



Next Generation Student Information Services

Project Summary Report: January 2017 – September 2018

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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 five 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, the NGSIS team 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, and Course Finder. NGSIS has also released a variety of large applications for faculty and staff, including e-marks, StarRez (residence management), applications to streamline curriculum management, and 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 January 2017 to September 2018

1 NGSIS Platform Modernization: Modernize the existing ROSI infrastructure with a series of high-powered servers and refreshed code base to decrease cost and increase efficiency.

2 Service Innovation: Continued rollout of web apps such as a student timetable builder, an exam invigilator application and a host of new features for ACORN.

3 ROSI Core Module Improvements: Targeted improvements to ROSI core modules, including the selection of a new Financial Aid and Awards module for U of T and participation in Quali Enrolment development.

4 New Course Information System: Continued development of a new Course Information System (CIS), including refinement of the online exam submission process for instructors and new building blocks for an online syllabus application.

5 Curriculum Management: Expansion of Quali Curriculum Management (CM) and the U of T Calendar product (Curriculum Publisher) for other large divisions at U of T.

6 Reporting, Planning and Analytics: Availability of a new “user friendly” web reporting tool for CM, CIS and other student system applications, along with the expansion of data visualization services which allow insight into the student academic lifecycle.

1 NGSIS Platform Modernization

NGSIS Platform Modernization

(formerly known as the ROSI Java Conversion project)

As the next step in its evolution, NGSIS will modernize the existing ROSI infrastructure with a series of high-powered servers and a refreshed code base. The transfer of two million lines of code to JAVA and a renewed ROSI infrastructure in 2018 is expected to result in significant improvements in registration performance. It will also allow for single sign-on, eliminate the bulk of annual software vendor costs and provide real-time integration with divisional and enterprise systems – decreasing costs and increasing efficiency.

Future

This new platform sets the stage for further application interoperability, integration of new applications such as the Course Information System and Curriculum Management, and the redesign of the ROSI user interface.

Benefits



Faster student registration – servers can efficiently handle peak registration times, when up to 15,000 students are accessing the system.



Single sign-on access to ROSI using UTOrid.



New option for PDF output.



Compatibility with popular web browsers, including Mac.

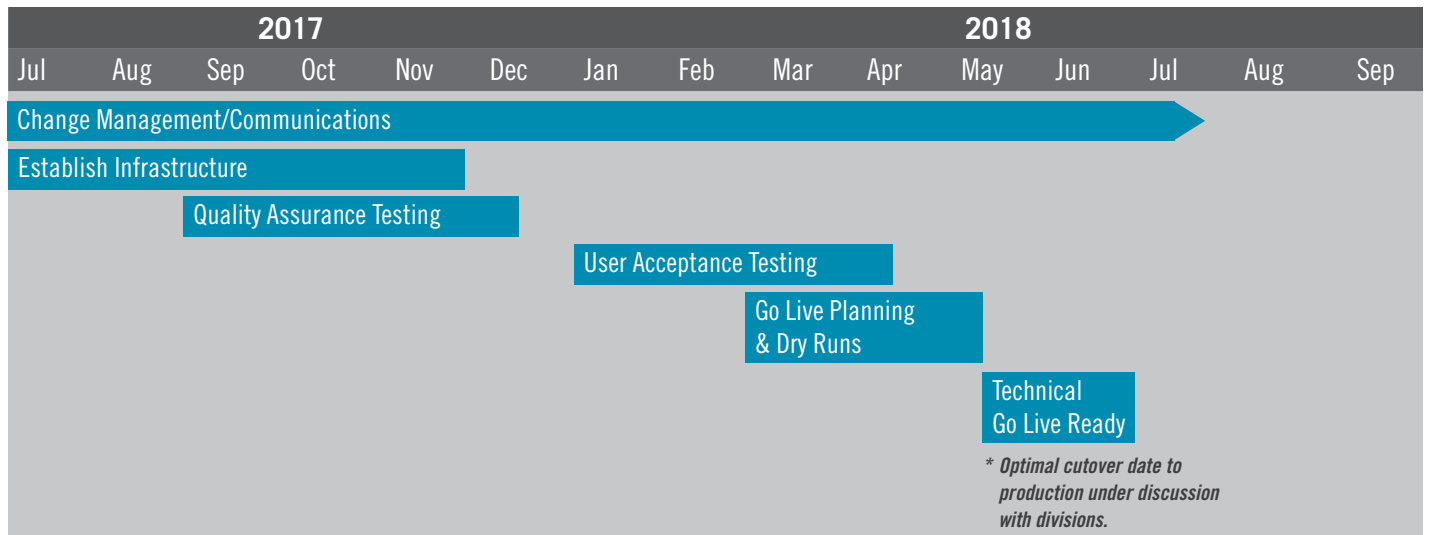


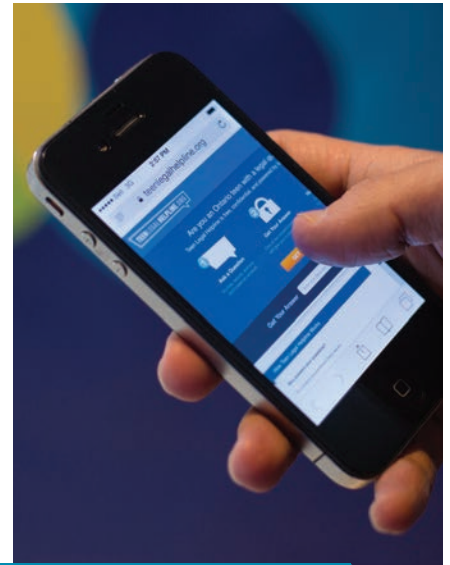
Simplified and more convenient web-based batch processing.



Real-time, secure communication between applications and future opportunities for better integration.

Project Timeline





2 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:

U of T Grant Application (On Hold)

This online application, released in 2016, allows for quick processing of students' emergency funding requests. Future enhancements will allow for improved student counselling and grant adjudication (e.g. status of grant application, batch export of results, etc.). Plans to roll out the application to additional divisions, such as SGS and OISE will be scheduled.

Analytics Implementation (Complete – September 2017)

In order to plan new features and fine-tune navigation, NGSIS has implemented Google Analytics event tracking across various applications to profile how students are using ACORN, Timetable Builder, Degree Explorer, Financial Planner, SWS, etc.

Confirmation of Enrolment (Complete – August 2017)

This new and convenient feature allows Arts & Science students to print a standard letter from ACORN confirming their enrolment status at U of T. This process is often required for student specific services or activities such as applications for bank accounts or employment.

Financial Planning Calculator (Complete – August 2017)

Released in 2016, this standalone service allows prospective and current students to calculate the cost of attending U of T, and their potential financial surplus or deficit for the upcoming academic period. In 2017, enhancements to the application included support for SGS students and the ability to calculate course, residence and program fees more accurately.

GPA Calculator (Complete – September 2017)

The GPA Calculator allows students to calculate their current as well as cumulative GPAs. Students can also generate projections based on their potential course performance.

Option for PDF Version of Transcript (2018)

A new service will be developed within ACORN to allow for quick and convenient access to an official electronic PDF version of a transcript for students. This release will coincide with the implementation of the NGSIS Platform Modernization project in 2018.

Next Steps Planner (2018)

New ACORN functionality will provide students with timely action items and need-to-know information with individually tailored content for each student's degree/program enrolment, year of study, as well as the current sessional period.

Online Admissions Deposits (2018)

This new ACORN feature will automate the admission deposits process, making it available to more divisions as an enrolment management tool and allowing students to use credit cards for payment.

ACORN Performance (Complete – August 2017)

Major performance and usability enhancements have been made to ACORN to manage high volumes of traffic on open registration days. This year, ACORN successfully accommodated over 33,000 students on a single day by offering a streamlined version of the service.

“In my first year, I had to enter all of my course information manually through ROSI – a time-consuming and confusing process. With ACORN I can easily find my courses, pre-select them and on registration day I simply press the enrol button and I’m good to go!”

– Ibraheem Aziz
Third-year Rotman Commerce Student

Accessibility (Ongoing)

NGSIS is continually focused on accessibility and implementing improvements to ensure full AODA compliance (WCAG Level AA).

Web Services for Central and Divisional Use (Complete – August 2017)

NGSIS has developed a variety of web services (16 complete) allowing for live connection and use of ROSI information for central and divisional sub-systems. Examples include convocation ticketing, student class information, educational history, and applicant status.

Degree Explorer (DE) Student Planner (Complete – June 2017, phased in approach)

A rewrite of the current Degree Explorer planner, an application that helps students plan their degree, now allows for improved performance, better integration options for ACORN and ease of maintenance of the application.

Degree Explorer (DE) Administrative Interface (Spring 2018)

A rewrite of the current Degree Explorer Administrative interface will allow administrators to monitor students' academic records and progress towards graduation. The new version will enhance performance and maintainability. The team is also reviewing possibilities to add pre-admission checks to confirm/deny qualification

for programs through DE (this is currently performed manually).

Timetable Builder (Complete – June 2017)

The new ACORN Timetable Builder allows students to craft and optimize their personal course schedule. The June release has been implemented for UTSC, and the Timetable Builder is now available for other divisions as requested.

Exam Invigilator Application (Complete – April 2017)

The new exam invigilator application allows an exam overseer to validate a student's TCard and photo 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. The application has been successfully used at UTSC and is available for use with other divisions with minor modifications.

Diploma Reprint (Complete – February 2018)

This new online module streamlines diploma reprint requests by graduands and alumni to the Convocation Office, and retires an existing legacy system. Following Phase 1, the team will add new functionality to record the history of all reprint requests processed by the Convocation Office.

Trinity Residence Management System (Complete – May 2017)

In May 2017, NGSIS successfully implemented the StarRez Residence Management System for Trinity College. With Trinity on board, all 12 U of T residences are now using a common residence management system.

StarRez Demographic Interface (Complete – June 2017)

The team has rewritten the student demographic interface from ROSI to StarRez to improve both performance and quality of information, impacting all residences.

Safety Abroad (Complete – February 2018)

This new, centrally supported application replaces a legacy application in Student Life. Safety Abroad tracks student placements abroad along with their emergency contact information. Future enhancements include pre-departure travel checklists and automated communications with travelling students.



3 ROSI Core Module Improvements

Large projects are underway that transform the backend modules of ROSI, allowing the University to respond effectively to the demand for new services both within U of T and from the province and external agencies. These include consideration of a new Financial Aid and Awards module, implementation of the provincially mandated net tuition billing program and development of a new course and program enrolment module.

Awards Management Module (Vendor Selection – Summer 2018)

Improved awards handling has been cited as one of the highest priorities for NGSIS this year by both students and administrators. The current processes are highly decentralized and are manual or embedded in local divisional systems. Additionally, no one system consolidates and stores all of U of T's current award information and eligibility criteria. Students must navigate multiple websites and self-identify for most awards that require an application.

An ideal solution would proactively identify funding opportunities for students, improve alignment of funding with donor agreements, maximize funding resources, and avoid overpayment to students as a result of lack of co-ordination and information sharing. To further understand these requirements, a cross-functional working group from Enrolment Services, UTM, UTSC, Arts & Science, Engineering, SGS, Financial Services, etc. has been formed. A Request for Information (RFI) was issued and subsequent vendor presentations were arranged. External

“An awards system of this scope and scale will position U of T as a leader in innovation and transform the student experience.”

– Donna Wall
Director, Financial Aid and Awards, Enrolment Services

best practice interviews with other large universities are now complete.

A formal RFP has now been issued and a vendor short list will be complete by the end of February 2018. Following selection of a product, a full implementation plan for the

University will be shared.

OSAP & Net Tuition (July 2018)

Changes to ROSI and ACORN are underway to accommodate new requirements mandated by the province to implement Net Tuition and Net Cost View Statements for students in Academic Year 2018–19. The changes will soon allow the University to accept OSAP payments directly from the province, and, along with identified institutional aid, apply these amounts directly to the student's account in advance of required tuition payments.

The first phase of the project is slated to go into production in July 2018 and will provide undergraduate students with both a Net Cost View (tuition, compulsory fees and residence, less OSAP funding and U of T non-repayable



aid) as well as a Net Tuition View (tuition, excluding compulsory fees, less OSAP grant funding and U ofT non-repayable aid). Graduate students will be included in future phases of the Ministry plan.

Other service improvements to be delivered directly by the Ministry and requiring close partnership and coordination with U ofT include the delivery of a new Net Estimate Statement, allowing students the ability to more accurately estimate costs to attend university prior to acceptance.

In preparation for these changes, and to improve the accuracy of received Ministry OSAP data for Enrolment Services, NGSIS completed development of a new Financial Aid database within ROSI in June 2017. The new database stores all the YTD OSAP related student data sent to Enrolment Services by the Ministry. Information within the database will be expanded to include additional Ministry files received for OSAP disbursements, net cost view estimates and other institutional related aid data as the project continues to unfold.

Kuali Enrolment (2 years +)

NGSIS is working with the Kuali Community Source development to create a cloud-based student system capable of managing U ofT registration requirements.

The current scope of the project includes course offering, program offering, course and program registration and some aspects of academic record.

The team is working closely with registrarial offices to gather requirements and synthesize needs for Kuali developers. They will also review and test deliverables as they become available from Kuali.

The first deliverable from Kuali, scheduled for 2019, will include basic course/program offering and registration without scheduling information. Implementation and integration of this module within the current U ofT system is expected to take one to two years following delivery by Kuali.



4 New Course Information System

Course Information System (CIS) (2017 – 2019)

CIS is a new system which allows for the collection and dissemination of pedagogical information as well as integration of this information with key administrative processes and systems at U of T. The team has worked closely with Arts & Science, UTM, UTSC and Engineering to gather requirements.

Two streams of work are underway.

Exam Stream: This component of the CIS allows instructors to submit final exams via a secure online process for review and printing, providing instructors more time to teach before finalizing their exam content.

The team has completed a number of releases with a variety of pilot units, including the departments of Economics, Geography, Math, Computer Science in Arts & Science and Engineering.

The current release includes support for crowdmark exams, submission of print instructions and integration with print shops. NGSIS will continue to roll out the exam module to additional departments within Arts & Science, Engineering and other divisions (UTSC, UTM and others) as demand and resources permit.

Syllabus Stream: CIS has delivered two phased pilot releases in 2017 beginning with four departments in Arts & Science (Economics, Human Biology, English and Psychology).

Initial modules will include: submission of grading assessments; common syllabus policy and procedural statements; important dates and deadlines; basic course information (code, title, day, time, location of the course, pre-requisites and section listings); and exploration into syllabus generating tools; syllabus archives; and data sharing capabilities with the new LME and other U of T core systems.

The syllabus module will continue to be rolled out to additional departments within Arts & Science and other divisions (Engineering, UTSC, UTM and others) as demand and resources permit.



5 Curriculum Management

Curriculum Management (CM) (on-going)

Curriculum Management was the first product to be delivered through a renewed partnership with Kualu.

The product allows divisions to create, maintain and retire courses and programs using customized divisional governance processes, and in the process, allows NGSIS to create a central repository of courses and programs for U of T.

In 2016, CM was successfully rolled out to Arts & Science, UTSC and Architecture.

Over 2017-18, the team will automate many of the committee governance reports using a vendor product known as BIRT (Business Intelligence Reporting Tool). The first steps in this process are now complete, allowing for the distribution of governance reports to UTSC and Arts & Science using a self-serve central distribution point, eliminating the need for a programmer to send each report individually to these divisions.

Next steps include automating many of the back-end processes still required to obtain the course and program information directly from Kualu CM. Preparation is also underway to roll out CM in other divisions.

Curriculum Publisher (CP) (on-going)

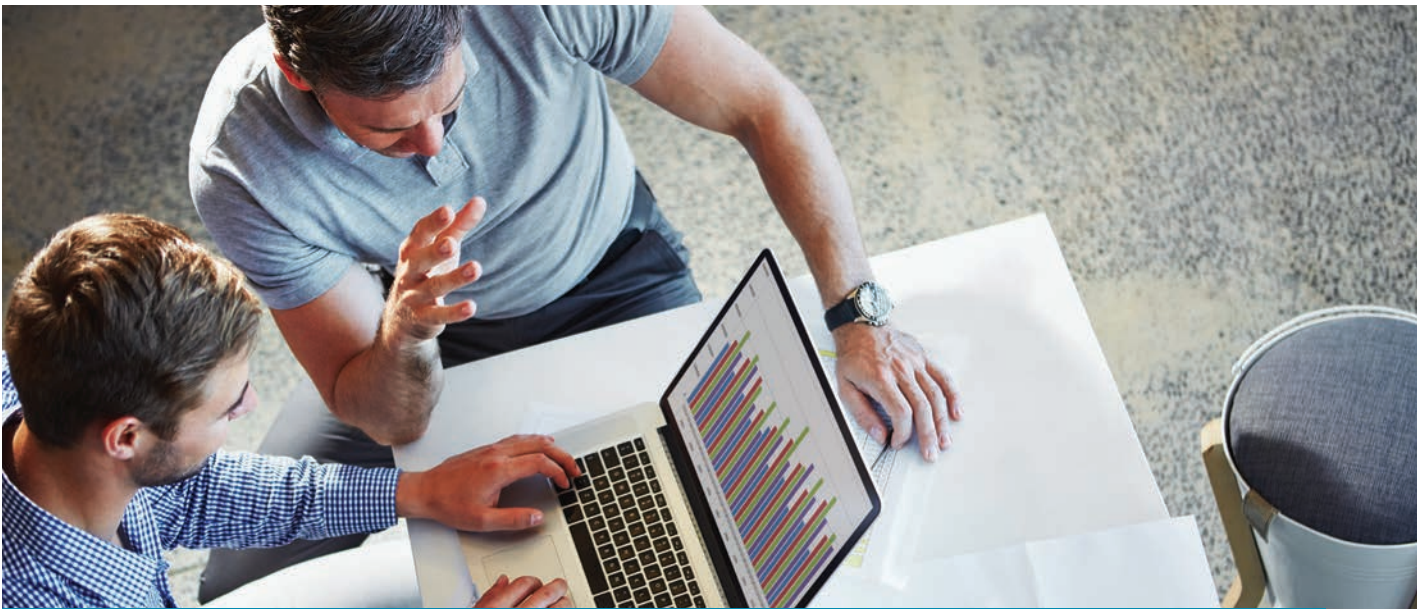
CP is a U of T developed content management website which optionally interfaces with Kualu CM, allowing divisions to publish a public facing calendar copy of their curriculum.

Curriculum Publisher sites are now in place for Arts & Science, UTSC, SGS, Daniels Faculty of Architecture and the Medicine MD program.

Maintenance of these sites is on-going, and additional divisions will be added as CM continues to roll out.

“The new online calendar format is indeed a big leap to a user-friendly environment. Congratulations on a job well done.”

– Armando Marquez
Undergraduate Counsellor, Department of Chemistry



6 Reporting, Planning and Analytics

The Business Intelligence planning and analytics team has played an integral role in capturing information on course and program enrolments, residence choices, student awards and co-curricular activities. Through a variety of specialized planning tools, staff and faculty 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:

Course Evaluation Phase 2 (Complete – April 2017)

NGSIS supports the analysis of institutional and division-level course evaluation results in conjunction with student performance and other indicators.

Student Success (Complete – October 2017)

New Business Intelligence tools capture data from Career Exploration & Education to provide data-driven insight on student use of the Centre, industry/sector job opportunities, employment rates, etc.

Retention and Graduation Rate Analysis (2017/2018)

NGSIS is developing reporting and analytical tools to examine factors influencing student retention and graduation rates over time. These factors include academic performance, program enrolment, domestic versus international, etc.

“Business Intelligence provides profound insight into admissions, enrolment, and student life. The team helps us with strategic planning and allows us to make evidence-based decisions to provide better services.”

– Sinisa Markovic
Assistant University Registrar & Director
Operations, Enrolment Services

Tableau Data Visualization Platform (Complete – November 2017)

The implementation of Tableau’s visualization platform enhances self-serve data analysis and visualization across U of T. Each division has a secure website to store Tableau dashboards, and a custom Tableau training course is helping to onboard staff onto the platform.

NGSIS – Web Reporting Tool – BIRT (Winter 2018)

The NGSIS team has selected a new vendor-supplied web reporting tool called BIRT (Business Intelligence Reporting Tool) for the student system. The new tool will allow the team to develop online, “user friendly” reports for a range of central applications such as ROSI, Curriculum Management, the Course Information System, Degree Explorer, Convocation, etc. Server setup is complete and preparations are now underway to prioritize user requirements, establish governance processes, train internal resources, etc. The first sets of reports are expected to be delivered in early 2018.



Operations

ROSI Change Advisory Board (On-going)

The ROSI Change Advisory Board (CAB) is a body that establishes priorities and directives for implementing ROSI enhancements. The 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 cross-divisional associate registrars) and technical leads and managers from EASI.

In a little over a year, this board has reviewed and prioritized over 50 ROSI Enhancement Requests received from 15 units around U of T.

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.

- Limit students' maximum course load per term (versus academic session).
- Link lectures with specific tutorials in ACORN.

Examples of Enhancement Requests Under Consideration:

- Add new delivery methods to capture lecture style course that include significant online teaching.
- Restrict student enrolment in courses that are offered simultaneously.

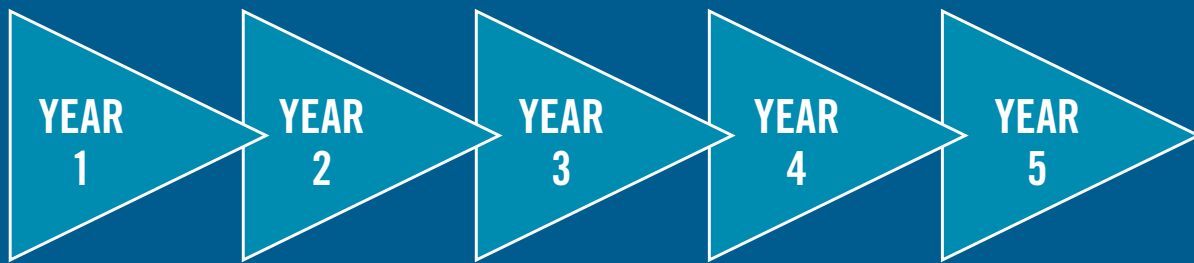
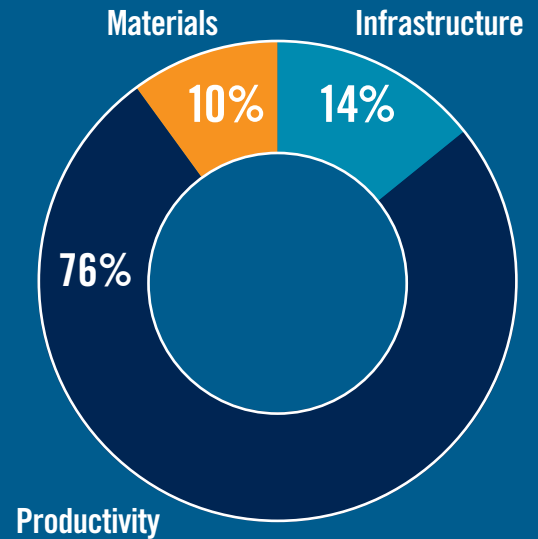
The membership of the ROSI CAB is very familiar with the platform on which U of T's institutional and student information sits. They are also mindful of trends in higher education as they affect records and registration systems and constraints of the current ROSI system.

In addition to continuing to receive ROSI enhancement requests, the ROSI CAB will begin considering information service solutions for larger proposals that have the potential for positive impact on the experiences of U of T students, and on the faculty and staff who prepare students for lifelong success.

Facts and Figures


Savings Analysis 2013–17

Project Name	Estimated Savings
My Res (5 years)	\$193,880
StarRez (5 years)	\$524,778
Degree Explorer (5 years)	\$1,282,720
Varsity Blues (5 years)	\$21,045
Transfer Explorer (3 years)	\$40,248
E-Marks (3 years)	\$210,488
Student Accounts (SCLM) (1 year)	\$30,788
Curriculum Publisher (1 year)	\$77,300
Course Information Systems (1 year)	\$142,157



Savings: \$2,523,404

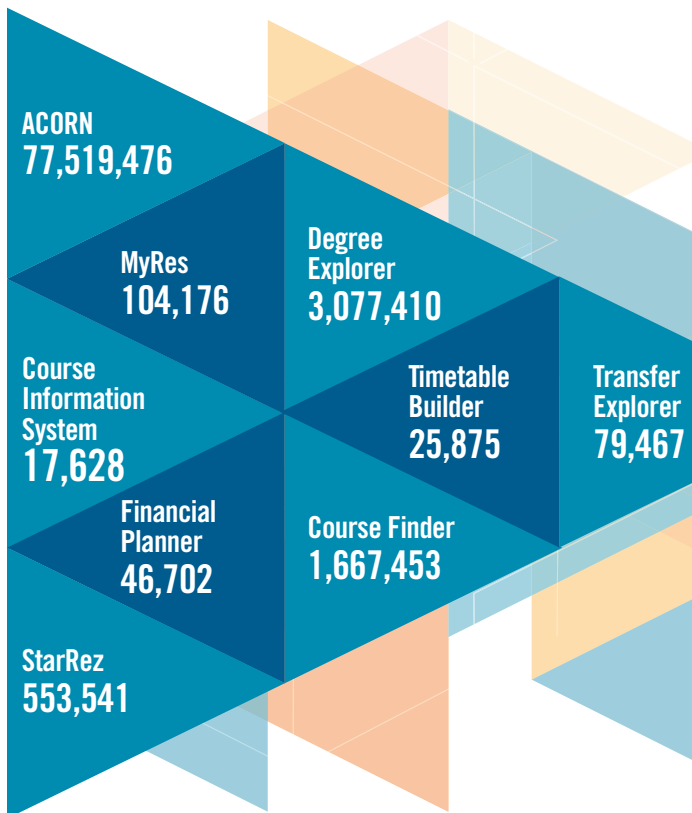
Where NGSIS is Making an Impact



9 tons of paper eliminated per year and **213** trees saved.

12,295  employee hours saved per year.

Webpage Views Feb 2017 – Feb 2018



Reporting, Planning and Analytics

