Next Generation Student Information Services

Project Summary Report: September 2019 – December 2020

(Updated September 2019)

ngsis.utoronto.ca

UNIVERSITY OF TORONTO

Overview

The goal of the NGSIS (Next Generation Student Information Services) Program is to create and deploy technological solutions that help students fully engage in rewarding learning experiences and achieve academic and personal success, and that help faculty and staff to provide a rich and supportive educational environment.

Through a targeted investment in information technology over the past seven years, NGSIS has introduced a wide variety of new services for students and staff, providing real-time information about all aspects of the student experience.

Broad consultations with users of these services have assisted the technical teams in shaping our products to meet the specific needs of students, staff and faculty. As a result, NGSIS is now actively supporting over **25 individual student and administrative applications in addition to the current ROSI system.** Included in this list are some of the most successful NGSIS services for students such as ACORN, Degree Explorer, Transfer Explorer, Convocation e-ticketing, Course Finder and Awards Explorer. NGSIS has also released a variety of larger applications for faculty and staff, including Curriculum Management (CM), Course Information System (CIS), ROSI Express, eMarks, StarRez (residence management), applications to streamline curriculum, courses and programs while offering improved processes and reports for student accounts.

With a base of successful applications now in place, there continues to be a multitude of opportunities to distribute, integrate, and further leverage solutions and associated underlying information for U of T.

Focus for NGSIS: Sept. 2019 – Dec. 2020

1. **NGSIS Platform Modernization:** Implement a new cloud-based data replica, allowing our systems to securely access ROSI data, and design and implement enhanced API functionality and ongoing API Management.

2. **Course Information System / Accommodated Tests and Exams:** Continued development and onboarding of departments for the Course Information System (CIS) and the introduction of a new application to support Accommodated Testing Services (ATS).

3. **ROSI Core Module Improvements:** Targeted improvements to ROSI Core modules, including implementation of the new Awards Explorer module and improvements in application performance allowing for increased development productivity and flexibility.

4. **Service Innovation:** Continued rollout of web applications such as a Student Timetable Builder, the Exam Invigilator application, improvements for Degree Explorer, and new features for ACORN.

5. **Curriculum Management:** Expansion of Kuali Curriculum Management (CM) and the U of T Calendar product (Curriculum Publisher) to additional divisions at U of T.

6. **Reporting, Planning and Analytics:** Expansion of data visualization services that allow insight into the student academic life cycle.

1 NGSIS Platform Modernization

For the past ten years, U of T had faced a crisis during its student registration period with its Student Information System (SIS). The server that supported the application, initially implemented in 1999, was running on an "end-of-upgrade-cycle" mainframe and the application could not scale readily during peak loads to accommodate thousands of registrations.

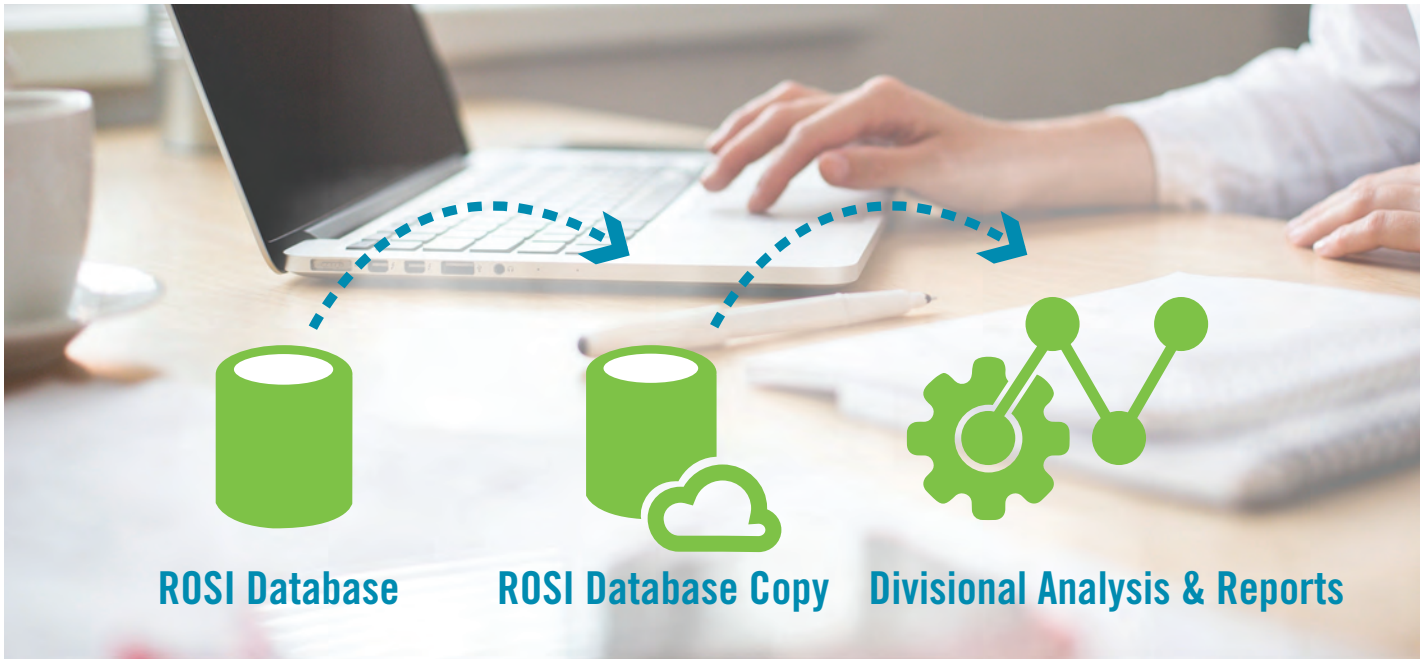
To address the issues of an aging and costly mainframe and an outdated code base, U of T embarked on an intense, three-year initiative called the NGSIS Platform Modernization Project. On November 19, 2018, the project successfully launched and the system transitioned from a legacy mainframe application with roots in the mid-1970s to an internet-savvy application with modern smarts.

This year's peak enrolment for the Faculty of Arts & Science was the smoothest to date – the system expertly handled thousands of students and **53,000** transactions in record time.

Highlights

- **Last year it took 24 seconds for an average page to load while this year only required 5.8 seconds.**
- **Students were able to complete their enrolment activities in an average of 7 minutes, versus 9 minutes last year, posting a 25 per cent improvement in this service overall.**
- **A seasonal first, social media sites were quiet over this time period with virtually no negative feedback regarding the system.**

Following the success of this enrolment period, the team plans to explore the opportunity to compress the enrolment time period, allowing administrators more time to react to classes that are oversubscribed. The new platform will also offer an opportunity to implement newer technologies, and facilitate future integration.



The development of a new cloud-based ROSI data replica will continue this year, allowing our systems to securely access ROSI data. Originally labelled the Data Lake, the new cloud-based solution has been renamed the Operational Data Store for student data and will be hosted in Azure. It will accommodate data from the divisions and will integrate near real-time with ROSI data, which should decrease the need for ROSI downloads to the divisions.

Benefits:

- Near real-time access to ROSI data.
- 99.7% up time.
- Multiple user access 24 hours a day 365 days a year.
- Secure data storage at a Microsoft Data Centre.
- Data encrypted at rest and in transit.
- Ability to scale system resources up or down as needed.
- Faster access to data than ROSI.
- Access to modern analytic tools.
- Increased data security.
- Improved data governance (authorization and access).

Who Benefits?

Students

- Enhanced user experience since students no longer need to compete with administrative staff for processing power.

Rocket Shuttle Users

- Faster queries with access to real-time data.
- Enhanced scheduling of queries.

Divisional Leadership

- Improved decision making capabilities with up-to-date data.

Future Plans:

To enhance the flow of data between ROSI and other systems, Enterprise Applications & Solutions Integration (EASI) has started designing and building Application Programming Interfaces (APIs) – which are like building blocks that connect with other systems. The interfaces are standardized, making it easier for developers to enable near real-time data exchanges. For example, if a divisional application needed a list of all the courses in which a particular student is enrolled, it would call the StudentInfo API, provide the student number, and the course list would be returned immediately. Even if the student had dropped or added a course via ACORN seconds before, the correct course list would be returned.

There will also be a published catalogue of available APIs and accompanying documentation to help developers find optimal solutions. Increased security will include an API Gateway that checks credentials before allowing the API requests to be serviced. In the future, the Operational Data Store could potentially integrate with Slate (Enrolment Services), Quercus (ACT), and Salesforce.com (Rotman).

2 Course Information System

The Course Information System allows for the collection and dissemination of pedagogical information, as well as the integration of this information with key administrative processes and systems at U of T. It streamlines syllabi and exam processes for instructors and administrators, and helps students to make better-informed decisions about their education.

Since 2016, the project team has been running successful pilots in select departments in the Faculty of Arts & Science, the Faculty of Applied Science & Engineering, the John H. Daniels Faculty of Architecture, Landscape & Design, the Faculty of Kinesiology & Physical Education and the University of Toronto Scarborough (UTSC). Over the next few months, into 2020, the team will expand participation to all Engineering Departments, the Faculty of Music and the University of Toronto Mississauga (UTM).

Current Functionality:

- Enhancements to the existing user interface to increase usability (Completed Spring 2019).
- The management of cross-listed and grouped courses, both within divisions and across multiple divisions for syllabus functionality (Completed Spring 2019).
- The upload and archiving of syllabi within current terms to support administrative functions and record keeping (Completed Spring 2019).

The **Exam Module** in CIS now has a complete, electronic end-to-end exam workflow. This process allows instructors to enter exam details and print options, and upload their exam. Department administrators and chairs are then able to review and print exams, or electronically send them to an approved print location.

The **Syllabus Module** has implemented four areas of functionality:

- **Basic Course Information:** This information provides instructors with a high-level overview of important information regarding their course such as sessional dates, requisite information, and lecture times and locations.
- **Marking Scheme:** This function allows instructors to complete the grading assessments for their course and receive immediate feedback regarding faculty and U of T policies and guidelines.
- **Syllabi Policy and Procedure Statements:** This section allows instructors to select from a list of required, recommended, and optional faculty and U of T policy statements. They also have the option to revise these statements or create their own, and save them for later use.
- **Syllabus upload, archive and download** functionality.

Future Functionality:

Looking ahead, CIS is planning for future releases that will include the following enhancements:

- A configuration module to allow administrators to customize existing functionality (Fall 2019).
- A full suite of tools supporting reporting and analysis within departments and divisions (2020).
- Integration with Library Services to allow for the automatic, electronic, archival of exams (2020).
- The option for instructors to create a complete syllabus document and retrieve archived syllabi on CIS (2020).

Departments currently using CIS include:

Faculty of Arts & Science

- All Departments

University of Toronto Scarborough

- All departments

Faculty of Applied Science & Engineering

- Cross-Disciplinary Programs
- First-year Courses

John H. Daniels Faculty of Architecture, Landscape & Design

Faculty of Kinesiology & Physical Education

Accommodated Test Services (ATS)

Started in March of 2019, and formerly known as Test and Exam Services, the new Accommodated Test Services (ATS) project leverages NGSIS products to introduce significant benefits to students registering for accommodated test writings; for instructors providing test details and documents, and; for administrators tasked with keeping ATS processes working efficiently and in a timely manner. The system is being designed and implemented to support the administration of Accommodated Tests and Exams. Instructors, students and administrative staff will find the new process seamless, transparent and intuitive, providing easy online access to information through pre-existing U of T platforms. There will be multiple phases to this initiative.

For phase 1, CIS will add special instructor focused functionality for ATS during December 2019. Full implementation of the project is expected to be completed during 2020.

3 ROSI Core Module Improvements

Projects continue to unfold which transform the backend modules of ROSI, allowing U of T to respond effectively to the demand for new services both within U of T and from the province and external agencies. In July 2019, the team completed the implementation of the Student Choice Initiative. From summer 2019 through fall 2020, the focus will be on the implementation of a new Financial Aid and Awards module. In early 2020, the team will turn its attention to a number of formative research activities to explore options to modernize the existing core system.

Financial Aid & Awards
(Vendor Implementation – September 2020)

Improved awards handling has been cited as a high priority project for NGSIS by both students and administrators. The ideal solution would proactively identify financial aid and award opportunities for students, improve alignment of funding with donor agreements, maximize funding resources, and avoid overpayment to students due to a lack of coordination and information sharing. Following an RFP process in 2018, a local Canadian company called SmartSimple, was selected as the vendor solution for U of T. Work commenced in early 2018 with the following implementation phases identified:

- The first milestone of a comprehensive and centralized administrative central awards repository was achieved in July 2019. Creating and modifying award master information can now be completed in the new Awards Explorer tool. (Data is still being sent to ROSI to process student award payments.)
- Starting in late September 2019, there will be a staged rollout of the administrative awards repository to all the divisions, faculties and colleges. This will allow users to enter faculty specific information associated with an award.
- A public facing view of the awards repository with a parameter based search engine is scheduled to be completed for January 2020.
- Requirements gathered on matching students to admissions, and in-course awards will be finalized in December 2020.

A Proposed Evolution of ROSI: Continued Modernization (formative research underway)

The User Interface

ROSI's User Interface (UI) has long been contentious. While the UI can be efficient, it takes users years to attain high levels of proficiency. Modern web-based UIs provide a rich user experience and improve data quality because more validation can be done at the point of data entry. EASI has created an administrative web-based UI for the Course Information System that has been well received. The team is currently reviewing options to apply this UI to other applications, including ROSI.

Since it is not feasible to update all of ROSI's screens at once, we are exploring the option to introduce the new UI starting with the main menu. The new main menu will be able to call the older screens and other new screens. This flexibility will allow ROSI to evolve into a modern system without major disruption of existing processes – ROSI can change at the pace that U of T is willing to accommodate.

New Administrative Functions

New administrative functionality will be developed using the latest proven programming techniques, creating application programming code that is easier to maintain and modify when requirements change. Many of the new functions developed for ROSI can be made available to other applications developed within the divisions via a concept known as Application Programming Interfaces or APIs. Many of the APIs will be used by the new UI.

Modern Data Models

New functionality will require new data models and these can be created with technologies that best fit the academic or administrative requirements, rather than defaulting to the rows and columns of typical databases. The benefits will be better system performance and data governance.

Existing ROSI Functions will be Updated Over Time

The existing ROSI screens and functionality will be modernized as time and academic or administrative priorities allow. The programming code supporting existing functions will be re-factored into APIs to facilitate better integration with a modern UI and integrate with other systems, such as the Human Resources Information System, the Financial Information System, Slate, Salesforce.com, and Quercus. ROSI will become a Student Information integration platform, enabling other authorized systems to securely interact with student data in real-time.

4 Service Innovation

At the core of NGSIS is service innovation, resulting in new applications that consolidate online services for faculty, staff and students, simplify operations, and empower students to make informed decisions across their lives at U of T. New and improved web applications delivered or underway by the NGSIS team include the following:

Projects Underway

Degree Confirmation Analysis (Fall 2019)

Degree Confirmation verifies if students or alumni have a degree with U of T and all details associated with the degree. Analysis and consultations have been undertaken with stakeholders to determine requirements to replace the existing application, leading to recommendations to buy or build a new system. Final consultations and an environmental scan are underway to determine the availability of potential products. The new solution requirements include the delivery of an improved UI for increased search and process success rates for customers using the application. Other requirements include the incorporation of batch processing options for large volume clients such as job placement agencies.

Wellness Resources on ACORN (Fall 2019)

Newly added to ACORN, when students use the 'Need Help?' button on each ACORN screen, one of their available options is an area dedicated to 'Well-Being Support.' This new option provides personalized resources spanning different delivery methods and categories of needs provided by U of T and external sources (included mental well-being, academic success, financial support and more).

Exam Invigilation Application (2019)

The Exam Invigilation Application allows an exam invigilator to validate a student's TCard and photo ID using a tablet application. The application provides real-time data exchange and integration with ROSI as well as U of T's central photo database. UTSC and the Faculty of Arts & Science will continue to pilot this application throughout 2019.

Delivery of the new T2202 Tuition and Enrolment Certificate Extract (Fall 2019/Winter 2020)

The full deployment of the T2202 xml file for the Canada Revenue Agency (CRA) is expected for fall 2019 with the first file to be sent to CRA in February 2020. This will extract the original T2202 student tax records from ROSI as well as the amendments applied during the year to be sent to CRA on a monthly basis. This has necessitated reactivating the SIN field on student records and adding it to ACORN as personal information the student can update.

Option for PDF Version of Academic Transcript (Dec 2019)

This new service will be developed within ACORN to allow for quick and convenient access to U of T's official electronic PDF version of students' transcripts. The solution will be tied to Parchment, the external vendor product selected earlier this year, which will securely distribute the e-transcript in PDF format to the recipient from ACORN. This project will be crucial for the sunset of the ROSI Alumni Transcript application (formerly SWS), as students without a UTORid will be able to bypass ACORN using Parchment's website to order transcripts, rendering the equivalent ROSI Alumni Transcript functionality redundant.

Timetable Builder Expansion (Winter 2020)

The ACORN Timetable Builder will allow students to craft and optimize their course schedule. After a successful pilot at UTSC, this service will be enhanced and released more broadly across U of T to students in additional divisions. Improvements to the Timetable Builder will include functionality from Course Finder, allowing for the subsequent retirement of that product. Timetable Builder will become the new and improved Course Finder.

Sun-Setting Online Calendar (Winter 2020)

The Online Calendar (OLC) application will be retired by implementing Curriculum Publisher (the specialized web system for calendar production) for the remaining divisions currently using OLC (OISE & Engineering). This may also require the implementation of Kuali Curriculum Management as necessary for these divisions.

Transfer Explorer / Transfer Navigator Replacement (Winter 2020)

Requirements analysis for a new version of this product have been completed, and an environmental scan is underway to determine whether this should be a vendor solution or a home-built application. It has become apparent that U of T requires more than a replacement of the existing database and needs a workflow tool for administrators to manage the application and assessment process for transfer credits as well.

Projects Underway

Curriculum Management Integration (Rules Integration 2020)

Curriculum Management (CM) has been integrated with Degree Explorer (DE) to allow users to read course descriptions/requisites and program requirements from CM to build DE codified rules. Additional work will be performed to allow DE to use CM course data (accreditation units) for Engineering program assessments (replacing some Online Calendar functionality). Further work is required to determine the best location for future CM enrolment and DE rules. Opportunities to use Machine Learning to ease the burden of manual rules translation between products will be considered.

Accessibility (Ongoing)

NGSIS is continually focused on accessibility and implementing improvements to ensure full AODA compliance (WCAG Level AA) for all applications. This year we are focused on the Degree Explorer Student Planner, with the goal of implementing AODA improvements by summer 2020.

Degree Explorer Enhancements (Through to Summer 2020)

Degree Explorer is an application that helps students keep track of incomplete, pending or completed requirements. The Degree Explorer Student Planner will be upgraded this year to include a number of critical enhancements, including AODA compliance, improved general usability and navigation of existing features, and optimization of the application for mobile devices using the existing desktop URL.

Completed Projects

Safety Abroad Student Registry (Spring 2019)

The Safety Abroad Student Registry follows a self-serve model, helping students across all three campuses to register for travel in low-to-mid level risk countries and facilitating direct interaction with the Safety Abroad Office to prepare for travel to high-risk areas. This project involved improvements to the administrative application designed to better track and report on students travelling for education and course work.

Convocation E-Ticketing Phase II (Spring 2019)

Improvements completed for the Convocation system now provide enhanced ticketing functionality. This includes the ability to display a list of graduation records belonging to a student by entering a student number or surname, and the ability to print initials within a graduate's name on a diploma, President's letter, label and graduation letter.

Convocation Diploma Replacement Phase II (Spring 2019)

This project incorporated the functionality of an old standalone legacy application into the centrally supported ROSI Express platform to support the diploma reprint process for the Convocation Office. The next phase of Diploma Replacement will add new functionality within ROSI Express to record the history of all reprint requests processed by the Convocation Office.

Student Choice Initiative (Completed July 2019)

U of T completed a comprehensive review of its ancillary fees and identified those that are not considered mandatory in accordance with a recent provincial government mandate. This initiative has had far reaching impacts within our ROSI and financial systems and has affected a number of business processes and organizations across U of T. EASI worked closely with the Vice-Provost of Students to ensure that students are now able to opt out of non-essential tuition fees for the 2019 fall/winter Academic session using ACORN.

5 Curriculum Management

Curriculum Management (CM) (Ongoing)
Curriculum Management was the first product to be delivered through our partnership with Kuali Inc.

The product allows divisions to create, maintain and retire courses and programs using customized divisional governance processes, and in tandem, allows NGSIS to create a central repository of courses and programs for U of T. The Student Information Systems team has also developed specialized governance committee reports as well as diagnostic reports and lists for the divisions. CM data is also exported for inclusion in publications generated by Curriculum Publisher (CP).

CM was officially launched in 2016 and is being used by the Faculty of Arts & Science, UTSC, the John H. Daniels Faculty of Architecture, Landscape & Design, and the Faculty of Kinesiology & Physical Education.

Work is now underway to add the Faculty of Applied Science & Engineering, the Faculty of Music, the Faculty of Information, OISE (graduate courses only), and the PharmD programs in the Faculty of Pharmacy for the 2019-2020 governance cycle.

Curriculum Publisher (CP) (Ongoing)
CP is a U of T developed content management website that optionally interfaces with Kuali CM, allowing divisions to publish a public facing calendar copy of their curriculum.

Curriculum Publisher sites are now in place for the Faculty of Arts & Science, UTSC, the School of Graduate Studies, the John H. Daniels Faculty of Architecture, Landscape & Design, the Faculty of Medicine MD program, and the Faculty of Kinesiology & Physical Education. A new site has been added for the newly implemented Bachelor of Information program, which started in September 2019.

Maintenance of these sites is ongoing, and additional divisions will be added as CM continues to roll out. In particular: CP will be rolled out for 2020 Calendar publications in the Faculty of Music, Faculty of Applied Science & Engineering, and the PharmD (Doctor of Pharmacy) programs as well as the OISE Bulletin and the Faculty of Information's graduate web handbook. Planning is currently underway for the 2021 UTM Calendar.

6 Reporting, Planning and Analytics

The Business Intelligence planning and analytics team has played an integral role in warehousing information on course and program enrolments, student housing, student awards and co-curricular activities. Through a variety of specialized tools, administrators can use this information to view application and admissions rates, take appropriate action to improve student retention rates, and refine curriculum. Priority projects for the current timeframe include:

Retention and Graduation Rate Analysis - Phase 1 (June 2019)

This project will allow better understanding of the undergraduate student admissions to the graduation life cycle. Data analysis will help to identify potential barriers to success. The project will provide data and reporting tools related to retention, persistence and graduation of students in direct entry undergraduate programs. For example, tracking students through multiple stages includes:

- **Retention:** Students' outcomes from Year 1 to Year 2.
- **Persistence:** Students' outcomes from year to year for years beyond Year 2.
- **Graduation:** Students' outcomes from admissions to graduation, including by year of graduation.

Data being analyzed in this project include:

- Cohort binning of students in order to identify the number and percentage of newly admitted students who return, graduate or are inactive.
- Course enrolment data to analyze student performance and identify barriers to success such as waitlists.

Machine Learning Pilot: Course Recommender (August 2019)

The purpose of this pilot is to build a Course Recommendation model by combining Microsoft Azure Machine Learning capabilities with Degree Explorer. This feature will be tested by a small group of advisors to help guide students with recommending which electives to choose. Machine Learning can imitate students' elective selection patterns, provide more accurate and focused recommendations and help staff and students to quickly make informed decisions.

Future Projects:

In April, the Business Intelligence team collected project ideas from various stakeholders. These student-impacting projects are currently in development:

- Graduate Admissions
- Subject Program Retention
- National Survey of Student Engagement - Retention and Graduation
- Engineering Student Analytics

Operations

ROSI Change Advisory Board (Ongoing)

The ROSI Change Advisory Board (CAB) is a body that establishes priorities and directives for implementing ROSI enhancements. This dynamic board was established in May 2016 on a model of collaborative governance. The 20 member committee is made up of tri-campus functional representatives (mostly central and divisional associate registrars) and technical leads and managers from EASI.

Members of the ROSI CAB are very familiar with the platform on which U of T's institutional and student information sits. They are also mindful of trends in higher education as they affect records and registration systems, and constraints of the current ROSI system.

Since its inception, this board has reviewed and prioritized over 80 ROSI Enhancement Requests received from across U of T. It has now become a model for other student information system applications.

Examples of Completed Enhancement Requests:

- Refined fields in ROSI for error management, government reporting and interoperability with other systems.
- Blocked students from removing themselves from courses marked Grade Withheld Pending Review.
- Disabled UTORid for expelled students.
- Created a batch upload to add transcript notations for award citations.
- Limited students' maximum course load per term (versus academic session).
- Linked lectures with specific tutorials in ACORN.
- Enhanced data extracts to support divisional needs.

Examples of Enhancement Requests Under Consideration:

- Integrate data and procedures between ROSI and the TCard Office to better manage student names and immigration status.
- Enforce prerequisites from Degree Explorer when students enrol in courses in ACORN.
- Make appropriate use of "preferred" vs "legal" name in different contexts across ROSI, ACORN and other student systems.

Examples of Ongoing or Approved Requests:

- Provide ongoing support for Ministry of Training, Colleges and Universities.
- Provide continued support for the ROSI MTCU Extract and Submission process.
- Work with the vendor, Parchment, to allow a current or former student to produce a PDF transcript request.
- Make improvements to award distributions when calculating student refunds.
- Implement changes required to produce T2202 (replacing T2202A) tax form.

OUAC Ongoing Changes, Workflow Maintenance & Enhancements:

Current Maintenance work:

1. Each year the Ontario Universities' Application Centre (OUAC) introduces changes to the exchange processes for application and admissions data responding to requests by Universities and Colleges or reflecting OUAC's own requirements. In advance of each applications cycle we review and analyze the changes and amend our own processes and timing before restarting procedures for the year.
2. To reduce the latency of data and to improve interaction with Enrolment Services' Slate system we are adjusting the timing of scheduled procedures, automating others and investigating other efficiencies in the procedures themselves. This will bring the data in ROSI, Slate and OUAC into closer alignment while we investigate more dynamic data interchange.

Future changes

OUAC announced that it will be phasing out the use of the EDI file format by September 2022 (admission cycle 2023), replacing it with the XML format. The change comes in an effort to align and remain current with data standards from the Postsecondary Electronic Standards Council.

ROSI exchanges Transcripts with other institutions through the OUAC's eTranscript system. This initiative from OUAC requires us to change our system to be able to SEND and RECEIVE transcripts in the new XML format (from the current EDI/delimited flat file format), based on OUAC's system changes for this work (including the mapping of the two sets of transactions that handle the complete workflow of the transcript requests). Work has begun in order for us to have all changes in place in advance of the deadline.

ACORN Functional & Technical Debt (Fall 2019)

Various updates requested by stakeholder groups will be addressed, as well as re-writing code to address deficiencies, and adding more comprehensive test cases, etc.

Glassfish 2 – JAVA 6 Updates (Fall 2019)

Updates to ROSI Express were completed fall 2018 and updates to the following applications will be released in fall 2019:

- Election
- EMarks
- Governing Council Address
- Sakia
- Varsity Blues Registration

Operational and Academic Reporting (March 2020)

Options for a new reporting tool to design and develop user-friendly online reports for Student Information Systems are being reviewed.

Refactoring ROSI Course Instructor Assignments (Summer 2020)

In order to assign instructor and coordinator roles in courses for ROSI and the Course Information System, and improve integration with other systems, solutions to better manage identification of faculty and staff from U of T and the Federated Colleges are being investigated.

Completed Projects

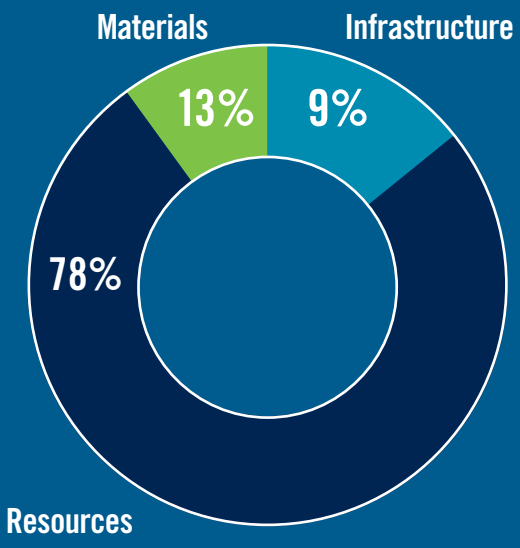
ROSI Performance Enhancements (Complete)

In preparation for the Faculty of Arts & Science "priority drop" enrolment period, the peak enrolment day for U of T, the NGSIS team implemented low-investment, high value improvements to ACORN. Improvements included optimizing Weblogin to better handle the large volume of login requests, as well as a 'webload management day' waiting page where if students tried to log in to ACORN before their scheduled start time, their session would be kept active and prevent Weblogin from having to process repeated login attempts. This further improved the system's overall performance.

Facts and Figures

Savings Analysis 2012–19

Project Name	Estimated Savings
Degree Explorer (7 years)	$1,791,400
My Res (7 years)	$271,432
StarRez (7 years)	$598,694
eMarks (5 years)	$347,640
Varsity Blues (7 years)	$29,463
Student Accounts (SCLM) (4 years)	$61,576
Curriculum Publisher (3 years)	$231,900
Course Information Systems (3 years)	$426,471
Transfer Explorer (5 years)	$67,080



Savings: $3,825,656

Where NGSIS is Making an Impact

10 tons of paper eliminated per year and **240** trees saved.

12,295 employee hours saved per year.

Webpage Views Sept. 1, 2018 to Sept. 1, 2019

ACORN
130,555,666

MyRes
151,421

Degree Explorer
1,031,864

Course Information System
93,514

Timetable Builder
59,018

Transfer Explorer
89,689

Financial Planner
152,217

Course Finder
1,519,246

StarRez
1,884,818

Reporting, Planning and Analytics

78 Cubes
465 Reports

2.5 Terabytes of Data

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