understanding of collective resources and priorities.

BC's transfer system is ideally positioned, both contextually and technologically, to encourage skills development and provide students and post-secondary staff, advisors, and faculty with an easier way to identify and build transfer, bridging or laddering opportunities that facilitate informed decision making throughout a learner's post-secondary journey by connecting courses, programs, and transfer options. Students and post-secondary institution staff, advisors, and faculty need to be able to plan and/or help answer an array of questions regarding transfer and program pathways to better assist learners' next steps in pursuing their education objectives. There already exists system-wide, institutional processes and capabilities to assist with this work and partner organizations wherein information can be effectively and efficiently cross-utilized.

COMMON SCENARIOS AND CHALLENGES

Students often face the following scenarios or transfer contexts:

#	Scenario Description
1	A student having completed courses at one PSI would like to see what credit they could receive at different PSIs, in different programs.
2	A student having completed a program at a PSI would like to see if there is a similar program to which they can transfer at another institution, and what specific credit gaps they might need to fill.
3	A student having completed a program at a PSI would like to see what next steps are available to further their education in that field of study.

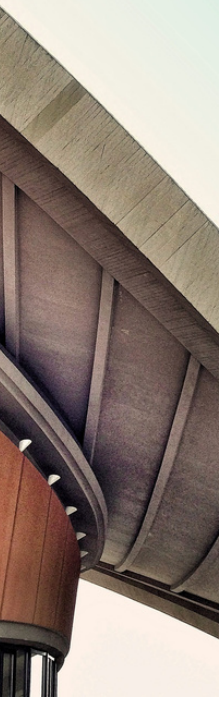
Table 1: Student Scenarios

From the post secondary institutions' perspective, they are seeking to alleviate or mitigate the following challenges:

#	Challenge Description
1	It is not uncommon for a PSI to spend a considerable amount of time (i.e., 12 to 18 months) developing a pathway agreement as it makes its way through the PSI's internal approval channels.
2	There is no automated nor maintained electronic workflow. Development of a pathway agreement is often impeded by a paper-based and people-dependent processing. Subsequent changes to course(s) specific to that program pathway or changes to a program itself are not easily accommodated. Maintenance is manual and ad hoc at best and is reliant on staff to be attuned to and proactive in alerting partners to curricular changes occurring within their PSI.
3	Staff turnover has a negative impact. Staff provide the knowledge retention. Loss of staff results in loss of knowledge. This impacts the requisite communication to partner PSIs regarding change impacts on pathways, and what may need to be addressed by the partner PSIs.
4	Many of the current agreements are extremely vague on key elements such as course equivalences, type and applicability of credit to a program, admissions standards, etc. An example is the Block Transfer agreements information on the BC Transfer Guide.

Table 2: Institution Challenges

The intention is to address the above scenarios and challenges via the definition and implementation of an IT solution, "Program Pathways". The report will also identify how the solution could lay the foundation for a functional extension that supports a broader scope or definition of bridging or laddering opportunities in future.



BCCAT WEBSERVICES

BC TRANSFER GUIDE

The BC Transfer Guide (BCTG) website provides access to a comprehensive online searchable database of courses and programs with documented and verified transfer agreements between BC Transfer System (BCTS) members. The website provides publicly accessible information on well over 300,000 established credit transfer agreements, and serves as a key resource for students, academic staff, and faculty within BC, across Canada, and beyond. Specific transfer policies of member institutions can also be found on the BC Transfer Guide.

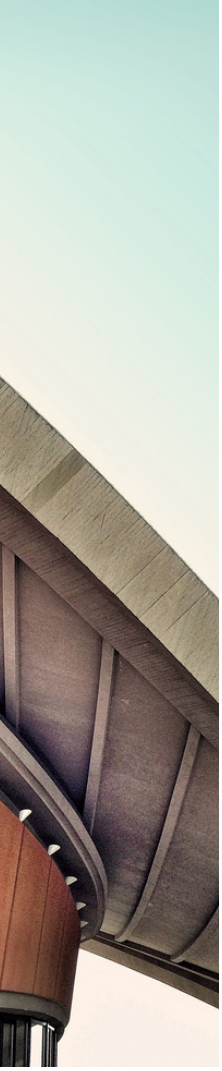
In addition to facilitating the post-secondary pathway planning needs of transfer students, the BC Transfer Guide facilitates and documents articulation decisions of post-secondary faculty and 65 provincial articulation committees. By providing public access to the credit transfer agreement information that would otherwise remain inaccessible within internal student information systems at each post-secondary member institution, the BC Transfer Guide enables and transforms pathway planning and development conversations between and among potential students, admissions staff, program faculty and advisers, and academic administrators.

In 2021, the BC Transfer Guide expansion saw the inclusion of 60,000+ pan-Canadian and international course-to-course equivalences, the Adult Basic Education course transfer search, and the English as an Additional Language course transfer search. This expansion is continuing with the planned inclusion of all pan-Canadian and international equivalencies for all 39 BC Transfer System member institutions over the next few years.

TRANSFER CREDIT SYSTEM

The Transfer Credit System (TCS) is a system-wide web-based application that employs a workflow that facilitates the creation and maintenance of course-to-course articulation agreements, Adult Basic Education equivalencies, and English as an Additional Language equivalences within the BC Transfer System and results are published in real time on the BC Transfer Guide.

The TCS is a technologically supported business process that is utilized by, and familiar to, all BCTS members and acts as a system repository for BC's transfer agreements and supporting materials.



In 2018, the “atomic” TCS was released, an overhaul of the previous data model and workflow with data structured to match course definitions in student information systems, greater automation allowed for changes to a course, outline, or effective dates to be automatically applied to all impacted sender and receiver agreements and affected PSIs notified immediately. The application minimizes challenges associated with human error, staff turnover, and disparate systems. In May 2022, the TCS ireleased a dashboard feature with KPIs reporting on articulation activity within a department, across the PSI, and sector.

The TCS allows for consistent decision making by and among our post-secondary partners, and efficiently manages, maintains, and collects of articulation agreements between BC Transfer System members . It also allows for BCTS members to articulate, store, and publish course equivalencies they have granted to non-members across the world which serves as a resource among TCS users as well as for PSIs across Canada and internationally to inform their respective decision-making on credit awarded for courses from and to BC PSIs.

TRANSFER CREDIT SYSTEM APIS

TCS APIs enable PSIs to use the TCS for more discrete institutional functions as desired to meet their administrative needs and serve their specific audiences. Through TCS APIs, PSIs can retrieve and filter data on published articulation decisions for internal use.

Post-secondary institutions can currently deploy a PSI-specific version of the course-to-course articulation data from the TCS onto their own respective websites. Prospective transfer students who are on a PSI website and the respective faculty, student advisors, and registrarial staff are able to access articulation agreements specific to that particular PSI.

In Summer 2022, there will be a widget available that will make this tool even more easily deployable for PSIs, requiring minimal resources from a PSI’s IT and Communications department. This functionality maintains the integrity of the TCS workflow and database to ensure documented, verified and maintained information on “guaranteed” credit transfer equivalencies and pathways, while enabling individual institutions to customize tools for their specific audiences and needs.

CURRENT GAPS

The table below identifies the gaps in the overall laddering and transfer capabilities available to students and PSI staff and faculty.

#	Transfer Type / Tools	Gaps
1	Course-to-Course	• Shows course equivalencies but not how those courses belong to program or lead to a credential. • Students typically register for a program and identifying to which program their current courses could contribute would be helpful.
2	Block Transfer	• Only highlights possibilities if an existing Block Transfer agreement is in place. • no workflow solution. • No change detection or management. • There is no inter-relationship with courses. • Is effectively a "label to label" transfer – there is no underlying verification or analysis. • Only high-level details available on the BC Transfer Guide. • Manual evaluation required with Course-to-Course articulation agreements available, but no coverage or gap analysis at the "course group" or program level.
3	Degree Audit	• Evaluation of a set of completed courses against a credential's course requirements. • Internal to the institution. • Not all PSIs have this software. • Affordability is a factor.
4	Degree Partnership	• Focus is on a sending institution's completed associate degree, diploma, or certificate to a research university degree. • The target credential is a four-year degree. • It is typically a pre-defined, signed, joint agreements so limited options for Sending institutions. • No workflow solution. • No change detection or management.
5	High School Transfer	• Course focused. • Only high-level details available in the BC Transfer Guide.
6	Indigenous Pathways	• Data not available in TCS or on BC Transfer Guide • Information on transition pathways from Indigenous institutions to BC public post-secondary institutions may be collected respectively by the parties to a particular agreement or pathway. Further exploration required.

Table 3: Gaps in Existing Transfer Types & Tools

DIFFERENTIATION BETWEEN A PROGRAM PATHWAY & CURRENT BLOCK TRANSFER

Currently, maintenance of Block Transfer data is supported by TCS. However, the business rules regrading the pre-requisites for creating a Block Transfer agreement are limited. Unlike course-to-course articulation within the TCS, there is no workflow that PSIs use for Block Transfer and Degree Partnership articulation, nor is there change management or detection functionality. For these types of transfer options, the TCS is in effect an agreement between a label referencing one institution's program and a label referencing another institution's program. There is no support for associating courses with either program, nor is there a function to perform a gap analysis between the two programs identified. In 2018, a change in the TCS data model to atomic has made a course-detail level pathway solution technically feasible.

TCS FOR PATHWAYS

PROOF OF CONCEPT

Over the next two years, a key outcome is to develop a proof of concept of the TCS Pathways application and aggregate BC Transfer System program pathway agreements, at a course-detail level, from select PSI partners into the application for publication on the BC Transfer Guide.

The understanding of a transfer pathway can be quite broad. It is unlikely that a single concept or solution will address all the gaps. We can narrow the scope by initially focusing on program laddering and bridging opportunities, and refer to this as "**Program Pathways**". However, we will want to ensure we have a "Pathways" foundational structure that can be extended later on to accommodate other types of pathway opportunities.

Aggregation of the program course-detail level data and program pathway agreements into the TCS and the use of a workflow and application similar to one that the PSIs already use with course-to-course articulation will allow transfer students and post-secondary institutions access to a repository of comprehensive, consistent, accurate, and current transfer information and agreements.

The channels of communication to internal units, from Faculty's to Registrar's office to student advisors, and to external units at partner PSIs and ultimately to BC transfer community and BC students will be clearer and systematic, allowing our BC Transfer System to provide better support to our transfer students by reducing unnecessary barriers and creating more awareness of opportunities available to a BC student.

Given the existing TCS capabilities, providing a management platform for Program Pathways in TCS could be done by leveraging many of the existing workflow processes and features already in place. The sections below outline the implications to using TCS as the platform for Pathways.

GOALS

The goals of the TCS Pathways Proof of Concept project are as follows:

1. Develop TCS Pathways application that will serve as a program builder and transfer pathway builder for program pathway transfer agreements;
2. Create a system repository for the programs and pathways created through the application;
3. Aggregate all available BC Transfer System data regarding program pathways into the TCS Pathways application, to create a centralized database of transfer agreements and technology-supported workflow for PSIs;
4. Allow for program pathway information in the TCS Pathways application to be publicly available on the BC Transfer Guide for prospective students and for faculty and staff in reviewing and developing pathways;
5. Publish substantive program transfer pathway[RF1] information on the BC Transfer Guide that keeps in mind ease of navigation, use, and comprehension by students and PSI registrar staff and program faculty and advisors;
6. Publish program transfer pathways on the BC Transfer Guide and develop an API for PSIs to have a program pathway search tool on their respective websites;
7. Leverage and integrate the data in the current TCS course-to-course application, the future TCS Pathways application, and from partner organization systems (eg. EPBC) to more effectively maintain currency of articulation activity and reduce multiple data sources for same or similar information and corresponding burden on PSIs resources and staff;
8. Provide EducationPlannerBC with accurate and current program pathway data for consumption and display in their search, plan, and apply systems; and
9. Provide training and resources to support the use of the TCS Pathways as a workflow for program transfer articulation activities within and among PSIs.

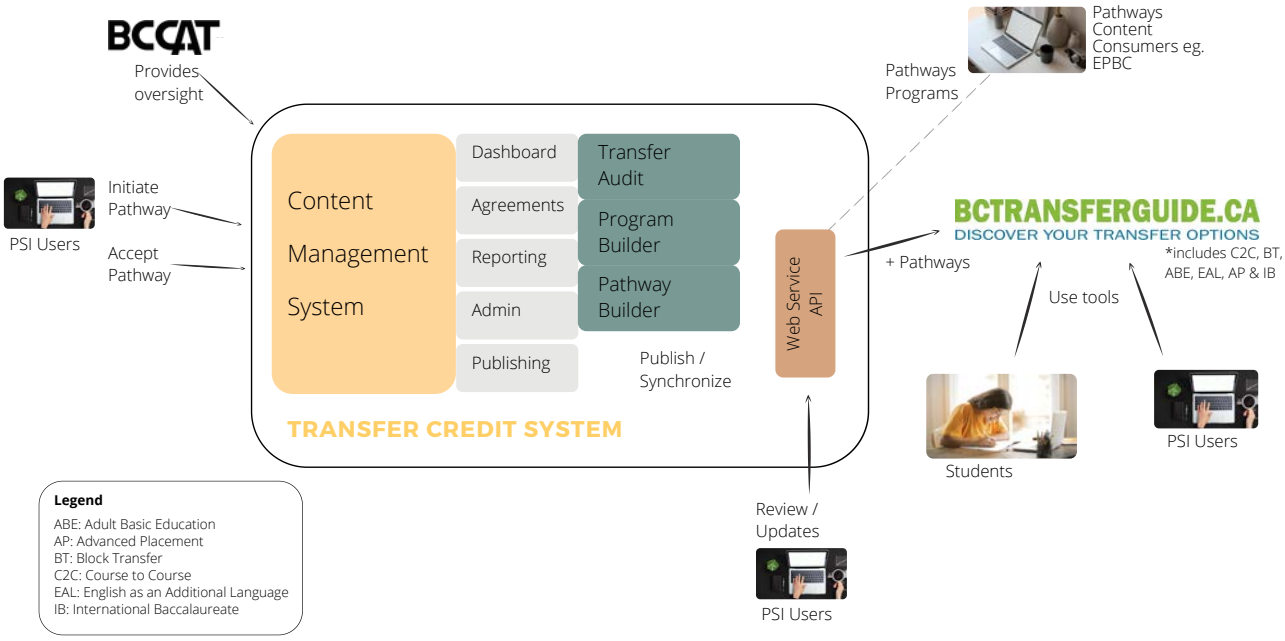


Figure 1: TCS Overall Context with Pathways

CONCEPT COMPONENTS

This section outlines the key components required to implement the Program Pathway.

REQUIRED COMPONENTS

To provide Program Pathways with the capabilities to meet the intended objectives, it will require the addition of the following three components:

Component	Function
Transfer Audit	Enables the comparison of a set of courses against a program's list of course requirements. This is necessary to be able to determine the coverage, perhaps as a percentage, between the sending program and the receiving program. Transfer Audit would identify any gaps in coverage.
Program Builder	Enables the definition of a program's course and other requirements. This is required as a Program Pathway includes a detailed comparison and acceptance of the two programs' requirements.
Pathway Builder	Enables the definition and implementation of the necessary Program Pathway elements, UI pages, workflow progression, and publication capabilities.

Table 4: Pathways Components Required

1 / TRANSFER AUDIT

This process and associated tool will enable users and institutions to know what course transfer coverage exists between a sending institution's program and a receiving institution's program, based on the course requirements of each. It will report what gaps exist in the transfer to the receiving institution's program.
This component has benefit in its own right since it will help students and PSI staff, advisers, and faculty understand where coverage exists and what gaps there are between any set of courses and a receiving program.

It is also a pre-requisite tool to have in place during the creation of a Program Pathway to illustrate for both the sending and receiving institution the coverage and gaps between their programs' conditions and requirements. This analysis step is required within the Program Pathway agreement process only to the extent that the gaps and conditions are recognized and accepted by both parties.

2 / PROGRAM BUILDER

Fully defined program, with course and other requirements defined for each program, allowing comparison of those requirements. Review and acceptance of the gaps is part of the Program Pathway acceptance process.

A tool, the Program Builder, can enable the definition of program and program requirements, in a manner that supports the comparison step of the Pathway creation process. A repository of institutional courses will be required. Participating institutions will need to define for their participating programs the specific course and other requirements of the program as a pre-requisite to creating a Program Pathway. See Appendix 1: Information Elements & Concept.

3 / PATHWAY BUILDER

The Pathway Builder component will enable:

- Creation and definition of a new draft Program Pathway
- Review and editing/commenting of the draft Program Pathway
- Notifications to request review or prompt further action as needed within the defined workflow
- If needed, comparison of the two proposed programs side-by-side, highlighting gaps
- Enablement and tracking of acknowledgement and acceptance of the Program Pathway as defined by the participating institutions.
- Change detection and management.
- Publication of accepted Program Pathways to the BCTG

A workflow management engine will be required.

OPPORTUNITIES & BENEFITS

The use of Program Pathways and its associated components Transfer Audit and Program Builder will give rise to the following opportunities and benefits in assisting students and PSI staff and faculty with bridging and laddering opportunities. In addition, it will address the gaps noted in Table 3: Gaps in Existing Transfer Types and Tools.

#	Factor	Opportunity / Benefit
1	Improvements introduced as a result of Program Pathways concept	• Will show how courses can transfer to a credential • Enhanced detail and validation for Block Transfer agreements, as the underlying courses are known • The Transfer Audit tool will help to determine the coverage between different institution's programs, and to indicate the extent of coverage for a current credential, or portion thereof (e.g. a set of courses) • Program Builder gives the ability to specify explicitly the make-up of programs, and to share this for use on BCTG • Program Pathways will provide an improved view of options available to students and PSI staff and faculty • Institutions have an easy method to create, agree and publish pathways
2	Usability within TCS	BCTS members are already familiar with TCS. Pathways will be an extension to a known platform.
3	Consequent usability within BC Transfer Guide	Students, PSI staff and faculty already access BCTG for course equivalencies. Now Pathways (and possibly Programs) will also be available on a familiar platform.
4	Single platform	Pathways will be added to an existing platform that already has significant information about BCTS members, external organizations, and courses. All workflow activity is captured in a single place.
5	Extension of support for Programs	With the Program Builder tool, a full definition of Programs within TCS will now be possible. This could be used to help populate BCTG and share information with other information publishers, including the institutions themselves.
6	Foundation for Expansion of Pathways	Assuming Program Pathways is introduced first, it will provide the foundation and experience to expand pathways to other credential types and non-credential pathways as well (ie. IAHLA Pathways).
7	Rudimentary degree audit capability	With the addition of program course requirements definitions via the Program Builder component, and the use of the Transfer Audit tool, TCS will then have a baseline degree audit capability.

Table 5: Benefits Arising from the Introduction of Pathways

RISKS

With the introduction of Program Pathways into the TCS eco-system, there are still risks that will need to be managed as the solution is developed and implemented. The following sections identify some of the key risks associated with the implementation of Program Pathways.

BCTS INSTITUTION MEMBERS

The premise of Program Pathways needs to be reviewed and accepted as a means to addressing identified goals and concerns, including the challenges outlined in Table 1 and 2. Institution stakeholders need to be able to endorse Program Pathways as an important first step to offering bridging and laddering opportunities.

Institutions will need to understand and accept new data management tasks required by Program Pathways: first, that such data is available; and second, the time resources that will be required to manage that data.

COSTS

DEVELOPMENT AND MAINTENANCE

A key benefit of using the existing TCS platform to support Program Pathways is that there is already in place an application architecture and workflow processes that can be extended.

Two key concerns are to ensure that the scope is managed and that the participating institutions are both supported and supportive of the proposed concept and implementation of Program Pathways as outlined. Proof of concept PSI partners will receive funding to support their participation in the development of the proof of concept. Additional staff support for outreach and business analysis for outreach and development outside of the scope of the specified components may increase costs as well.

TECHNOLOGICAL COMPLEXITY

Given the existing information and processes currently in place within the TCS, the addition of Program Pathways primarily represents an extension to this existing information and adaptation to the existing workflows, save for the Transfer Audit component.

COMMUNICATION & CHANGE MANAGEMENT

Assuming the Program Pathway concept as defined is agreed by the appropriate representative stakeholder groups, the subsequent challenge will be communicating how a Program Pathway can be used by both students and institutions. However, if the foundational premise for the need for a Pathway is correct, then BCCAT has a strong basis to develop and deliver the necessary communication materials to this end.

TAKE-UP AND TRAINING

The key risks to the take-up and use of Program Pathways include the following:

1. Participating institutions may not have the resources or incentive to define their programs within TCS as a pre-requisite to using a Program Pathway.
2. Institutions (both BCCAT members and others) may assess that it is easier for them to negotiate directly with the other institution to create a Pathway without the formalized requirements and processes enforced by using TCS. However, the major benefit of using TCS is that it addresses the institution challenges noted in section 2.1 and provides a centralized, easily accessible repository and workflow for all Program Pathway information.
3. There may be confusion amongst both student and institutional users with respect to the purpose of this new "capability", and how to effectively use it.

From a training perspective, the following key actions could be employed:

1. As far as is possible, make use of the current channels and forums already in place that are used for any changes or additions to the current TCS platform.
2. Extend the existing "Resources and Support" pages within TCS with descriptions of the new Program Pathway concept and implementation.
3. Produce readily available resources that clearly positions Pathways and its capabilities.

NEXT STEPS / RECOMMENDATIONS

The following sections outline some of the key next steps with regard to the Program Pathway solution.

STAKEHOLDER CONSULTATION

1. Consultation will include Ministry, its Digital Services advisory committees, PSIs, student groups, and other system level stakeholders, as appropriate.
2. Confirm partner PSIs participating in Proof of Concept Pathways project.
3. Confirmation on the Program Pathway concept, characteristics and properties, associated business rules and processes.

DEVELOP PROOF OF CONCEPT

The use of TCS will adequately meet the requirements for Program Pathways as outlined here. Any further exploration would likely only be required if there was some aspect or requirement that TCS and the associated eco-system could not fulfill.

the intention is to prototype the Transfer Audit capabilities to understand its intricacies and possibilities – given a Program with its list of required courses, determine the transfer coverage of a list of courses from another institution using Course-to-Course articulation agreements. This prototyping would be to assess approaches for implementing the gap analysis function of the Transfer Audit component, and understanding what algorithms are required to improve that functionality.

Upon completion, institutional users would be able to use the POC within TCS to begin Program Pathway data management. Feedback would be collected to identify subsequent phases, such as improved Program Pathway functionality, enhancements to support a broader range of bridging and laddering opportunities, and the public interface to Program Pathway content on BCTG.

PROOF OF CONCEPT PARTNERS

COAST MOUNTAIN COLLEGE

Project Sponsor

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Note: Operational responsibilities and commitments to be outlined in a subsequent project process document

APPENDIX 1: INFORMATION ELEMENTS & CONCEPT

PATHWAY INFORMATION REQUIRED

- ☐ Program title
- ☐ Program duration / if applicable, total credits required
- ☐ Credential awarded
- ☐ Course-level details for program & pathway agreements
- ☐ Max. transfer credits awarded
- ☐ Pathway admission requirements
- ☐ URL to more detailed information
- ☐ Specific campus?
- ☐ Terminal credential required to access pathway?
- ☐ Residency requirement?

PROTOTYPE CONCEPT