



Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

IT Services Annual Report 2014-2015 Service Plan 2015-2016 Part 1



Director of IT Services 2015

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Information Technology is a key enabler of the delivery of the University's strategic business goals. In 2014 Trinity IT Services continued its commitment to support these goals in order to deliver services that meet and exceed the requirements of the University community. Our focus is now on sustaining and enhancing the high quality services we provide, while utilising the new service models available.



In support of the University goals a new IT Strategy (2014-19) was developed in September 2014. Some of the key themes in the strategy are “mobile first” and “cloud first” approaches to technology development and adoption where appropriate. In line with the above approach, we commenced a large scale project to completely wireless-enable all indoor and outdoor areas of the University bringing a high speed, high density wireless network solution to the University's community. This is a significant investment by the University and Trinity will have one of the leading edge and largest wireless networks in the country.

We continued to prioritise our mission of understanding the IT needs of the Trinity community, undertaking a number of projects in 2014 to review our service offering and how we interact with you. One of the highlights was an engagement with students to deliver an innovative mobile solution. This and other projects are all covered in detail in the annual report.

In order to ensure that we can meet new demand and better serve our users the department was restructured under the START process. New teams were formed that are more aligned with the core competencies of the University, specifically in the areas of Teaching and Learning and Research. This has allowed us to be more agile in our solutions approach and timelier in our responses.

The staff in IT Services are to be commended for their willingness to engage with the change process particularly when these changes were being implemented in difficult economic times.

I hope you enjoy reading the report and if you have feedback I can be contacted at jmurphy@tcd.ie

John Murphy
Director IT Services

2 OUR COMMITMENT TO SERVING THE TRINITY COMMUNITY

IT Services is responsible for the planning, delivery and support of the University's main computing facilities. This includes the University's network systems, web infrastructure, email and calendaring, management services, research IT and teaching and learning facilities. IT Services also provides support for teaching and learning in a number of lecture theatres and seminar rooms on and off campus, and also provides a video capture/production service and a photographic service. The department has a central service desk and IT Projects Office and provides bespoke training courses for staff and students.

VISION

We aspire to provide excellent IT services to the University to serve the realisation of student potential and scholarship that benefits Ireland and the world.

MISSION

To provide an IT Service that is agile and creative, with robust technology that supports the University's core mission of excellence in Teaching, Learning and Research, and enhances the student experience.

CORE VALUES

Our Core Values are at the heart of all we do:

- **University Experience** - we are committed to adding to the overall University experience of staff and students
- **Customer First** - understanding our customers and their differing needs. Deliver our services in a way that exceeds their expectations
- **One IT** - working with colleagues across IT towards common goals in a collaborative environment
- **Enabling Others** - enabling colleagues across the University. Working in partnership with them to ensure we can guarantee delivery of their services
- **Environment** - understanding our role and responsibility to promote sustainable development in all our activities.

OUR ORGANISATIONAL GOALS

STRENGTHEN COMMUNITY AND PROMOTE STUDENT LIFE

We will deliver our services with consideration of the community, informing and involving them in our decision making processes. We will provide services that reflect the range of needs across the University, focusing on early adoption and universally accessible leading edge tools. We will enhance teaching and learning by providing systems and services that meet the needs of both academic and student users and develop appropriate IT platforms for online delivery of relevant student services.

DEMONSTRATE INSTITUTIONAL LEADERSHIP

We will be proactive and innovative in bringing new information technology solutions to the University and driving the evolution of existing services in line with international standards of quality and excellence.

RESEARCH FOR IMPACT

We will develop a collaborative IT environment enabling us to meet the dynamic needs of new research priorities.

ACTIVATE TALENTS

We will help enable strategic change within the University by working with our staff and students to develop digital capabilities for the modern world.



3 HIGHLIGHTS OF THE YEAR

PROJECT HIGHLIGHTS DURING 2014-2015

The restructuring of IT Services continued during the past year with the appointment of the new middle management team and the transfer of telephony services from Estates & Facilities to IT Services.

Significant advances were made during the year in delivering key projects in support of Trinity's Strategic Plan. The following are the key project highlights during the year.

MOBILITY

In 2014-2015 the main procurement stage of the Mobility project was completed with the build stage starting. The project is on track to be completed before the end of 2015 delivering a significantly enhanced and expanded WiFi service for the University.

OFFICE 365 PRO-PLUS FOR STUDENTS

Working with Microsoft as part of the staff email upgrade project there was an early benefit for Trinity students. IT Services successfully released Office 365 ProPlus to students, offering a free full downloadable version of Microsoft Office for PC, Mac and mobile devices for up to 5 devices per user. It also includes 1 terabyte of personal file storage (cloud personal storage) through OneDrive.

TCD DIGITAL ID

A project to deliver a new TCD digital ID was successfully launched in September 2015 during Fresher's week providing students with a way to verify their identity on campus, using their mobile device without the need for a physical student card.

DISASTER RECOVERY

Excellent progress was achieved in the Disaster Recovery implementation project this year with three of the four deliverables of this project now complete within scope and under budget. The main deliverable was the provision of a disaster recovery site where critical data is backed up to and where University systems can be operated from in the event of a disaster.

APPLICATION VIRTUALISATION

In 2014 a project was completed to deliver Application Jukebox, a streamlined solution to manage and make available software applications to users of the Trinity public access computer rooms.

IDENTITY MANAGEMENT

IT Services successfully completed the implementation of the Microsoft Forefront Identity Manager project, a new University Identity Management solution for user identification and provision of access to University services.

PROCESS AUTOMATION USING ONLINE FORMS

IT Services, working with HR, has progressed a HR Forms project to build a set of automated processes using online forms and SharePoint technology. These automations will enable the elimination of existing paper-based forms, provide for faster response times and support traceable processes. The project will continue into 2015-2016 and will improve the user experience by providing web enabled forms with automated approval workflow.

CAMPUS NETWORK IMPROVEMENTS

The Campus network architecture project will end in Q4 2015 and will deliver the installation of a new high-performance network distribution layer with two connections to the network core making the network more robust and resilient. Should one connection fail, the other will ensure that the network is still fully available to users.

RESEARCH PROJECTS



There was continued successful delivery of a number of strategic research projects including the Digital Repository of Ireland project (DRI). Trinity is the technical lead on the DRI project, delivering Ireland's trusted digital repository for the humanities and social sciences. The repository was launched by Minister Damien English in June 2015 and has had a number of high profile collections featured in the media.

The National Collection of Children's Books Website (<https://nccb.tcd.ie>) was also delivered. Successfully developed by Research IT, the NCCB website is the centrepiece of a multi-institutional collaboration between TCD, the Church of Ireland University of Education and five institutional libraries. This website hosts a centralised catalogue of children's book collections from the participating institutions. The NCCB website was launched on 28 September 2015 at the Dublin City Library and Archive.

RESEARCH SUPPORT SYSTEM

Continuous improvements were made in 2014-2015 to the Research Support System (RSS) with server upgrades and enhancements to functionality, including the ability to enter the ORCID ID to the RSS Curriculum Vitae, thereby creating a persistent link between these two information systems; enabling users to change publication and other research output types themselves, and enabling publications and other research outputs to be imported directly to the RSS.

SUPPORT FOR UNIVERSITY CAPITAL PROJECTS

Extensive consultancy was provided by IT Services to support the University's capital projects including engagement with Estates & Facilities on new building projects, for example the new Business School and Oisín House.

TEACHING AND LEARNING IT

AUDIO VISUAL EQUIPMENT UPGRADES 2014-2015

This project enhanced staff teaching and student learning experience through the replacement of old audio visual equipment with newer, more reliable and more serviceable equipment. Presentation facilities were upgraded in D'Olier Street Theatres, including new projectors, screens control equipment, document camera, video conferencing and audio equipment.



The system control equipment was upgraded in the D'Olier Street seminar rooms. An interactive white board was provided in Room 5040 in the Arts Building. Arts 5052 was upgraded with a new high definition projector, a new screen, new Mac computer and new switching equipment. The Emmet, Davis and JM Synge theatres had new touch panels and controllers installed. Museum M4 was upgraded with new switching equipment, a new controller, Mac computer and wireless microphone.

SOFTWARE VIRTUALISATION

IT Services ran a pilot project in early 2014 that evaluated an application virtualisation solution. Application virtualisation makes application software available, for example, in public access computer rooms, without having to actually install the software on the computers in the room. This provides for greater speed and efficiency in software distribution and license management and reduces the labour overhead associated with physically installing software on multiple computers.

As a result of the pilot, a system called Software 2, which is widely used in higher education institutes, was implemented in Trinity. At present it is used in some public access computer rooms and lecture theatres to distribute software remotely.

BLACKBOARD COMMUNITY ENGAGEMENT

IT Services engaged with the Centre for Learning Technology to deliver a project in 2014-2015 to integrate data from the Student Administration System, SITS, into Blackboard for the effective use of the Community Engagement module (a Blackboard add-on module). The main benefits of this were to allow the Blackboard web page to be tailored to students, depending on their roles; allow special presentation of Blackboard to online students; allow devolved administration of Blackboard using the organisational hierarchy and its associations; allow collaboration and sharing across courses and research groups and allow creation of non-credit bearing modules for staff development and training.

MANAGING COMPUTERS IN STUDENT COMPUTER ROOMS

LabStats software provides a simple solution to measure computer usage in public access computer rooms. It provides reports on both past use of computers and real-time information about current use. It monitors the period of use of computers; the number of logins; the software application that are used, and the length of use. This software helps IT Services to determine how computer rooms are being used, including busy periods and slack periods.

The status of computers in rooms is monitored remotely and if a computer goes offline for a set period of time an alert is sent to IT Services to check the device.

The system was recently upgraded and provides better reporting capabilities and a friendlier user interface for users. The benefit of this work is that IT Services can monitor computer usage in rooms to better meet the needs of users and to optimise the provision of software and computers in computer rooms. It will also assist IT Services to plan more accurately the number of computers and software licenses required to meet student needs in different rooms. Students can check the availability of computers using a simple web interface.

ENHANCING THE USER EXPERIENCE

TRINITY ID CARD PROJECT

A project to deliver a new TCD digital ID was completed and launched in September 2015 during Fresher's week. The project was a collaboration between the Students Union, the School of Computer Science and Statistics (SCSS) and IT Services. The Trinity ID application provides students with a way to verify their identity on campus, using their mobile device, without the need for a physical card.



Two Junior Sophister students in SCSS wrote the application and the server software. The application works on Apple and Android devices. IT Services coordinated and managed the project, delivering the hosting and necessary integrations with internal University applications.

The Trinity ID application can be used by students to verify their identity with University Security; Academic Registry; Library; IT Services; Careers Advisory Service; University Health Services; Student Counselling; the Students' Union, and the Sports Centre. In the future it is hoped that it can be further extended to include other services such as book lending and building access.

IT Services conducts a range of surveys throughout the year and also includes special surveys from time to time. The results of these surveys help us to review existing services, improve services and provide new services where a demand is identified, subject to funding and resource availability.

IT Services conducted a Digital Capabilities Survey for University staff in April 2015. Digital capabilities are defined as those that prepare us for living, learning and working in a digital society and include the ability to use digital tools to:

- Undertake research, teaching, learning and administration
- Use specialist tools and data sets
- Communicate ideas effectively
- Produce, share and critically evaluate information
- Collaborate, reflect and promote knowledge.

Key findings from the survey are as follows:

- Respondents thought that digital capabilities are very important in supporting the delivery of almost all of Trinity's strategies and ranked digital capabilities as of most importance in supporting the Information Technology Strategy, Teaching and Learning, and Online Strategies
- Almost 90% of staff use a smartphone and just over 55% use a tablet, with the majority using Apple devices
- IT Services, Administration and the Library were the three main areas in the University that respondents thought could positively affect change in University's digital capabilities
- The three things identified that respondents would like to see developed to improve the Digital Capabilities of the University were improved access and service availability for:
 - University WiFi Network
 - IT Training
 - IT Support.

The complete results are available at <http://www.tcd.ie/itservices/improvements-projects/surveys.php>.

MANAGEMENT SERVICES

ACADEMIC REGISTRY ENHANCEMENT PROJECTS

IT Services is providing data services to the Academic Registry (AR) enhancement programme to assist in the delivery of academic transcripts and data migration. In addition, functionality relating to diets, non-compensatable modules and online registration was delivered. Some additional configuration to the AR's Enterprise Service Desk was made as a result of a business process review. Further systems improvements for this programme will be delivered towards the end of 2015.

HEA RETURN PROJECT

This project was substantially completed in 2015 and will simplify the running of the HEA Returns in the future.

SENIOR LECTURER'S ANNUAL REPORT

The team provided a number of complex reports for inclusion in the annual Senior Lecturer report.

KX ACCOMMODATION SYSTEM UPGRADE

IT Services worked with the Accommodation and Catering Service to complete an upgrade on their software to the latest version. The Kx application supports Trinity's Accommodation and Catering Service to provide accommodation to students and summer visitors. It assists the booking and smooth running of conferences and other events. The Kx Hotel online booking system was upgraded to a new mobile-friendly version. The main benefits of the upgrade are the improved functionality, particularly for the student web component, a more supportable and up-to-date system with all the latest bug fixes and new functionality.

UNIVERSITY CALENDAR IMPROVEMENTS



The University calendar was further improved in 2014-2015 in response to the request by the Secretary's Office to allow for the rollover of different years. The main benefit is the provision of functionality for the pre-population of future University calendars. University users now have access to multiple University calendars online.

SPORT CENTRE SYSTEM UPGRADE

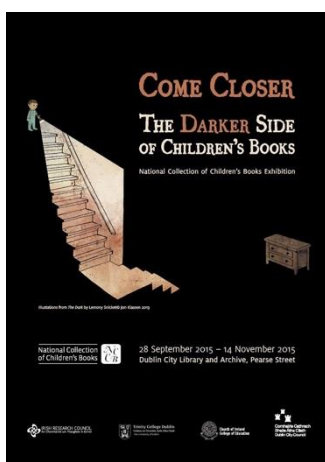


IT Services worked with the Department of Sport and Recreation to upgrade their existing service, which is used to manage admittance, bookings, membership and reporting. The upgrade ensures the system is running on supported technology hosted in the University's main data centre. It also ensures that it is based on a supported, secure application, operating system and database architecture, enabling better performance and security. It also offers more functionality including the SEPA-compliant management module allowing installment payments; the potential for direct debit payments; the potential for online booking of sports facilities in the future, and improved reporting on membership and retention.

APPLICATION PORTAL

IT Services developed an application portal in 2014-2015 to replace old technologies and to provide a secure user-friendly web application framework to support the rapid development and delivery of small business applications. The portal has been developed on a vastly improved infrastructure that will provide greater availability, resilience and accessibility. On completion of a security review, to be carried out in 2015-2016, programmers will be able to reuse business objects for faster application development. This solution's main benefits will be improved quality of programming and development, faster speed of deployment for applications and a consistent look and feel for end users.

NATIONAL COLLECTION OF CHILDREN'S BOOKS



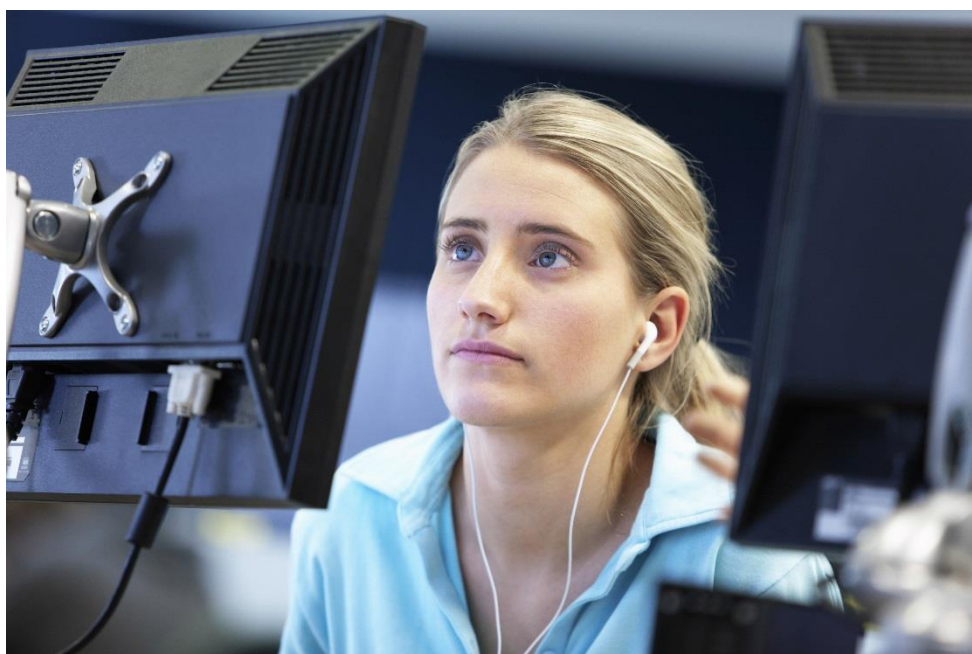
Developed by RIT, the NCCB (<https://nccb.tcd.ie>) website is the centrepiece of a multi institutional collaboration between TCD, the Church of Ireland University of Education and five institutional libraries. This website hosts a centralised catalogue of children's book collections from the participating institutions. It also contains a database of selected texts, including detailed descriptions and images of the texts.

Rather than build a fully standalone site, the NCCB site uses resources and application programming interfaces of the Digital Repository of Ireland (DRI) as a database for the catalogue. Indeed, it is currently the largest single DRI collection.

The NCCB website was launched on 28 September 2015 at the Dublin City Library and Archive. Initially it was hoped that 50,000 records would be uploaded to the system. Already, 180,000 records have been uploaded and it is expected that up to 240,000 records will be available by the end of the project in December.

RESEARCH SUPPORT SYSTEM UPGRADE

The Research Support System facilitates the University's scholarly communications by allowing Trinity Researchers to maintain their Curriculum Vitae and bibliographic data and to record their research outputs in one central location. This project upgraded the old RSS infrastructure to supported versions of Windows and Oracle. The transition was completed with minimal interruption to the University community.



IDENTITY MANAGEMENT PROJECT

IT Services successfully completed the implementation of the Microsoft Forefront Identity Manager Project, a new University Identity Management system to identify and authenticate users and grant them access to University services and IT resources, based on their role. Final testing was carried out at the end of 2014, followed by the rollout of new software processes and decommissioning of older technology. This project consolidated identity data into a centralised Identity Management system, thereby promoting consistency of organisational data and improving identity data quality and security across University systems.

BUSINESS CONTINUITY PLANNING PROJECT

The Business Continuity Project advanced further in 2015 with the delivery of a Business Continuity Plan that, when fully tested and implemented, will enable the University to recover from events that disrupt operations in a planned, structured, and timely fashion. This will ensure that critical IT systems and services are restored as quickly as possible and with the least amount of disruption. IT Services will review, update and test this plan on an ongoing basis to ensure that it stays relevant and accurate.

IT SECURITY WEEK AND DATA PROTECTION DAY 2015

IT Services held the third annual IT Security week (26-30 January 2015) to raise awareness of IT Security issues affecting staff and students in the University. We posted a news items to our website each day that offered tips and guidance on the latest IT Security developments.



To mark international Data Protection Day on 28th January, there was an exciting panel discussion in the Sygne Theatre entitled "What does the internet say about you?" This event was held in conjunction with Information Compliance and the Science Gallery. The event was aimed at raising awareness and educating individuals on their rights and responsibilities with regard to collecting, storing and processing personal data.

In addition to the panel discussion, a giant QR code, developed by Research IT, was projected onto the Nassau Street entrance to the University. Over 100 people scanned the code and were asked a sequence of questions requesting personal data ranging from name, gender, email address to more sensitive data such as date of birth, occupation and credit card details.

Without any idea of what their information would be used for or where it was going to end up, 90% of participants volunteered their name and gender, while a shocking 27% of participants answered the request for details of medical conditions and their credit card number. No personal data was stored during the demonstration.

While this exercise was for demonstration purposes only, it could easily have had a more sinister agenda. The moral of the story is to think before you click!

SECURING THE MAIN UNIVERSITY NETWORK

A project was completed in 2014-2015 to enhance security and reliability of the wired network. The main objective of the project was to apply enhanced security features to each switch in the University to ensure that only known and valid devices can connect to the network. The rollout was phased over a 16 month period and required extensive consultation with staff. It was implemented in over 123 communication cabinets and 353 switches on campus and in all remote locations, covering over 94% of end user network points.

DECOMMISSIONING OLD SYSTEMS AND SERVERS

This project arises out of a programme to reduce the number and extent of physical servers in the IT architecture. IT Services' objective was to decommission obsolete, unsupported and non-standard physical servers to remove the risks associated with unsupported systems. In many cases, systems were upgraded and data migrated to supported applications to ensure access to historic data for future use.

NEW AND EXISTING REFURBISHED BUILDINGS PROJECTS



IT Services has been working with Estates & Facilities on new buildings and refurbishments of buildings to ensure the buildings are designed to the highest networking standards, comply with IT Services structured cabling policy and meet the appropriate quality standards in relation to all aspects of networking that are carried out by external companies. Once commissioned, IT Services integrate the buildings with the core network, commission

networking switching equipment, configure access points, patch points and test to ensure the highest possible standard of networking is ensured for the end-users. Major refurbishment work was completed for Enterprise Centre Unit 24; Trinity Biomedical Sciences Institute (Business School); House 5; Anatomy; 22 Westland Row; Enterprise Centre Units 3 and 8; Clare Street; Museum Building, and minor refurbishment work in Áras an Phiarsaigh Room 3.06; Parsons Building; Sports Hall; Kinsella Hall, and Ussher Library.

IMPROVED ORACLE DATABASE BACKUP SYSTEMS

A project was completed in Q3 2015 to implement Oracle RMAN Catalog, which is software that manage centrally all Oracle database backups. The main benefit of the project is to reduce the effort and complexity of database management by providing a single source of backup reporting, saving disk space on databases, and increasing the reliability of database backups. This ensures that there are common back-up and recovery methods that can be implemented quickly, backup logs can be centrally managed, backup failures captured quickly in a single location, easier rescheduling of backups and alerting on the status of backups.

MANAGING NETWORK TRAFFIC

A project to implement internal load balancing, which improves network performance and security, was completed in 2014-2015. This solution ensures that IT Services can offer greater availability, high performance and failover protection for internally hosted web services.

INFRASTRUCTURE AND OPERATIONS

OPERATIONAL UPGRADES, MAINTENANCE AND IMPROVEMENTS

The ongoing programme of maintenance upgrades and enhancements to the University network, hosting and web infrastructure and services continued during the academic year.

The following services were upgraded or enhanced:

- 10 Gb/s firewall infrastructure and software upgraded, which ensures that our high speed network connections to the outside are maintained.
- Old central wireless controller infrastructure and wireless access points decommissioned and replaced with new equipment under the Mobility Project.
- Bradford Campus Manager System that manages self-service connections to TCDconnect for students upgraded to latest version.
- The virtual private network (VPN) providing remote access to the University network was upgraded in November 2014 and the latest Windows, Mac and Linux clients were added in 2015. This allows secure access for University staff to the Trinity network from anywhere in the world.
- The intrusion detection system (IDS) provides security and monitoring services for the network and detects possible hacking attempts.
- The RADIUS wireless authentication service, which controls access to the WiFi network by authenticating users and authorising their devices on the network, was upgraded. This upgrade significantly improved the security of the WiFi network.
- Computing capacity in the primary data centre in Áras An Phiarsaigh was increased by 55% through a memory upgrade to the servers. Further improvements were made to the secondary data centre in the Lloyd building (RIT) by adding more powerful servers.
- The University has been piloting a new style of telephony to work on the IT network, which greatly reduces costs. The system in use, Cisco Unified Communications Manager, was made highly available (HA) by the addition of servers dedicated to telephony in the secondary data centre in RIT.
- The migration of the Enterprise Backup solution from old on-site tape devices to state-of-the-art off-site efficient disks was completed. The Enterprise Backup Software was also upgraded to the latest version available. These improvements have led to a very significant decrease in the time taken to perform backups and restores.

INTEGRATED RESEARCH DATA SERVER IMPROVEMENTS

During the year, RIT conducted a full review of its hardware and software for integrated research data that was spread over multiple older computer environments. A solution was implemented that allowed for the older computer environments to be integrated into the more modern Infrastructure as a Service environment, while still permitting access to the older storage systems.

UPGRADE OF WINDOWS SERVERS

The challenge of keeping our IT infrastructure, including servers, storage, operating systems and applications, up to date and in support by suppliers has been exacerbated in recent years by the economic downturn and reduction in University budgets. Nevertheless, during the past year, IT Services migrated over 30 systems that were no longer under support to a supported platform. Microsoft ended its support for Windows 2003 server operating system from July 2015 and this meant that they no longer provided official patches, security updates or support for this system. The main benefit is to remove the University's exposure to harmful security threats and new viruses, and to provide University systems with secure supported underlying operating systems. Upgrades included the Student Health Service system and the Counselling Service system.

UPGRADE TO CENTRAL COMPUTER STORAGE INFRASTRUCTURE

Major service improvement works and business continuity testing were completed successfully on the primary data storage device in June 2015. This work involved considerable preparatory work to ensure a successful upgrade with minimum disruption to University services. As part of this work, IT Services successfully tested its business continuity procedures by using high availability technology and associated procedures to fail our main University systems from primary to secondary sites and back again. The work was scheduled for the end of semester in order to minimise impact on academic activity, and took place outside of core business hours.

Service improvement works were completed successfully on the secondary storage device in July 2105 with no downtime of services.

Service improvement works were completed successfully on TCD's Disaster Recovery (DR) storage infrastructure located in ServeCentric in August 2015 with no downtime of services.



NETWORK CORE

The central network core infrastructure, which underpins all IT services and facilitates campus, off-site, data centre and connection to the Internet had 100% uptime during the academic year 2014-15. Performance has been further improved by changes to the network design that governs how devices communicate on the network, which were implemented as part of the Campus Re-architecture Project. As a result of these improvements, the load on central processing units has been reduced from 65% to 35% at peak times, greatly improving performance and response times. The total number of devices, such as PCs, laptops, phones, tablets and scientific equipment on the network has increased from 38,000 to almost 50,000 during this period.

TCDCONNECT ENHANCEMENTS

Over the course of the academic year, almost 13,000 users and 23,600 devices registered with the TCDconnect service, which allows students in Trinity residences and those who wish to use the student WiFi network to register and connect their devices to the Trinity network. There was an increase of 5% in the number of users that availed of TCDconnect and an increase of 27% in the number of devices registered, compared to the previous year.



With the introduction of WiFi in residences during 2014-15 under the University Mobility Project there has been a significant shift away from the use of the wired TCDconnect service in residential buildings, in keeping with the prevailing trend of “wireless first” as the preferred connection mechanism for students.

CONNECTION TO THE INTERNET

University internet traffic continues to grow at a steady pace year on year. Uptime for Internet connection in 2014-15 was 100%.

Network traffic increased on the previous year, driven mainly by the increase in the number of additional mobile devices and users on the network. Typical sustained speeds of up to 1.0 Gb/s traffic download over the internet access point at peak times were evident, up from 0.8 Gb/s or approximately 20% to 25% on the previous year.

CONNECTIONS TO TRINITY'S OFF CAMPUS LOCATIONS

Connections to a number of new off-site locations were provided and existing sites were enhanced over the course of the year. A resilient pair of 1 Gigabit/s links are currently being installed to serve the student residential campus at Trinity Hall in Dartry, replacing the current 300Mb/s and 100Mb/s circuits from the main campus. These new links, which will be operational in Q4 2015, will incorporate full automatic failover and can operate as an aggregated pair which will significantly increase the bandwidth available in this busy location. The links are also future-proofed to allow them to scale up to 10 Gigabit/s in the future should the bandwidth demands require.



A 1Gb/s link was also provided for the new Institution of Population Health Medicine Building in Tallaght and a small site on Clare Street has been connected with a 100Mb link back to main campus.

ICT FACILITIES

The ICT Facilities group was formed as a combination of some staff transferred from Estates & Facilities and some existing staff from IT Services. The new group is responsible for the University's physical network infrastructure, 4 data centres, over 150 communications rooms, OVP lecture theatres and public access computer rooms.

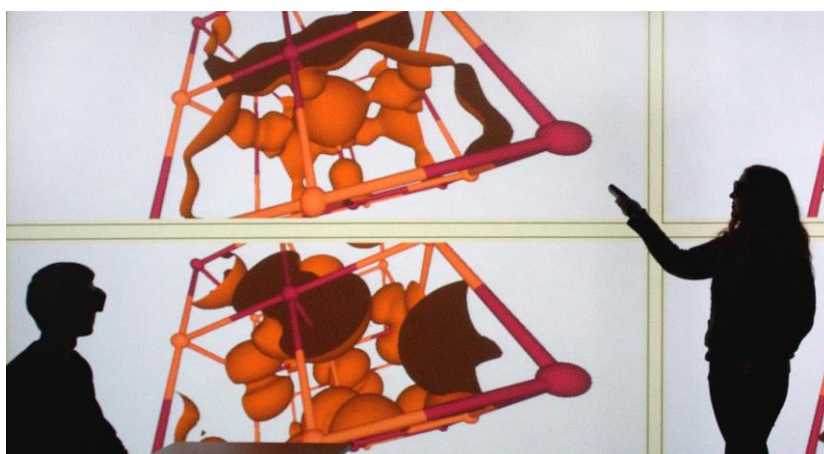
The group also supports IT Services' infrastructure projects, such as the Mobility Project and the Network Re-Architecture Project. It liaises with Estates & Facilities on the IT aspects of new buildings and refurbishments.

Operational activities of ICT facilities include telephone and on-site support for OVP lecture rooms; on-site support for public access computer rooms; installation and support of email stations across the University; support and updates for computer management software in computer teaching rooms and on-site support for audio visual equipment for lectures and conferences.

RESEARCH IT

Research Support System

As part of the restructuring of IT Services, Research Support System (RSS) team joined RIT.



The RSS has undergone a number of significant changes since April 2015.

- Upgraded to a new platform running the latest versions of the operating system and database. This delivered improved performance and stability and a better platform for future development.
- ORCID IDs can be manually entered using the Researcher's RSS Curriculum Vitae.
- A shortcut to the TCD Web Systems registration page is now available at <http://www.tcd.ie/rssregister>.
- RSS users can now change the publication and other research output types themselves. This was previously available by request only.

COMMUNICATIONS TO THE TRINITY COMMUNITY

The focus on informative, relevant and quality communications continued during the academic year. Two eNewsletters were published during the year and the Trinity community was kept up to date with over 70 blog items, updates on Twitter, emails directly to staff and students and the ongoing publication of KPI's and Service Desk incident trends.

IT SECURITY COMMUNICATIONS

Throughout the year the focus was on communication about IT Security and informing and helping users learn to 'Keep IT Secure'. 12% of blog items for the year were related to IT Security. In conjunction with the Graduate Students Union, the communications team ran an IT Security information session for postgraduates covering items such as data backup; phishing; mobile device security; malware; spyware; software security updates; password security and cloud security.



IT Security week focused on protecting personal data and throughout the year the group continued to highlight the serious issue of phishing attacks.

TRAINING

The training team continued to deliver classroom-based training, desk side coaching and application support on topics including MS Office applications, Dreamweaver, Photoshop, Thesis Production and Survey Monkey. Throughout the year the team continuously reviewed and enhanced these courses with additional online videos and updates to training material.

The team worked with the Academic Registry throughout the year reviewing the demand and delivery of SITS training in 2014-2015.

SITS courses were redeveloped and delivery methods were changed, where appropriate. Shorter classroom-based courses were complemented with lecture-based presentations, demonstrations and drop-in clinics. User guides were completely reviewed and updated to provide more complete information for users.



Training courses delivered included:

- Introduction to SITS (my.tcd.ie)
- Module Assessment Patterns (MAPS/MABS)
- Module Mark Entry
- Progression (UG Harmonised, UG Manual and PG)

TRINITY RE-BRANDING INITIATIVE AND IT SERVICES RE-BRANDING

The communications team was very active in working on behalf of IT Services on the Trinity rebranding initiative and led the rebranding work for IT Services.

NEW STUDENT ORIENTATION AND INDUCTION

IT Services continued to review the delivery of information to students during orientation. To follow on from the success of including information sessions in the orientation run by the Schools and Departments in 2013, the group worked with the Senior Tutor's Office to have IT Services' sessions added to main University Orientation Week for 2014. This move allowed us to deliver our 'Getting Started' orientation information to greater numbers of students in a more efficient manner.

IT SERVICE DESK

MAC OS X Yosemite is now supported on the wired network in University offices and labs and on the staff WiFi network.

McAfee Enterprise virus protection service was upgraded from Windows Server 2003 to Server 2012.

TCDguest WiFi accounts can now be created by specific administrators in schools and administration.



Enhanced IT Service Desk 1st line support was provided for the Virtual Learning Environment and for the new Digital ID app.

New themes functionality was released into MyZone to allow students to customise their Trinity email service.

A new group study room was opened in IT Services for students, which provides space for group and project work.

Students can now connect Kindle devices to the WiFi network through TCDconnect.

Computer operating systems such as Windows 10, Mac OS X Yosemite (10.10) and iOS 9 are now supported on the student TCDconnect service.

Antivirus support has been increased from six products to twelve.

The start of the academic year is an important and busy time for IT Services, with the Service Desk being a key area of activity to support new and returning students. A range of additional activities ran alongside, and in support of, the IT Service Desk for the start of the new Academic Year 2014-2015.

IT Services provided the following induction support for students

- 881 additional hours, or 118 extra person days, of support, including training, TCDconnect clinics and information desk services were provided in addition to normal service levels.
- The Service Desk handled 7,706 calls for assistance during induction, a decrease of 2% on the previous year and a 25% decrease on 2012. For the first year, the minority of interactions were through personal visits to the walk-in Service Desk
 - 30% of call were via a visit to the walk-in Service Desk
 - 36% of the calls were received via email
 - 32% of the calls were via telephone.
- The Service Desk handled 17.5% of the overall annual call volume in the first 6 weeks of new student registration and induction in 2014. This means the Service Desk is 50% busier handling calls during this period than at any other period in the academic year.
- Password issues accounted for 69% of all the visits to the walk-in Service Desk.
- Student visits to the walk-in Service Desk in 2014 for password issues and password collection remained static in volume, but queries regarding TCDconnect increased by 44% and referrals to the Academic Registry appeared among the top five issues for the first time.
- Staff visits to the walk-in Service Desk in 2014 for password issues and password collection remained static in volume but requests for hardware repair almost doubled and issues relating to account expiry appeared among the top five issues for the first time.
- User Communications ran induction events and met 7,572 new students.
- 17,000 User Guides were published.
- The number of students registered and connected to TCDconnect by the end of October 2014 was 12,735 and they had connected 21,459 devices. This represents an additional 17% (1,855) students and 36% (5,993) devices connected in 2014 compared to the same period in the previous year.
- The number of students who needed help and attended TCDconnect clinics was 861, a fall of 20% on the number who attended in the same period in the previous year.
- 6.8% of students needed TCDconnect Clinic assistance to connect in 2014. This was a reduction of 2.6%, 5% and 10.3% on the percentage of those needing assistance in 2013, 2012 and 2011.

PAY AND NON-PAY EXPENDITURE

The table below shows pay and non-pay expenditure from 2007-2008 to 2014-2015.

Year	Non Pay	Pay	Total Expenditure	Increase/Reduction	%
2007-08	2,681,926	5,842,000	8,523,926		
2008-09	2,356,686	5,747,000	8,103,686	-420,240	-5.00%
2009-10	2,547,445	5,136,000	7,683,445	-420,241	-5.00%
2010-11	2,369,354	4,852,492	7,221,846	-461,599	-6.00%
2011-12	2,067,791	4,443,423	6,511,214	-710,632	-10.00%
2012-13	1,631,194	4,663,425	6,294,619	-216,595	-3.00%
2013-14	1,950,691	4,737,891	6,688,582	393,963	6.00%
2014-15	1,999,972	6,127,063	8,127,035	1,438,453	22.00%

Table 1 Expenditure on pay and non-pay 2007-08 to 2014-2015

PAY

Over the past number of years, we continued to suffer significant reductions in our pay budget, in line with other areas of the University. Pay expenditure began to rise in 2013-14 and continued to rise in 2014-2015. The increase in pay was due to the transfer of the Student User Support Unit, SUSU, from the Office of the Vice Provost to IT Services to provide support for the Student Administration System, SITS, and the timetabling system, CMIS. In addition to the permanent staff in SUSU, further staff were hired on contracts to assist in finishing the GeneSIS Project and supporting SITS.

NON-PAY

Expenditure of almost €2 million on non-pay items is primarily spend on recurring, non-discretionary items that support the University at an enterprise level. These include software and database licensing for enterprise applications; software licensing for academics and students; the Internet connection for the University; telecommunications connections to remote sites; licensing of the VLE; maintenance of our core network and computing infrastructure, and support and upgrade of audio visual facilities in lecture rooms and theatres.

Although expenditure rose on non-pay in the last two years, it is still considerably below expenditure under this heading in prior years.

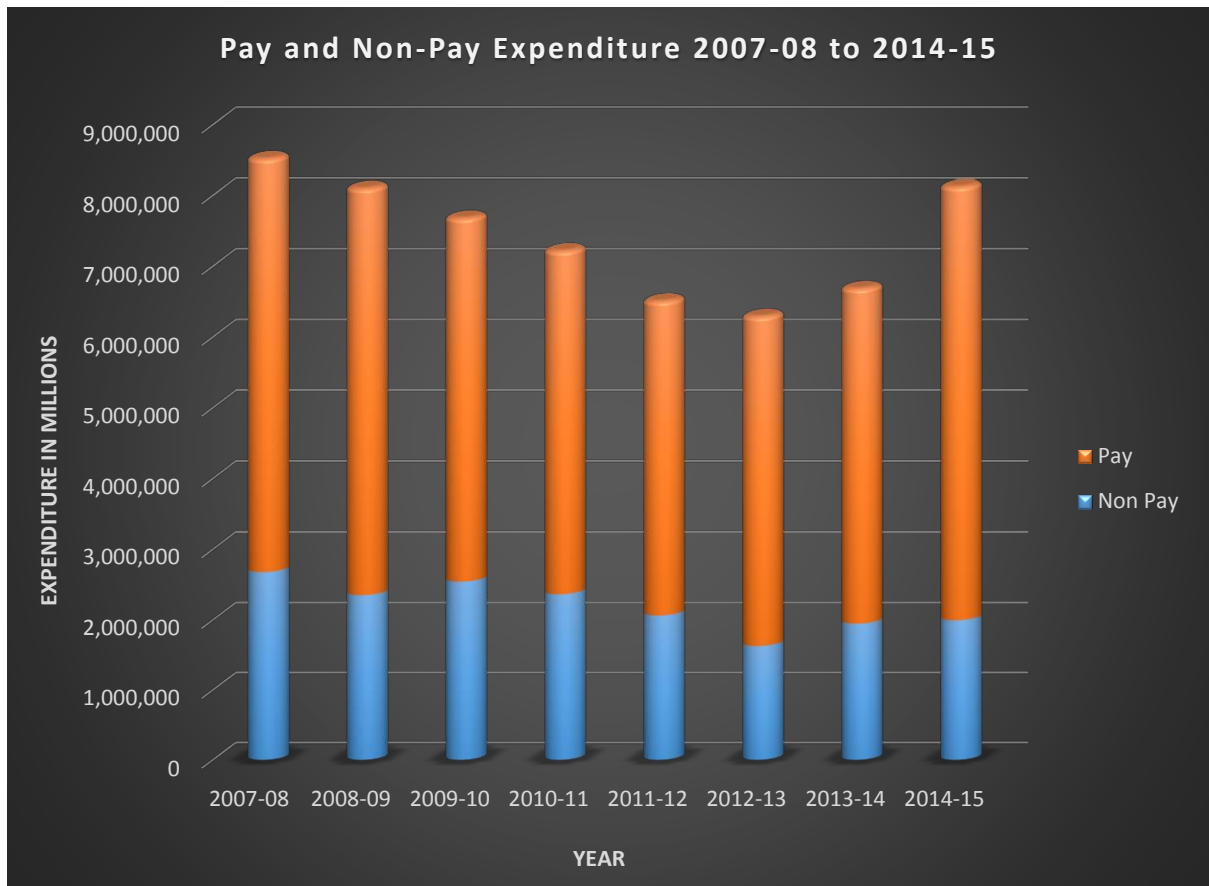


Figure 1 Expenditure on pay and non-pay 2007-08 to 2014-2015

MOBILITY PROJECT

The increase in the use of mobile devices in recent years, coupled with new data-intensive styles of teaching and learning, are all driving the demand for better campus WiFi.

Since March 2015 IT Services, as part of the Mobility Project, has been upgrading the existing Trinity WiFi service with an enhanced and expanded service, designed to meet the needs of students, staff, guests and public visitors into the future.



The Mobility Project will be completed on time on 30th November 2015. On completion the upgraded WiFi service will run on the latest technology available and will be one of the largest WiFi networks in Ireland in terms of size, complexity, density and speed.

For staff and students this will result in expanded and better-quality WiFi service, meeting the increasing need for access to information at all times.

In the early stage of the project a full redesign of WiFi coverage across all University working spaces was completed. To deliver on this design over 2,000 high-speed and high-capacity WiFi access points are being installed across Trinity, and this work is now over 75% complete.

STAFF EMAIL UPGRADE PROJECT

As part of the staff Email Upgrade Project, IT Services delivered Office 365 ProPlus to students in Fresher's week, September 2015, with on-site support from Microsoft. Office 365 is a free version of Microsoft Office (Word, Excel, PowerPoint, OneNote) for PC, Mac and mobile devices for up to five devices per user. It also includes 1 Tb (terabyte) of personal file storage (cloud storage) on OneDrive. To enable this facility for TCD students, IT Services were required to make major changes to their identity infrastructure including Active Directory and Microsoft Azure Active Directory.



All TCD students can log onto to the service, use the Office Products online, and download the Microsoft Office software. Once stored on OneDrive, files can be accessed from any device in any location where a connection to the Internet is available. ProPlus is available as a free service to all students for the duration of their time as registered students in the University.

In the coming months, ProPlus will also be made available to staff.

VIRTUAL LEARNING ENVIRONMENT

This is an initiative to procure and implement a cloud based Virtual Learning Environment (VLE) for Trinity, with additional functionality, integrations and process improvements, that will scale to meet the University's strategic and operational needs from 2016 to 2021. The proposal will be implemented by IT Services and Trinity Teaching and Learning.

UNIFIED COMMUNICATIONS AND COLLABORATION

This is an initiative to procure and implement a cloud based integrated Unified Communications and Collaboration solution for Trinity. The project will build directly on the Email Upgrade project that is delivering Microsoft Office 365 services for staff; provide presence; replace the aging telephony infrastructure in the University; ensure that staff have access to collaborative document management sites, and the ability to communicate using both real time and non-real time services.

WEB TRANSFORMATION

This is an initiative to analyse and optimise the University's web services to ensure that the Trinity website becomes a primary digital marketing tool for attracting and converting prospective students and other stakeholders to the University to generate positive benefits. Underpinning technologies include the implementation of web content management and customer relationship management systems in target areas in the University.

BUSINESS INTELLIGENCE

Business intelligence (BI) is a set of technologies, tools and processes that assist organisations and decision makers in using data to understand and analyse organisational performance. Under the umbrella of the University's Digital Transformation Strategy a BI initiative is proposed to meet the BI and reporting needs of the University.



The goals of the BI initiative are as follows:

1. **Leverage Capabilities:** Enhance existing BI capabilities and deliver new ones, including:
 - Provide and widen access to existing DataMarts
 - Facility to provide data for better and easier analytics
 - Facility to provide data visualisations
 - Facility for self-service reports and dashboards
 - A single, certified repository for BI data.
2. **Empower Users:** Train and support power users with a standard toolset for self-service reporting and analysis.
3. **Governance:** Govern BI capabilities and data, fostering user autonomy and self-service.
4. **Resilience:** Provide, manage and maintain the BI and data infrastructure.
5. **Strategic and Management Information:** Move from operational reporting to statistical analysis and forecasting.

DISASTER RECOVERY IMPLEMENTATION PROJECT

Excellent progress was achieved in the Disaster Recovery (DR) Implementation project this year. The DR implementation project seeks to provide the University with a highly resilient IT infrastructure that will underpin and support the day to day operation of all University activities that use core IT services. Three of the four deliverables of this project have been completed within scope and under budget. These deliverables include:

- Establishing an offsite disaster recovery site where critical data is backed up to and where University systems can be operated from in the event of a disaster event that affects the campus. This was delivered on time and under budget in August 2014.
- The relocation of essential communications equipment so that the equipment can benefit from increased resilience and superior facilities including but not limited to fire suppression, appropriate security and access controls, and a lower flood risk.
- A communications upgrade for the University campus involving the installation of a new fibre ring. This provides the University with network resilience in the event of infrastructure failures or of damage to cables during on-campus construction projects.

This project is due for completion in 2015-2016.

GENESIS STAGE 5

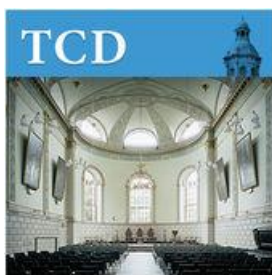
The Ceremonies and Alumni functionality have been provided to the Academic Registry in 2014-15, and will enable graduation ceremonies to be run from the SITS system for the first time.

The close-out of the remaining Seanad and Research components will be handed over to the Academic Registry in 2015-16.

TEACHING AND LEARNING IT

PODCASTING PILOT AND ITUNESU UPGRADE

The current podcasting system, Podcast Producer, is old and needs to be replaced. The ability to easily capture content through podcasting is strategically important (Strategic plan 2014-2019) as it can contribute to the online learning initiative and facilitate engagement with the wider community. IT Services is piloting the Panopto podcasting system for one year. This pilot project will provide an opportunity to determine if there is sufficient demand to justify the implementation of the full system, based on the number of hours recorded, the number of active producers, the number of active consumers and on whether demand for the system is expected to grow in the future. The solution will offer a significant upgrade to the existing podcast system with a range of easy-to-use features. The podcasting facilities in the OVP centrally managed theatres - where the service is offered - are being upgraded as part of this project. The existing solution will then be decommissioned and a new publishing process for iTunesU content will be implemented. The solution is currently being deployed and it is scheduled to go live in Q4 2015.



The servers currently hosting the podcasts for iTunesU are nearing the end of their operational life. An upgrade project for iTunesU will migrate the service to virtual machines hosted by IT Services. The system will be migrated from a Mac platform, removing the need for Mac server support. The new solution will allow the Trinity Web and Digital team, who upload the content to iTunesU on behalf of University, greater freedom to troubleshoot issues as they can now be given direct access to the uploaded content.

ENHANCING THE USER EXPERIENCE

AUDIO VISUAL EQUIPMENT UPGRADES 2015-2016

During the coming year, IT Services will continue its annual programme of audio visual equipment upgrades to support teaching and learning in OVP pool theatres and seminar rooms, identifying locations where old equipment needs to be replaced and responding where possible to user needs.

SELF-SERVICE PASSWORD RESET AND GOOGLE ACCOUNT MANAGEMENT

This project, which will be completed in 2015-2016, builds on the Enterprise Identity Management capabilities implemented in 2014. There are two main objectives for this project:

- To implement a service to enable staff and students to reset their passwords through a simple self-service portal. It will also enable passwords to be synchronized across the main Trinity systems and, for students in the first instance, with Google.
- To implement a new interface and automated processes to create new accounts in Google Apps for new students.

UPGRADE TO CENTRAL ANTI-VIRUS SERVICE

The ePO system is the central anti-virus service that monitors virus and malware activity on the staff networks for some 5,000 computer clients. The main objective of this project is to migrate the anti-virus service from an old Windows 2003 server to a new Windows server operating system, and to upgrade the ePO application. The work involves a phased migration of all computer clients over a six-month period. The main benefit is an upgraded, supported ePO service for staff to help maintain a more secure, virus- and malware-free environment on the staff networks. The project is on schedule to end before the end of 2015.

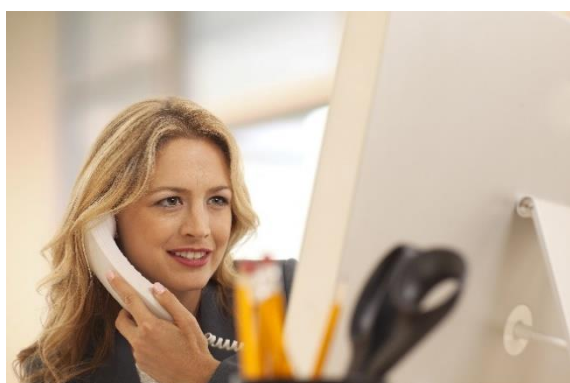
COMPUTER DATA RETRIEVAL AND DATA DISPOSAL

The project will end in 2015 and will establish new procedures for securely destroying University data held on IT equipment and media and will identify recommended suppliers for data retrieval services. The main benefit is to ensure the secure disposal and retrieval of University data.

UPGRADE TO CENTRAL STORAGE AND WORKFLOW TECHNOLOGY

An upgrade project for the University SharePoint service, which provides central document storage and automated workflow capabilities, will end in 2015-2016. The project's objective is to upgrade and standardise the existing SharePoint servers to latest versions. The aim is to consolidate the existing servers into a new architecture to support the controlled development, testing and deployment of SharePoint services and to provide higher availability and improved functionality.

STUDENT ADMINISTRATION SYSTEM (SITS) AND ACADEMIC REGISTRY ENHANCEMENT PROJECT



The overall objective of the Academic Registry Enhancement (ARE) Programme is to support the registry and to ensure that it can provide the services necessary to support the student lifecycle, support schools in delivering the University's mission, and to enable the University to grow student numbers with confidence that the structures, processes and systems in the registry can support that growth. It is an integrated change programme with a number of workstreams.

The most significant workstream for IT Services work is the 'Systems' workstream. This has been further sub-divided into 10 small projects, for which IT Services staff are doing all of the business analysis and some of the development work. These include Awards Calculation (Harmonised courses); Academic Transcripts; Visiting Students (Online application); Student Record Mains; SCE; Finance Automations; Online Registration Screens; Exam Paper submission and Post Graduate Modularisation. Work is also being completed by IT Services on the 'Process' workstream and 'Data' workstream elements of the Programme.

The programme is on track to be completed before the end of 2015. It is expected to have direct impact on reputation, on the satisfaction of existing students and on our ability to attract future students.

STUDENT COMPLAINTS SYSTEM

The 2011 review of the Office of the Vice-Provost identified the need for a University-wide Student Complaints Procedure. The objective of this project is to deliver an automated online workflow system to support the administration of Student Complaints Procedure and allow the OVP to manage the student complaint process more effectively. This new system will automate much of the administration of the procedure. It will help to provide a standard and simple experience for students lodging a complaint, will facilitate case tracking and storage of standard case data, enable standard and ad-hoc reporting, and facilitate consistent decision making.

COLLECTIONS MANAGEMENT SYSTEM

A project to deliver a new Collection Management System was requested by the Curator of the University art collections to allow for the effective curation of the collections by having an electronic catalogue of artworks and collections. IT Services will host the application and database with a view to making the Trinity Collections databases available online for research, teaching and outreach purposes in line with the current University Strategic Plan 2014-19. We propose to implement the Adlib system, which is used for university and museum collections at other major institutions. This will further enhance the perception and prestige of Trinity's heritage and research management.



This project will be completed in 2015-2016

HR FORMS

IT Services are working with Human Resources to build a hub of web forms using SharePoint technology to support their service and process improvement programme. The project includes Staff Requisition form; Nomination form; Leaver form and a Probation form with automated approval workflow processes. This year-long project started in February 2015 and will see the phased release of online forms. The HR Forms hub will improve the user experience by automating process and approval workflows. Reliance on external vendors has been reduced thus reducing annual maintenance fees. The hub of online forms can be further expanded for HR and other areas of the University to provide a streamlined Information hub. This project will be completed in 2015-2016.

ACCOMMODATION SYSTEM ENHANCEMENTS

This project was requested by the Accommodation and Catering Office. It involves the implementation of new modules for the accommodation system (Kx) by the next academic year's student intake in September. The Kx inspections module will provide a more consistent method for recording, evaluating and charging for damage to residential rooms.



The Kx request module will enable students to request services such as overnight guests, kitchen packs, room moves and early departures using the Kx student web site. This module will make it easier for the student to make requests and streamline the office work necessary to process them. This new functionality will improve the student experience and reduce the workload in the Accommodation Office. This project will end in 2015-2016.

UPGRADE TO WEB APPLICATION DESIGN AND DEVELOPMENT SYSTEM

The Research Support System and WiSER (Women in Science and Engineering Research) System were developed using an Oracle web application design and development tool known as Oracle Application Express (APEX). This project will upgrade the APEX system, migrate the web applications from the current system and decommission the old APEX servers with minimal disruption to the University community. The main benefits are improved robustness for applications and ability to deploy the applications on mobile devices.

SCHOOL OF NURSING STUDENT ALLOCATIONS SYSTEM UPGRADE

The Student Allocation System is used by the School of Nursing and Midwifery (SONAM) to manage the allocation of student nurses to training hospitals. This project will migrate the old system to an entirely new server infrastructure, with minimal disruption to staff and students. This essential service, necessary for administering allocations, will run on a secure and supported platform, with easy access to an online portal for staff and students, providing continuity of the service with agreed support from the supplier.

OTHER PLANNED UPGRADES 2015-2016

- Library Manuscripts service.
- IT Services Team Foundation service.
- IT Services Project Management tool.
- Annual SITS upgrade.
- Nursing student allocations service.
- Financial Services Division Time and Attendance system.
- Library Time and Attendance system.

THE DIGITAL REPOSITORY OF IRELAND

Trinity is the technical lead on the DRI, Ireland's trusted digital repository for the humanities and social sciences. The repository was launched by Minister Damien English in June 2015 and has had a number of high profile collections featured in the media.

Development continues on the repository with a large focus on scalability and robustness and on incorporating workflows and audit features. The repository was awarded the Data Seal of Approval (DSA) in July 2015. The DSA ensures that data producers are given the assurance that their data and



associated materials will be stored in a reliable manner and can be reused. It also provides funding bodies with the confidence that data will remain available for reuse and their investments will not be lost. Furthermore, it enables data consumers to assess repositories where data are held and supports data repositories in the efficient archiving and distribution of data. RIT is currently working towards full ISO 16363 certification, which assesses the trustworthiness of digital repositories, for the DRI.

Because of our work on the DRI, Trinity was selected as the host for the international Open Repositories conference in June 2016. This week-long event will see over 500 delegates from around the world report on progress to date and plan the future direction of open-source repository software.



DEVELOPMENT OF NUMERICAL LINEAR ALGEBRA CODE

RIT has been supporting researchers in the TCD Spintronics group (<http://www.spincomp.eu/>) by investigating libraries for inversion of large sparse matrices. In addition RIT has adapted a novel method of parallel block tridiagonal sparse matrix inversion which is currently in testing phase.

RESEARCH ETHICS APPLICATION

RIT are developing a web application for the Research Ethics Committee. This will allow for online collection of research ethics applications, and will assist with the approval process in line with University policies. The system is due to be trialled in Q4 2015, with a full roll-out in early 2016.

DRAWN TO THE PAGE

The Drawn to the Page (DTTP) database catalogues an initial selection from the holdings of the Trinity Library of publications illustrated by Irish artists between 1830 and 1930. The database provides a selection of high resolution images from each of the texts listed, subject to copyright restrictions.



The main aims of this digital resource are to facilitate wider public access to the material, to create a greater awareness and appreciation of Irish artists' activities as illustrators and to encourage further research in relation to Irish artists and illustration. It will go live in December 2015.

CAMPUS NETWORK ARCHITECTURE

The objective of the Campus Network Re-architecture project is to redesign the University network and align it to current best practice design for enterprise-scale campus networks. This project will deliver new high-performance equipment and will make the network more robust and resilient. The increase in the number of distributed high-bandwidth 10 Gigabits-per-second (Gbps) links throughout campus will improve network performance and, once implemented, will be capable of supporting the performance demands of future and next generation data, voice and mobility services for University. This project will complete in Q4 2015.

CENTRAL DATA NETWORK IMPROVEMENTS

This project will replace the old network distribution equipment with new Hewlett Packard equipment and migrate all campus links to the new equipment. The equipment will be deployed in the main communications facilities on campus and individual campus buildings will be wired back to these new switches. This work is a key enabling activity for the larger campus network Re-architecture project. This project will end in Q4 2015.

NETWORK ADDRESS MANAGEMENT SYSTEM UPGRADE



Devices such as PCs, laptops, mobile phones, tablets, servers, storage and specialist equipment need a specific address on the Trinity network to enable them to communicate with each other. As the number of devices on the network increases, it becomes increasingly challenging to manage them without the use of an address management system.

IT Services initiated a project in 2015 to upgrade its network address management system, known as Internet Protocol Address Management (IPAM). IPAM provides various address management services and methods, depending on the specific requirements of the device and the services it requires or provides. The upgraded system is designed to provide high availability (HA) to critical network services, with HA configured on various subsystems and components located in different data centres, both on and off the main campus.

A new IPAM system has been procured at significant cost savings to the University. Installation started in October 2015 and it is expected to be in service by mid-November 2015. It will provide a scalable and high-performance IPAM system for the next five years that will be capable of meeting increased capacity requirements, will provide enhanced functionality to support self-service IPAM and streamline administration, operation and maintenance.

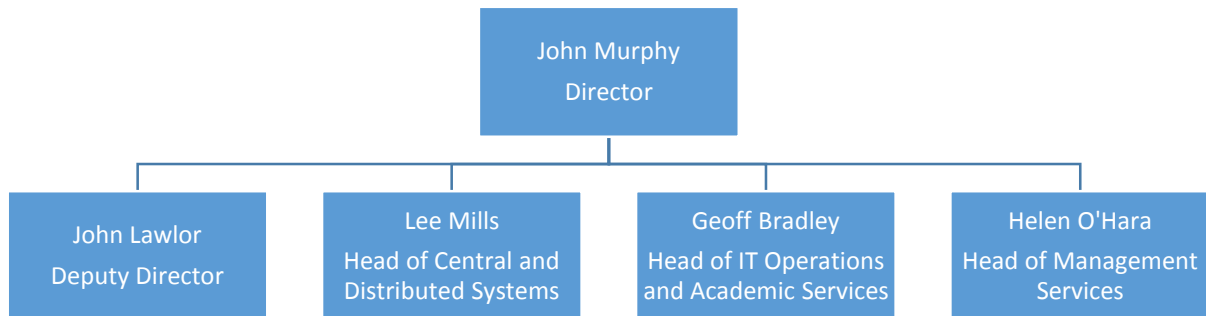
REDESIGN RESEARCH IT DATA CENTRE TO REDUCE POWER USAGE

The objective of this project is to reduce power usage in the Research IT Data Centre and bring the site in line with modern data centre standards that support the Trinity's Green IT objectives. The project will end in Q4 2015.

OTHER IT INFRASTRUCTURE PROJECTS PLANNED FOR 2015-2016

- Expansion of IT Services storage infrastructure.
- Replacement of the University's Internet firewall and network perimeter security monitoring systems to further improve security of the network.
- Further improvements to the University's RADIUS authentication service to improve security of the wireless network.
- Cloud-based storage infrastructure.
- A replacement of external load balancers, which manage network traffic from outside the Trinity network.
- New network monitoring and management systems to improve performance and security.
- Continued upgrade of server operating systems.

APPENDIX 1 - IT SERVICES ORGANISATION CHART



FUNCTIONAL RESPONSIBILITIES

JOHN LAWLOR, DEPUTY DIRECTOR



- Administration
- Enterprise Architecture
- IT Project Management
- IT Security
- Vendor Relationships.

GEOFF BRADLEY, HEAD OF IT OPERATIONS AND ACADEMIC SERVICES



- Teaching and Learning IT
- Research IT
- Infrastructure and Operations
- ICT Facilities.

HELEN O'HARA, HEAD OF MANAGEMENT SERVICES



- Application Design and Development
- Programming and Integration
- Business Application Support
- Business Intelligence.

LEE MILLS, HEAD OF CENTRAL AND DISTRIBUTED SYSTEMS

Service Desk; Service Delivery; Training and User Communications.

APPENDIX 2 - CUSTOMER CHARTER

We aim to deliver excellent customer services. The customer charter tells you, as our customers, what standard of service you should expect when dealing with IT Services. It defines a high and consistent standard of customer care that we will strive to achieve.

WHAT YOU CAN EXPECT FROM IT SERVICES

We are committed to providing responsive, timely, effective and consistent services to you.

We will be	What this means
Customer focused	Excellent customer experience Fair and respectful treatment Friendly and professional service Answering queries promptly Easy to use services
Good Communicators	Jargon free communications Accurate and up to date information Open and transparent service management Listening to and valuing your feedback
Innovators	Seek out new technology and opportunities Think creatively about providing solutions Embrace change Flexible and agile service delivery

WHAT WE ASK IN RETURN

Expect the best from us

- Let us know if our services do not reach the standards that you expect
- Tell us what you think, we welcome your comments and feedback.

Help us help you

- Provide us with clear information about your service request or problem
- Be patient and understand that sometimes serious incidents need to take priority
- Be respectful in your interactions with our staff and be mindful of the rights of fellow students and staff when using our services
- Use our services in accordance with terms of use, licensing agreements and the IT Usage Policy.