

INFORMATION SYSTEMS SERVICES ANNUAL REPORT 2012-13 SERVICE PLAN 2013-14



The Annual Report for Information Systems Services 2012-13 presented to the Library and Information Policy Committee; providing background information on the area and highlighting the achievements during the year. The Annual Report is circulated with a summary document.

Director of Information Systems Services 27th January 2014

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DRAFT

Director of Information Systems Services 2nd December 2013

1. Overview of the Area

1.1 Structure and Function

IS Services is responsible for the planning, delivery and support of the College's main computing facilities. This includes the College's network systems, web infrastructure, email and calendaring, management information systems, student computing facilities, some research IT infrastructure and High Performance Computing. IS Services provides support for teaching and learning in a number of lecture theatre's and seminar rooms on and off campus, and also provides a video capture/production service and a photographic service. Staff and students are provided with full IT support via the IT Service Desk and a wide range of IT training is also available either online or face to face. IS Services also runs a Projects Office for all IT projects in line with College Board policy and provides significant support to the College's enabling Strategy (e-Strategy). The department supports 25,000 users on the main campus and on 26 remote sites.

An IS Services organogram is included as **Appendix A**.

1.2 Staffing and Locations

The current (2012/13) staffing complement amounts to 77 fulltime equivalents (FTEs). The department is geographically dispersed over five locations. The largest number of staff is housed in 200 Pearse Street. The Support Service and Helpdesk is based on the ground floor of Aras an Phiarsaigh which also hosts the College's Green Data Centre. The Audio and Visual and Media Services has floor space on the third and fourth floor of the Arts Building and the Photography service is delivered from the Berkeley Library. The High Performance Computing team work from the Lloyd Building.

IS Services operates a number of computing labs for student and academic use on the main campus and on remote sites. The total space allocation to IS Services is 1573.44MSq. Most of this space is on campus. However, this allocation includes over 150 data communication rooms which include a number on 26 remote sites including major buildings at St. James and Tallaght hospitals; the Biomedical Sciences building on Pearse Street; and 20 Student Computing facilities providing over 1,000 student computers on campus and five off campus locations.

1.3 Key initiatives 2012-13

Following on from the Quality Review of IS Services in November 2012, in early 2013, the College Board approved an implementation plan for the recommendations outlined in the Quality Review. While some of the recommendations are operational or in the area of continuous improvement, many such as the development of a College-wide Information are Strategic. The Quality Review 2012 is published in full at http://www.tcd.ie/teaching-learning/quality/reviewers_reports_3.php

During the year, IS Services was one of the areas that was considered as part of a "shared services" feasibility study conducted by the Irish Universities Association (IUA). As part of

this initiative the IT departments in each university were assessed and IS Services were the highest ranked IT department in a number of key areas.

IS Services regularly receives user feedback via its Helpdesk call logging and tracking systems. Every year a full and comprehensive user survey is conducted the results which feed into the setting of the departments objectives for the coming year and into the IS Services continuous improvement process. In late February 2013, IS Services, working with oversight from the School of Computer Science and Statistics, launched a second comprehensive annual Satisfaction Survey. The response to the survey was good with a total of 1,537 responses.

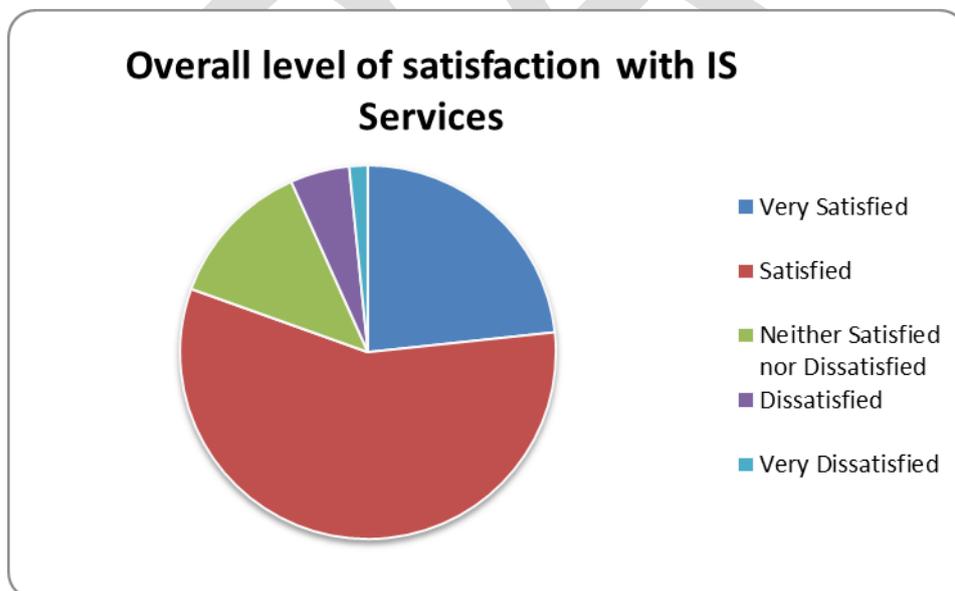
- 457 staff (13% of the overall number of staff)
- 1082 students (6% of the overall population of students)

The results summary includes:

- Overall level of satisfaction with ISS (Staff)
- Overall level of satisfaction with ISS (Students)
- Rating Results Tables

Overall Level of Satisfaction for Staff

The overall level of satisfaction with IS Services was rated very high by the staff who responded to this survey. A total of 80.5% were either 'Very Satisfied' or 'Satisfied' with IS Services, an increase of 5% on the 2012 survey result. Only 6.7% were dissatisfied with IS Services overall, a fall in the level of dissatisfaction of 3.3% on the 2012 survey result.

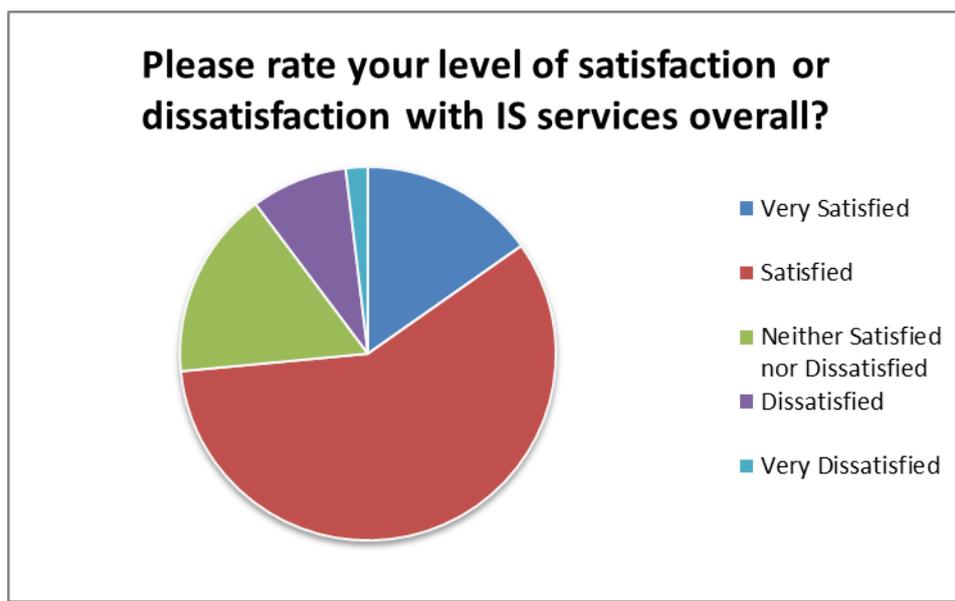


The survey specifically asked those who were members of College in 2011/2012, whether they thought services provided by IS Services had improved or declined over the last year. In total 51% agreed with the statement that services have improved over the last year, 44%

thought services had neither improved nor declined, while 5% believed services had declined over the last year.

Overall Level of Satisfaction for Students

The level of satisfaction with IS Services was very positive with 73% saying they were either 'Satisfied' or 'Very Satisfied', and only 10% saying they were dissatisfied overall. This marks a change from the 2012 survey results with a 15% increase on satisfaction levels and a 10% fall in dissatisfaction levels overall.



The survey specifically asked those who were members of College in 2011/2012, whether they thought services provided by IS Services had improved or declined over the last year. In total 70% agreed with the statement that services have improved over the last year, 27% thought services had neither improved nor declined, while 3% believed services had declined over the last year.

The full reports from the survey are available at <http://isservices.tcd.ie/general/satisfaction-survey-2013.php>

The Director of Information Systems Services was included in a small working group, chaired by the Chief Operating Officer, to develop an Information Strategy for the College. A summary document was "approved in principle" in June 2013 by START governance and this document included a number of functions that IS Services should deliver into the future.

As part of this process an external review of IS Services was conducted by the Innovation Value Institute <http://ivi.nuim.ie/> which looked at the maturity and capability of IT delivery in IS Services and the College as a whole. As part of this exercise the department was benchmarked against commercial IT departments and the report showed the department exceeded the benchmark in many key areas. The report is published in full on the IS Services website <http://isservices.tcd.ie>

During the year the department continued to engage positively with the College-wide START initiative, and work commenced on a new organisational design. This will deliver a new structure for IS Services that will be more aligned with the College's core areas of Teaching

and Learning, the Student Experience and Research; as well as continuing to provide support to other administrative and support areas.

As well as performing operational and support duties, IS Services staff were also heavily involved in the support of the College's e-Strategy programme of work and a number of other IT projects. A number of key projects commenced, most notably two major strategic initiatives. In July 2013, Executive Officers approved funding for the College Mobility programme which will fully wireless enable the College campus as well as the 26 remote sites now connected back to the main campus. This will deliver a seamless wireless network experience for staff, students, visitors and guests to the College. This initiative will deliver considerable improvements in wireless coverage from Q3 2014 and will be completed in 2015. A full list of all IS Services projects and their status is available at http://isservices.tcd.ie/isspo/current_projects.php

Executive Officers also approved funding for a Disaster Recovery/Business Continuity project which will ensure that College's key systems will always be available in the event of disasters such as a flood or fire on campus; and also have the ability to restore some of College's critical systems quickly in the event of a major disaster that results in access not being possible to the main campus. This initiative will be completed in 2014.

In July 2013, the Director of IS Services was appointed to the role of Project Sponsor to the Genesis Project (new Student Administration System) with the remit of completing phase one of the project (G1) and to put in place a new support structure. The G1 phase of the project will be completed early in 2014 and the existing support unit for Student Administration (SUSU) will be integrated fully into IS Services.

IS Services senior management also served on a number of committees including The Library and Information Policy Committee, The Research Committee, The Graduates Studies Committee and the Web Management Committee; and are also involved on the Project Boards of the GeneSIS, Financial Information System, Enterprise Architecture & HR work-streams.

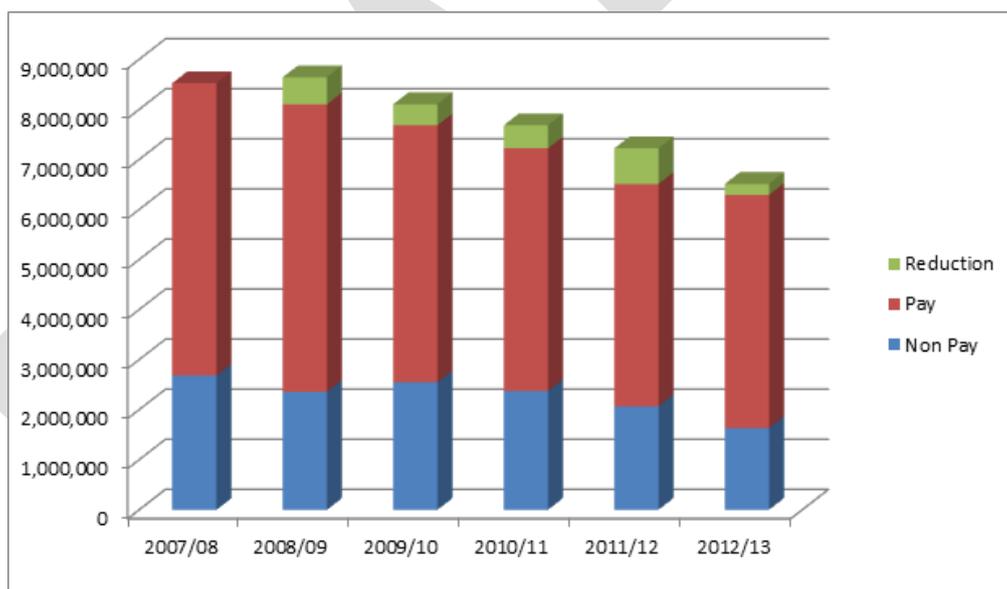
1.3 Budgetary Information

During the past six years (in line with both the external and internal financial pressures) the IS Services budget, both pay and non-pay allocations, have reduced significantly. Despite these significant reductions IS Services provide and improve existing services and add new services to its Service Catalogue. More buildings have been added to the College network, bringing an exponential increase in the number of devices (particularly mobile) and the number of users using our services. On a more positive note significant investment has been allocated to major strategic IT initiatives such as Disaster Recovery/Business Continuity via the College's Capital Projects process. Table 1 and Graph 1 below show the budget situation in IS Services over the past six years.

Table 1 – Information Systems Services Budget figures 2007 -2013

Year	Non Pay	Pay	Total Expenditure*	Reduction	% Reduction
2007/08	2,681,926	5,842,000	8,643,926		
2008/09	2,356,686	5,747,000	8,103,686	540,240	6.30%
2009/10	2,547,445	5,136,000	7,683,445	420,241	5.20%
2010/11	2,369,354	4,852,492	7,221,846	461,599	6%
2011/12	2,067,791	4,443,423	6,511,214	710,032	10%
2012/13	1,631,194	4,663,425	6,294,619	216,595	3%

Graph 1



The non-pay budget of c€1.6M is primarily spent on recurring IT expenditure items. The top ten recurring IT expenditure items equates to over €900K of the budget. A table of the top ten recurring expenditure items is included as **Appendix B**

2. Teaching and Learning IT

As technology is now being used more and more in the delivery of teaching and learning IS Services continued to play a key role in supporting and providing initiative solutions. In support of Teaching and Learning and the Student Experience a number of improvements in infrastructure, equipment and facilities were delivered.

Immediately below is a summary followed by more detailed breakdown of what has been delivered.

- At the start of the academic year 3,442 new students attended 46 induction events
- 16,000 User Guides were published and there were 36,790 visits during Induction to the IS Services home page and 4,329 to the IS Services new student orientation page
- The total number of connections to TCD Connect student network service by the end of October 2012 was 7,000. This was an increase of 16% or an additional 1,000 connections on end of October 2011.
- IS Services has a self-service networking service for students. IS Services does provide assistance for those with difficulties via network clinics. 11.88% of students needed assistance to connect in 2012 which was a reduction of 5.28% on the number of those needing assistance in 2011
- As part of a rolling programme of PC replacements 172 workstations in our student computing facilities were replaced
- The AV equipment across 18 Lecture Theatres and Seminar Rooms were replaced or upgraded and a number of new deployed new audio systems were put in place.
- The College's Digital Signage and information display units were replaced.

2.1 Student Printing

A new print, copy and scan solution was deployed in the student computing facilities, the Library and the central copying service for students. The new solution has added the functionality of copying and scanning in all computer rooms while printing and scanning is now available in the Library. Students registered can now print to the system and collect their print job at any location.

2.2 Computer Replacement

The student computer rooms in the "Huts" at the East End of College have been decommissioned as part of a building project. The computers from these huts have been relocated to the Graduate Memorial Building, thereby upgrading the PCs in this room.

2.3 Software Updates

The student computer rooms were updated with a new software portfolio for the Academic Year. The Mac computers now run Mac OS 10.8 and a large volume of teaching materials for Film Studies was added to the Art's building workstations. The software on all Macintosh computers and PC's has been upgraded to the latest versions where applicable.

- Linux has been deployed to half the computers in EE4, the East End Mac computer room to meet requests from users for this operating system
- In a new arrangement ISS provided support to the Centre for Deaf Studies Consultancy was provided to School of Music to provide a software solution package to allow them configure their computers.

- A comprehensive windows image and support was provided to the computer labs in the Trinity Access Program (TAP) and Bridge 2 College initiatives
- A specific image was provided to Pharmacy teaching computer labs and the Central Societies Committee office.

2.4 Software Licence upgrades

There were some positive developments in respect of software licensing.

- The ERDAS Imagine software licence has been upgraded. With the new licence this allows staff and students to install the software on computers, university owned or personal, for non-commercial activities thereby offering better value for money, increased availability and flexibility in how the software is used.
- The ArcGIS licence has been upgraded and has new conditions which allows the software to be installed on staff and students computers off campus for one year for non-commercial activities again leveraging on existing arrangements to allow greater usage and flexibility in the user community.

2.5 Teaching facilities – rooms upgrades

There were upgrades to a number of lecture theatres and seminar rooms were completed over the summer of 2013 as part of a rolling programme of works funded by external HEA funding. The works included specifying and procuring the equipment and overseeing the installation of the equipment.

- The Edmund Burke Theatre. -new teaching podium location, extra microphones on stage, AV system integrated with new lighting
- LTEE3- East End - replaced Screen, Projector and PC upgrade
- LTEE2 – East End - replaced Screen, Projector and PC upgrade
- Davis Theatre – Arts buildings - Room 2043 Replaced Screen
- Goldsmith Hall – Westland Row – Replaced Screen
- Museum Building - M20/21 - substantial rewire and replaced lecterns
- D'Olier St – School of Nursing - Upgraded PC's, Screens and Projectors
- Arts Seminar Rooms (various) - New projectors, PC's and screens
- Aras an Phiarsaigh - Seminar Rooms (various) -New projectors, PC's and screens

2.6 Audio Visual Consultancy & Design

The AV team assisted with the following consultancy and design projects.

- Biotech building redevelopment - Design AV solutions for 2 x Meeting rooms, 1 x training room, 2 x Classrooms
- Moyne Lecture Theatre - Design new AV system for lecture theatre
- School of Social Work and Social Policy - Design of AV facilities for meeting room and 2 classrooms
- School of Medicine - Design of AV system for teaching room
- START Office, South Leinster Street – Designed AV solutions for meeting room
- GMB - Design of AV system for debating Chamber
- School of Business MBA Room - Design of AV upgrade
- Parsons Building - Design AV system for research project workroom

2.7 Video & Audio Production

The following is a list of some of the video and audio productions that were delivered in support of Teaching and Learning in 2012-13. It shows the variety of work carried out for different areas of College.

Videos for the School of Biochemistry & Immunology, TCD - This is a large collection of videos of members of staff in the School of Biochemistry & Immunology, Trinity Biomedical Sciences Institute. The staff members give introductions to the many and varied research projects underway in the Trinity Biomedical Sciences Institute. The completed videos will be used as important teaching and learning tools.

Video for Trinity College Dublin's National Institute for Intellectual Disability (NIID) - Video of student outlining the group's research and learning, for use on their website.

Biosafety Video, for TCD Safety, Health and Welfare - A biosafety video demonstrating the operation and safe use of Microbiological safety Cabinets, and in particular the new Containment Level 3 Laboratory in the Trinity Biomedical Sciences Institute.

Video for The School of Histories and Humanities, TCD - Video of students, giving accounts of their experiences studying Histories and Humanities in Trinity, for use on website.

Video for The School of Natural Sciences and School of Computer Science and Statistics, TCD - Video of postgraduate students in the Department of Botany, and the Trinity Centre for Biodiversity Research, giving accounts of their research projects in Nepal, for use on The School of Natural Sciences website.

Video for The School of Religions and Theology - Video of students, giving accounts of their experiences studying at The School of Religions and Theology in Trinity, for use on website.

Four videos for The School of Nursing & Midwifery, TCD - Four video interviews, for use on The School of Nursing & Midwifery website, as well as content for an interactive on-line teaching resource.

Audio Live recordings of material in various languages for language learning, research, examination comprehension tests and various other language related initiatives.

School of English - Live recordings of collections of Poetry for the Oscar Wilde Centre, TCD.

School of Histories and Humanities - Restoration and digital mastering of archive audio recordings of College historical material for the School of Histories and Humanities.

The School of Education - Recording of two-hour interview with the singer / songwriter Ralph Mc Tell.

The Artist Biography Project is a series of conversations with artists, offering opportunities to explore key influences in their artistic development.

Recording of two-hour interview with Professor Lucy Green, a music-educationalist at the London University Institute of Education

The interview explores aspects of music relating to education, informal learning and innovative pedagogy.

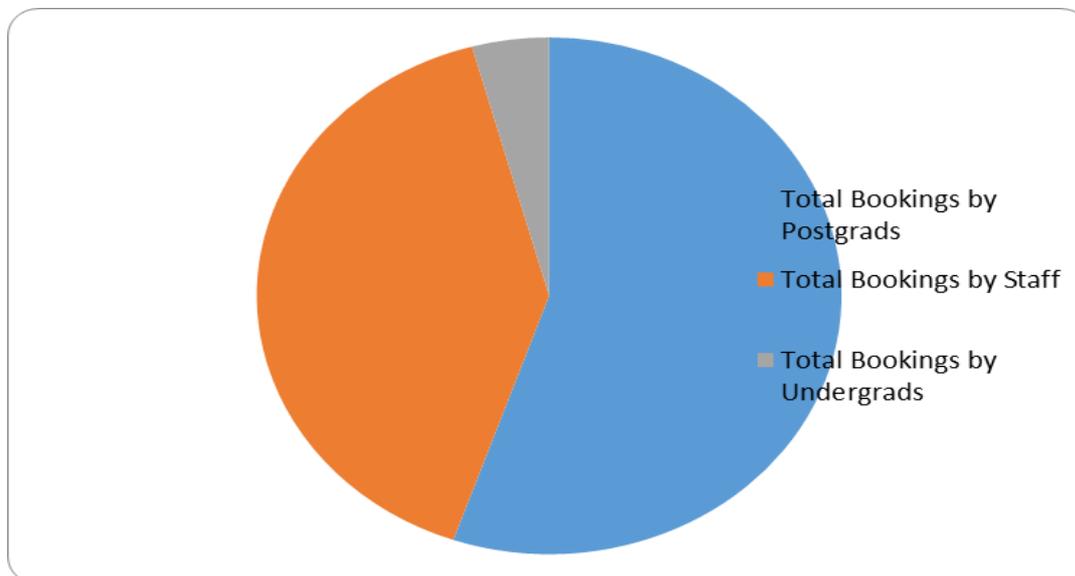
2.8 Photography

The following is a list of some of the key works completed by Photography in 2012-13.

- Supply of images to the Secretary's Office, Provost's Office, Alumni Office, College Rugby Club, Accommodation Office, School of Medicine and History of Art Department
- Studio Portraits for variety of Departments, including the Provost's Office, Secretary's Office, School of Education, Economics, History for use on website and publications
- Updated shots around the College- the ongoing photographing of College for the archive.
- End of year Graduation group shots "BESS" Economics, MSISS Computer Science & Statistics, Senior Sophisters, Pharmacy and the supply of enlarged prints in presentation folders
- 1200 Exam Prints supplied to History of Art for the 2013 Exams.
- Photo Shoots for Royal Irish Academy -- Shots on location, images touched up and supplied from archive
- Photo Shoot in The College of Physicians of rare maps for Philip McEvansonya - History of Art
- The supply of a variety of Images to the Curator of College Paintings and Art works. Paintings and sculpture works photographed on location and in the Studio. Also the ongoing supply of scanned & touched up images of the College Art Collections
- Lecture Theatres equipment photographed for College website
- Location shoot of High Performance Computing for publication
- Preparation of photographic images for College photographic competitions such as Trinity Life Photo Competition and taking part with judging panels
- The supply of images of Brendan Kennelly for the book, "Brendan Kennelly/Behind the Smile" by Sandrine Brisset
- The supply of images for the book "Blood Toil and Tears", by Professor Ian Temperley
- The photographing of the newly restored Museum Building for publication.
- Photographic shoots and supply of stock images to Julia Whittridge, College Global Officer, for publication

2.9 IT Training Statistics

Between August 2012 and September 2013 IS Services provided 1,000 booked training places over 93 scheduled IT skills development training sessions. The breakdown of the booked places is shown below:



The three most popular courses over the Academic Year 2012-13 were;

- Planning Thesis Production
- Data Processing using Excel
- Maintaining College Websites

The overall satisfaction rating for Training delivered in 2012-2013 was **99.11%**

In addition to the training session noted above we provided a further 14 on-demand training sessions for specific Schools across College for 130 people.

Online training

We have invested in Adobe Articulate storyline to develop our online training presence. New online training material was created for the use of our Helpdesk system. We have also continued to increase the number of podcasts to supplement our classroom based training courses.

Dreamfeeder Training

At the request of the Web Design Office new training material was created for users of the Dreamfeeder application.

Training courses at St James Hospital

We have added scheduled classroom based training courses in the Trinity Centre in St James Hospital.

3 Enhancing the User Experience

IS Services is committed to providing new and improved services to the College community and during the year undertook continuous service improvements in several areas. The objectives of this initiative are to achieve higher levels of user satisfaction and to reduce levels of support activity. We select the services for improvement using the following information sources: monthly Helpdesk statistics (what staff and students have been contacting us about at the Helpdesk), feedback from the IS Services User Group, and analysis of the data in the ISS 2012 satisfaction surveys.

Here are just a few items of continuous improvements completed over the last academic year;

- improvements to the wireless infrastructure to enable increased network traffic driven by the increase in mobile devices and mobile users;
- roll-out of additional wireless access points to areas with no coverage or with over-subscribed zones thereby improving existing wireless connectivity and increasing the number of areas with coverage;
- reduced connection complexity to TCD Connect Wi-Fi;
- new single password management page and removal of 6 month password expiry for students;
- modification to network security rules to provide greater access to external resources;
- Roll-out of wireless mobile device connectivity pilot.

3.1 Smartphones (mobile device) network support

In response to the increased demand for connectivity for mobile devices, IS Services introduced network connection support for mobile devices on the student network. Many students in College now have up to four mobile devices, a laptop, a tablet, a phone and sometimes a gaming device.

Staff now also expect to connect multiple devices to the network outside of the College provided computers. There is now network connection support for IOS and Android devices on the staff networks.

3.2 Printing from the Staff Wi-Fi network

IS Services introduced a new service to allow staff to print to College office printers over the College wireless network.

3.3 Irish Language Grammar and Proofing Software

IS Services introduced enhanced software support for the Irish Language for grammar and proofing <http://blogs.tcd.ie/isservices/2013/03/> The Helpdesk phone service now has bi-lingual messages in compliance with the Official Languages legislation.

3.4 New Virtual Private Network (VPN) software

A new software application called Cisco Anyconnect was introduced to provide a robust multi-platform service for those staff requiring secure VPN connections while outside the TCD networks (mainly on broadband or when travelling abroad).

More details at – <http://blogs.tcd.ie/isservices/2013/05/>

3.5 New Desktop Management Developments

- Windows 8 was tested and is now supported on the College network
- MAC 10.8 was tested and is now supported on the College network
- The Microsoft Windows patching facility was upgraded to provide greater security and Windows OS update capability for users
- As many users have now moved to much lighter and thinner laptops, USB Ethernet dongles for laptops such as the PC Ultra book Air and the MacBook Air were tested and are now supported on College network

3.6 Guest Wi-Fi and EDUROAM Wi-Fi Services

IS Services enhanced its support for these two services by provisioning Wi-Fi configuration instructions for Android, iOS and Windows Phone users, thus continuing to support the Mobility Strategy of the College. The Guest Wi-Fi service has also been expanded to allow IT support staff and Authorised Parties across College to create accounts for guest visitors to their departments.

3.7 User Communication

A key component of IT Service delivery and an area for improvement for 2012-13 was User Communication. A number of initiatives in this area were delivered over the academic year. With an emphasis on the use of 'plain English' ISS have worked on engaging with our users through a number of forms of communication. A revamped Newsletter was produced and five editions were sent to all staff and students. Building on the success of social network technologies such as Twitter, a new You Tube channel was launched allowing easy access to online videos and relevant IT information.

Working with the IS Services Projects Office new processes have been put into place so that user communication is included in all future project plans.

We reviewed and updated all the standard and automated emails that are sent from IS Services to create a more consistent and user friendly tone to our communication. We built an image library for use in our communications with a view to developing a consistent brand for all IS Services communications so that they are easily recognisable.

4. High Performance Computing and Research IT

4.1 High Performance Research Computing (HPRC) - Service Provision

HPRC currently manages a range of High Performance Computing infrastructure and projects that delivers compute power and storage to the Research community. The following is a list of some of the High Performance Computing equipment currently housed in the Data Centre

- Kelvin – a national HPC resource funded through PRTLTI with 1,200 cores
- Lonsdale – a College wide resource with 1,232 cores
- Parsons – a private resource for 4 research groups with 1,100 cores
- Crusher – managed on behalf of the Computational Chemistry group
- Stibbons – managed on behalf of the Molecular Design group

There is also associated High Performance Computing storage infrastructure (~200 TB) and infiniband networking. These systems have been used by 127 users from 14 schools leading to the publication of a large number of peer-reviewed papers and conference presentations. In association with the School of Physics, the unit will shortly be deploying a new system using the new Intel Xeon Phi processors. HPRC is also in discussions with similar groups in other universities with a view to developing a shared HPC compute, data and support service between the institutions.

4.2 Teaching and Training

In 2013, HPRC continued to be involved in providing both for credit teaching at postgraduate level and not-for-credit training courses. The unit provides the backbone of the School of Mathematics' MSc in High Performance Computing covering Parallel Programming, Computer Architecture, Software Engineering and Financial Mathematics courses as well as supervising students' research projects. The unit also provides an intensive week long course in Risk Quantification as part of the School of Business' MSc in Finance as well as occasional lectures and seminars in the M.Phil. in Digital Humanities.

At various times during the year the unit has also run skills transfer training courses in parallel programming, software tools, CUDA programming and Linux to staff and students. As part of the TCD/UCD research alliance, HPRC provided a week long Linux course to computational scientists in UCD. These not-for-credit courses are always over-subscribed and we hope to expand both the number of courses and their frequency in 2014.

4.3 Scientific Support

Part of the core mission of HPRC is providing support to computational researchers throughout College. Two areas that have been especially busy this year are computational nano-materials and neuroscience. HPRC staff have been developing parallel algorithms for modelling new nanoscale materials for research students. So far, the work has improved code performance by around 30% and with the upcoming Xeon Phi cluster, more performance and scaling gains are expected. With researchers in TCIN, we have been

developing and porting code that carries out comparisons of brain images generated using MRI scans. These scripts are mainly written in Matlab and R and HPRC have been involved in performance improvements as well as some parallelization.

4.4 Digital Humanities

In 2013, HPRC has continued to increase its involvement in the Digital Humanities. Staff in HPRC are now part of the newly formed College Research Centre for the Digital Humanities, with the HPRCs' manager sitting on the Centre's steering committee. Projects delivered in 2013 include the catalogue of Early English Church Music, The Petty Maps and most recently the crowd-sourced Letters of 1916 project which aims to collect digital images of letters written in 1916 from the public and to allow the public to transcribe the letters.

HPRC continues to lead TCD's involvement in the Digital Repository of Ireland (DRI), where it leads the infrastructure strand. Working alongside partners in NUIM and DIT, the DRI team have completed the development of the pilot repository and are on course to launch the repository to the public in 2014. When complete, DRI will provide a single portal to digitized cultural and heritage resources of Ireland.

4.5 Collaborations

In 2013, HPRC continued to host a student from the University of Santiago de Compostela through the Leonardo Program. This student contributed to projects in Finance, Health Sciences and the Digital Repository of Ireland.

HPRC is currently collaborating with researchers in Karlsruhe Institute of Technology in two separate projects – one using the DARIAH e-infrastructure as a cloud service for digital preservation and another on deploying CEPH as a multi-site, federated storage platform. We are also part of an FP7 project investigating the use of IPv6 in educational environments.

5 Sustaining the IT Infrastructure and Performance

This area of the report looks at some of the continuous improvement initiatives that took place and is quite technical in nature. The network is the life-blood of the IT operation and is a critical component in the day to day operation of the College. Most people from outside College wishing to find information about the College visit the www.tcd.ie site. Details of visits to the site are included as **Appendix C**. The principal method of communication is still email with over 20 Million internal emails sent internally between TCD staff. **Appendix D** has full details on email statistics.

5.1 Key Performance Indicators

The department continued to perform strongly against many of its Key Performance Indicators (KPI's). Network reliability and the availability of key systems such as email matched or exceeded recognised IT standards. A full list of the department's KPI's and benchmarking against same is at: <http://isservices.tcd.ie/general/performance.php>

5.2 Green Data Centre

Over 20,000 students and staff depend on IT services every day. With PCs, laptops, and smart phones connected to servers 24 hours a day and 7 days a week, it's safe to say that as our need for technology grows, so does our carbon footprint. The question then arises: how do we become more energy efficient while also continuing to grow and change with technology to meet daily business needs? During 2011, TCD approached a number of data centre companies with an opportunity to tender for the design and construction of an ultra-flexible, ultra green physical infrastructure platform. The goal for the facility was to deliver 99.999% uptime of IT services; to provide a physical infrastructure capable of operating over the next 20 years; and, to lead as an example of Global energy efficiency excellence with a focus on sustainability, reduced operational costs, reduced carbon footprint and return on investment. In March 2013, the College's Green Data Centre was opened. Since then, existing servers and IT services are in process of being transferred to this energy efficient data centre. Over the next five years, IS Services and Future-Tech (partner suppliers) will work together on maintaining the data centre so that it continues to deliver reliable uninterrupted IT services to TCD and to operate as one of the most energy efficient datacentres in the world. The delivery of the Green Data Centre will allow IS Services to provision Infrastructure as a Service (IaaS) and Private Cloud computing for College. The project was short-listed as a finalist for the Leaders in the Public Sector Aware at the Annual Datacentre Dynamics EMEA Awards event. Although the facility lost out on the winning spot, it is a major achievement to make it to the top four of such a hotly contested category.

5.3 Core Network Integration and commissioning activities

A number of network core integration activities took place as part of the Infrastructure as a Service (IaaS) project. High speed and high throughput (80GB/sec) connectivity was commissioned between the IaaS equipment hosting sites - in the Green and HPRC Data Centres - and the central network core infrastructure, to provide backbone connectivity to the College network.

5.4 Internet access point resilience enhancements

IS Services manages the campus side of the College's high-speed Internet connection which connects the College to our Internet Service Provider (ISP) HEAnet. Working with HEAnet a project was completed to ensure that the College has a fully redundant, high speed resilient connection to the Internet. This was an important development as it removed a high risk item from the College's Risk Register.

5.5 TCD Connect

The TCD Connect service which manages student network access saw a significant increase in user and device registrations during 2012/13, primarily driven by the demand for handheld device connectivity. Over 9,300 users and almost 13,000 devices registered with system, an increase of approximately 20% on the previous year. The connection of iOS devices was fully supported for this academic year with over 5,000 of these devices, mainly iPhones and iPads, registering with the system. A number of service enhancement initiatives took place during the year including the addition of support for Google Chrome mobile devices, an expanded range of Audio Visual applications and streamlining of the login process for network access in student residences

To meet future user and performance capacity needs a project was initiated to conduct a major upgrade of the underlying infrastructure. This infrastructure project, completed in August 2013, now means we can scale to support up to 20,000 users, double the previous capacity. This new infrastructure is hosted in the Green Data Centre with resilient network links.

5.6 Wi-Fi Enhancements and Developments

The College wireless network infrastructure provides services for a diverse range of user types, with dedicated networks for College staff, students, guests, visiting EDUROAM users and the Science Gallery. The academic year 2012/13 saw record numbers connect to these networks with over 14,000 staff and students and over 20,000 users in total connected across all networks. Driven by the BYOD (Bring Your Own Device) phenomenon handheld devices emerged as the single largest growth area with over 1,000 Apple iOS and Android devices connecting to the staff wireless network and over 5,000 of these devices connecting to the student network via the TCD Connect service.

The College Wi-Fi network infrastructure experienced modest growth in 2012/13. Additional wireless access points were installed in the new Academic Registry building, the Ussher Library, CAMI building St James Hospital, START South Leinster St, Loyola House, the BATTERY Food Court, Biotechnology, 27 Westland Row and the LIR Drama Academy and units 16 and 28 in the Enterprise Centre.

During 2012/13 "High-Density" wireless deployments were introduced to campus for the first time to a number of locations. High-Density (HD) wireless is used in areas with a high concentration of wireless end-users to ensure sufficient bandwidth is available to all users to maintain a quality service. Typically locations such as lecture theatres, libraries, seminar rooms and public concourses and hospitality areas require HD wireless. This will become the

standard deployment model for such locations in the future as they are refurbished or upgraded.

To further enhance wireless performance the “802.11n” wireless standard was enabled on compatible wireless access points during 2012/13. This standard provides greater shared bandwidth per wireless Access Point (AP), thereby facilitating more user connections and more user bandwidth per AP. Each “n” access point is capable of speeds in excess of 140Mbps, almost a threefold increase on the 54Mbps speed available from the older standard. At present only newer model AP’s support the 802.11n standard, which comprise less than 30% of the total wireless estate. All HD wireless locations support 802.11n. A full list of HD and 802.11n enabled wireless locations is available at <http://isservices.tcd.ie/network/map.php>

Table 3 below shows the growth in wireless usage over the past number of years.

Table 3 – Growth in wireless access usage

Growth in wireless network usage.	2004/5	2005/6	2006/7	2007/8	2008/9	2009/10	2010/11	2011/12	2012/13
Staff and student wireless users	200	750	1500	2150	3750	9770	11,245	12,340	14,106
No. of wireless access points	145	290	469	607	650	700	980	1,100	1,140

Staff and Student wireless networks use both authentication and encryption to ensure that only authorised users can connect to the network and that the privacy of their data communications is protected from eaves-droppers over the wireless RF environment. During 2012/13 the enhanced wireless encryption level “WPA2” was rolled out across the wireless infrastructure and is now the default encryption level for all new staff and student connections with plans to transition all remaining older “WPA1” devices before the end of the 2013/14 academic year underway.

5.7 New Building connectivity and Refurbishments

One of the major infrastructural projects supported by IS Services in 2013 was the establishment of the Academic Registry. The Academic Registry is located in the Biotechnology Building and required a complete refurbishment of the existing building. Over 700 data points and 20 Wireless Access Points were installed as part of the project. Resilient fibre-optic connects the building to the College network.

The Loyola Institute relocated from Milltown onto the TCD campus. The former Physiology building was extensively redesigned to accommodate the new users and IS Services provided wired and wireless data services. Resilient fibre-optic was also installed in the building to connect to the College network.

IS Services supported the construction of a state-of-the-art €7 million Clinical Research facility on the grounds of St James's Hospital. The Clinical Research Facility has over 200 data points installed and there are plans to expand the College wireless network into the building over the coming year. A joint initiative between Trinity College Dublin and St James's Hospital, The Wellcome Trust

IS Services connected the National Centre for Advanced Medical Imaging (CAMI) facility on the St James's campus to the College network. The installation of data points and wireless services were part of the works to provide staff with connectivity to the College network.

The National Academy of Dramatic Art based in the Trinity Technology and Enterprise Campus extended its current facility into a second phase. IS Services provided data points and a wireless service in the extended building. The Learnovate Centre was established in a refurbished unit in the Trinity Technology and Enterprise Campus earlier this year. The Centre, funded by Enterprise Ireland and the IDA, was provided with wired and wireless networking services by IS Services and connected to the College network by a fibre-optic cable.

Refurbishments & minor works

Regular refurbishments of the infrastructure in college are carried out throughout the year. In 2013 IS Services were involved in refurbishments of various sizes in the following areas:

- East Theatre
- Apollo House 2nd Floor
- Early Printed Books
- Physics
- Museum Building
- 7-9 South Leinster St/START
- Students Union

Minor Works

Additional data point installation and minor works in college offices and buildings accounted for 35 separate jobs installing 140 new network points.

5.8 Infrastructure as a Service (IaaS) - Private Cloud initiative

A new resilient compute and storage infrastructure that will enable private Cloud services to be provided to the College user base was completed.

There are many benefits accruing to this new infrastructure including a framework agreement extending over 5 years for the purchase of new IT equipment, state of the art technologies, expanded capacity for the hosting of compute and storage solutions for the College community, a scalable solution to allow the IT infrastructure grow as required, costs savings, replacement of end of life equipment, new and improved data centre networking.

5.9 New and upgraded College services

IS Services has been involved in the successful delivery and hosting of a large number of upgrade projects for some of the key enterprise services of College including upgrade to the College's Library service, upgrade to the College HR service which will allow for online payslips and in the future Employee Self-Service (ESS), the College's new financial system and upgrades to the TCD Connect service and Trinity Foundation service.

5.10 College new IDM service

The infrastructure teams were involved as part of the Identity Management team in selecting, designing and delivering a new Identify Management service for College using Microsoft Forefront Identity Manager 2010 R2 (FIM). This service is hosted on Colleges IAAS infrastructure.

5.11 Genesis pre-live

IS Services hosts the College SITs student services, a project was completed in 2013 to provide a pre-live environment for service testing, this is now hosted on Colleges IAAS infrastructure.

5.12 Active Directory Server 2008 upgrade project completion

The final stage of the upgrade to the College Active Directory authentication service to Server 2012 was completed in Q1 2013. This service provides authentication to logon to all major College services. The upgrade has facilitated the introduction of more enhanced security services including the enabling of secure LDAP (director service) for authentication.

5.13 IPAM Services

An upgrade project was completed to replace the College's DNS and DHCP service, this has provided a more resilient and enhanced service. DNS and DHCP are critical to the operation of the College network and access to the Internet.

5.14 Microsoft SCCM 2012

Update project completed to replace the College's server and desktop SMS patching service with Microsoft SCCM. This is a critical service that prevents security related attacks on computers and helps ensures the integrity and reliability of services

5.15 Server Management

IS Services has continued to extend its virtual hosting service to College in 2013, 86% of its

server hosting is virtualised with approximately 400 provisioned VMs and 60 physical servers supporting the main College systems.

5.16 Customer Relationship Management Pilot Project

IS Services are assisting with the implementation of Microsoft Dynamics CRM for the Careers Advisory Service. This pilot implementation aims to allow a cohort of students to access a self-service appointment system to schedule meetings with Careers Advisors. It will also allow the Careers Advisory Service to centrally manage contact and employer information, events and team calendars. Integration with SITS data will allow for the activation of a fully integrated CAS appointments management solution. Working with the CRM team, IS Services have delivered an ADFS service for service authentication, data integration and are hosting components of the service of College IAAS infrastructure.

DRAFT

6. Management Information Systems and the IS Services Projects Office

6.1 Enabling the College's e-Strategy Programme

The Management Information Systems group (MIS) provides key enabling services to ensure the success of the College's e-Strategy programme. The main work carried out during the year is outlined below.

6.1.1 GeneSIS Project

When SITS went live in September 2012, it was integrated with 14 other systems in the College, and work has continued since then to integrate another 8 systems. 7 of these are now complete and live and the remaining interface is due to be tested and released in the coming months.

MIS staff have also been involved in trouble shooting and general support for the integration components of the system. Work to remove the legacy systems associated with the old student administration system has been on-going, and is due to be complete by September 2014. At the time of writing the risk associated with these old systems has been dramatically reduced, and the few remaining critical systems that still reside on legacy infrastructure will be tackled in the coming months.

6.1.2 FIS project

MIS staff have been closely involved in specifying and testing the interfaces between Oracle E-Business Suite and 3 other critical systems within College (SITS, Kx Accommodation and Core HR). This work was essential to allow the first phase of FIS to go live in October this year. In addition to the 3 systems mentioned above, a further 43 systems were checked for compatibility with the new Chart of Accounts structure produced by the FIS project. 12 of these systems required some modification to ensure they carried on working with the new account codes.

6.1.3 Enterprise Architecture and Identity Management Project

2013 has seen very good progress on the delivery of the Identity Management Project. Leveraging the Enterprise Architecture published last year to inform the choice of ICT platforms, technologies and tools, the project team identified Microsoft Forefront Identity Manager 2010 R2 (FIM) as the technology to underpin the delivery of an Identity Management solution for the College.

Implementing an Information Systems Services central Identity Management system will enable College and non-College users to access services to which they are entitled, and IS Services look forward to rolling out the benefits of service over the coming months.

6.1.4 HR Programme

Among the work undertaken in conjunction with Human Resources was;

- Upgrade of Core HR system - This continued on from the previous academic year with the actual upgrade taking place in October 2013. As this also involved a database upgrade, substantial work was undertaken to enable the interfacing /integration from Core to numerous other College systems.

- The upgrade of Core HR provided the basis for enabling the rollout of services to College. Preparatory work was undertaken to facilitate the provisioning of an on-line payslip services. This was rolled –out on a pilot basis to a number of College areas and it is envisaged that it will be rolled out to the wider College community in the near future.
- Further involvement and assistance in the implementation of Forms based on SharePoint including the implementation of the Travel Pass form.
- As the Financial Information System (FIS) progressed it became clear that the proposed new Coding Structures for the General Ledger and Projects would have a major implication for Core HR and for other systems which use personnel data.

6.1.5 Quality Assurance

The internal MIS Quality Assurance function (QA) has worked on further defining processes within ISS and has also contributed to the e-Strategy programme of projects as follows:

GeneSIS

The QA function had developed a support template for ISS developed SITS-related interfaces and carried out subsequent follow-ups to ensure that this ISS support documentation is being put in place.

Financial Information System (FIS)

The QA function carried out an initial independent desk scan review of the FIS project, defined the scope for the subsequent reviews, and acted as broker between College and the external QA Provider (PwC). Two external reviews were carried out on the FIS project between the period Feb – July 2013 with the second review covering key areas such as change management and go-live preparedness.

HR Work stream Programme of Project

The QA function carried out, at the request of the Director of HR, a review of the status of the projects which define the HR Work stream Programme of Projects. This review was subsequently formally presented by QA to the project board governing the HR Work stream Programme of Projects.

Enterprise Architecture - Identity Management

The QA function has carried out a desk scan review of the EA Identity Management project and has been engaging with the project manager on planning follow-up reviews.

Other Quality Assurance (QA) activity

As part of normal routine, the QA function also carried out:

- Reviews and random checks on current ISS projects and identification of issues for further action by the relevant person in IS Services
- Reviews and updates to QA process documentation
- Reviews and updates to PMO documentation and templates

- Defining new templates and report requirements as required for PMO and QA purposes
- Submitting QA responses to annual external auditor queries.

6.2 Enterprise SharePoint 2010

The Faculty of Health Sciences Administration and the Academic Registry now have live sites to enable document management and collaboration and both are in the process of setting up their sites. SharePoint is also the platform for the Travel to Work and Bike to Work applications.

6.3 Regression testing of Enterprise Applications following completion of AD Server 2008 upgrade

The College's Active Directory authentication service was upgraded from Server 2003 to Server 2008 in Q3 2012. This service provides a mechanism for logon to all major College services. The final stage of this project to upgrade to Server 2008 Release 2 was completed in January 2013. As part of this final phase MIS completed regression testing for College Enterprise Applications reliant on Active Directory to ensure no errors had been introduced that might cause a loss of service to College users.

6.4 Operations and Support

MIS continues to support existing applications and now also has a significant role in supporting the integration components for the GeneSIS project. During the year, 1,100 helpdesk calls were assigned to MIS, and following concerted efforts to resolve aged Helpdesk calls, 1350 calls were closed in the same period.

6.5 IS Services Project Office (ISS PO)

The ISS PO was re-established in June 2013 under new College governance arrangements and reports to the College-wide Programme Management Office (PMO). The ISS PO provides and facilitates a range of functions within IS Services and for IS Services clients across College:

- Assists in the alignment of proposed projects with College strategy
- Assists in the prioritisation of Projects and Continuous Service Improvement (CSI) activity within ISS
- Promotes and enforces the use of standardised project management processes
- Assists all project managers in project management practices using templates, forms and other information and provides advisory services to clients across College functional areas
- Assists with the governance and quality assurance of Projects and CSI activity
- Monitors and reports status of all Projects and CSI activity for management information
- Tracks and monitors the delivery of project benefits
- Develops and conducts one-to-one and group training in project management
- Provides programme and project management services.

A full list of projects and further information is available at

<http://isservices.tcd.ie/isspo/intro.php>

Service Plan 2013-14

Building on a number of successes over the past three years IS Services will continue to provide new and innovative services to the College community. The work programme for 2014 (to be published in January 2014) will once again be a combination of delivering on key strategic initiatives and projects; and services enhancements via the continuous improvement process. Some of the key strategic initiatives are;

- Completion of the Genesis G1 project and putting in place a support structure and continuous improvement process that meets the demands of system users
- Completion of the Identity Management project allowing easy and secure access to IT facilities for staff, students, visitors and collaborative partners
- Building a robust and resilient IT Infrastructure by completing the Disaster Recovery/Business Continuity project
- Improving wireless connectivity on campus and on remote sites by delivering phase one of the Mobility programme thereby providing a pervasive high capacity wireless network
- Developing and implementing an Information Strategy that ensures the College gets a better return on investment (ROI) from IT investment, a robust IT governance structure, reduced costs and ensures that IT supports the core academic functions of the College
- Develop and implement a Unified Communications strategy that focuses on collaboration and supports Teaching and Learning, Research and external collaborative initiatives
- Introduction of new technologies that support students and staff in the effective use of technology for teaching, learning and assessment
- Support the research mission through High Performance Computing
- Supporting the College's overseas engagement strategy

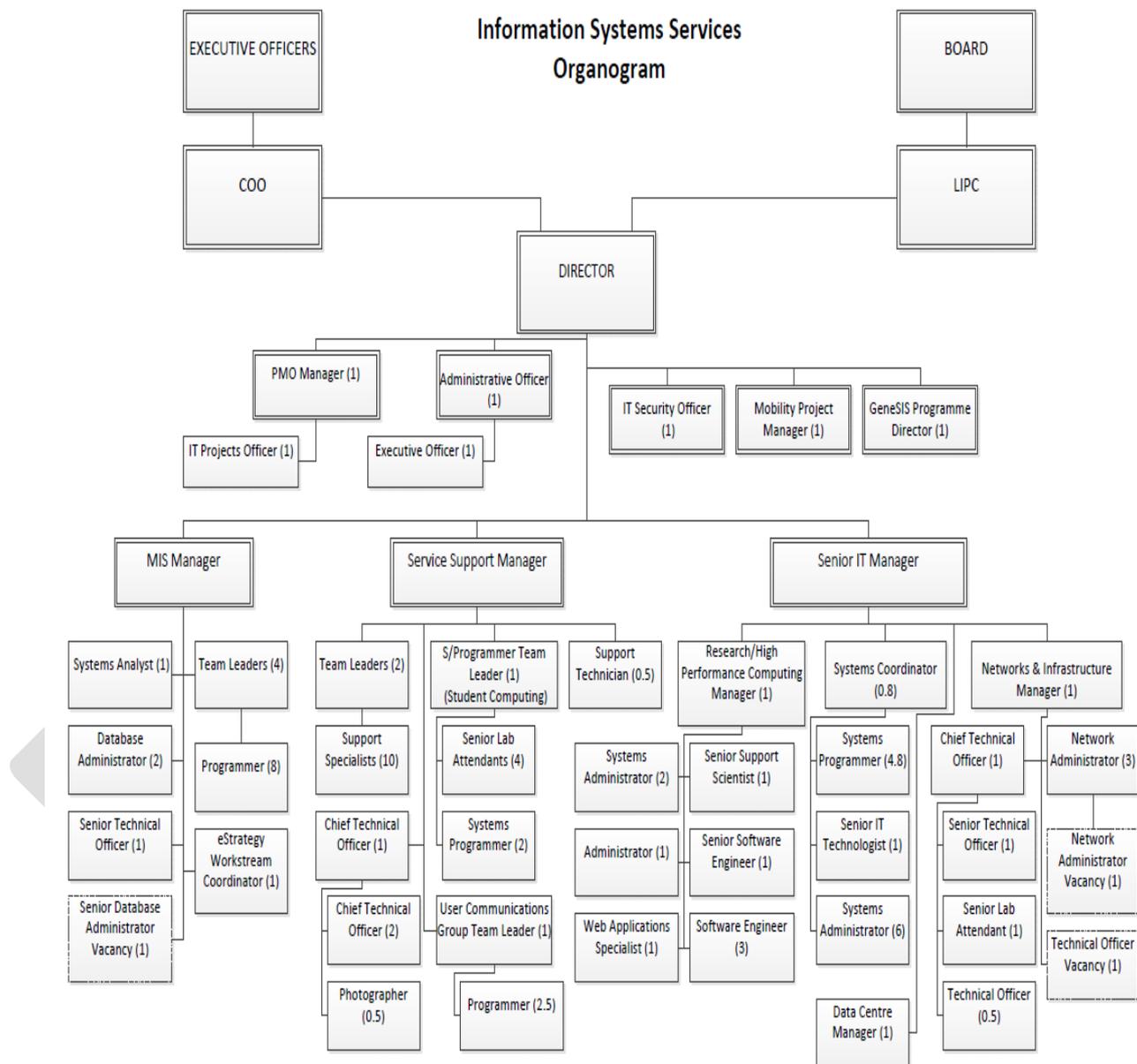
During 2014, IS Services will go through a significant change process that will see the department re-organised to be more aligned with the College's strategic objectives and to ensure greater support for Teaching and Learning, Research and key initiatives such as the Global Relationships Strategy. Some of the deliverables of this change process which will be conducted under the START initiative will enable;

- Updating IT professionals' skills and roles to accommodate emerging technologies and changing IT management and service delivery models
- Further developing a professional quality service
- Optimising the blend of the delivery model e.g. in house, managed services, Cloud etc.
- Demonstrating a value for money approach that delivers a sustainable infrastructure whilst keeping pace with emerging technologies
- Facilitating institutional efficiencies and modernisation
- Supporting the use of analytics/business intelligence to inform decision making and planning

A number of smaller technical projects and continuous service improvements will also commence and details of these are at: http://isservices.tcd.ie/isspo/current_projects.php

8. Appendices

Appendix A – IS Services Organisational Structure 2012-13



Appendix B– Top ten annual recurring IT expenditure items

Number	Description	Organisation	Amount	Comment
1	Microsoft Campus Agreement	Micromail	€222,577	Based on number of staff FTE's. All universities in Ireland subscribe to this deal
2	Internet connectivity for the College	HEAnet	€194,304	All third level and 2 nd level educational institutions buy their Internet connectivity from HEAnet
3	Connection of some of the 24 remote sites that connect back to the main campus	EIRCOM	€115,000	Metro Ethernet for James St, Trinity Hall, Santry Ave, Leinster St, Pearse St, D'olier St and Belgard Rd
4	Software Licensing for some of College's databases such as Finance.	ORACLE	€135,378	Software licenses for key administrative systems
5	Virtual Learning Environment supporting Teaching and Learning	Blackboard	€92,579	Costs are expected to rise year on year with increased usage and new modules such as Collaboration and Mobility
6	Core network maintenance contract. This guarantees a response time from a CISCO approved partner in the event of the College's core network going down. The impact of the core going down is no Internet connectivity and loss of services such as email	Planet 21	€88,876	This is an insurance policy that guarantees access to CISCO expertise in the event of a priority 1 incident
7	Central audio visual maintenance contract	Fitting Image	€55,993	This will increase if more sites are added to the contract
8	Software Licences for use by students and Academic Staff in FEMS (Mathematica)	Wolfram Research	€31,129	This is administered centrally with some contributions from Schools
9	Software Licences for use by students and Academic Staff in FEMS (Mathlab)	MathWorks	€29,317	This is administered centrally with some contributions from Schools
10	HR System licensing	CORE	€29,173	Will increase with increased functionality
Total			€994,326	

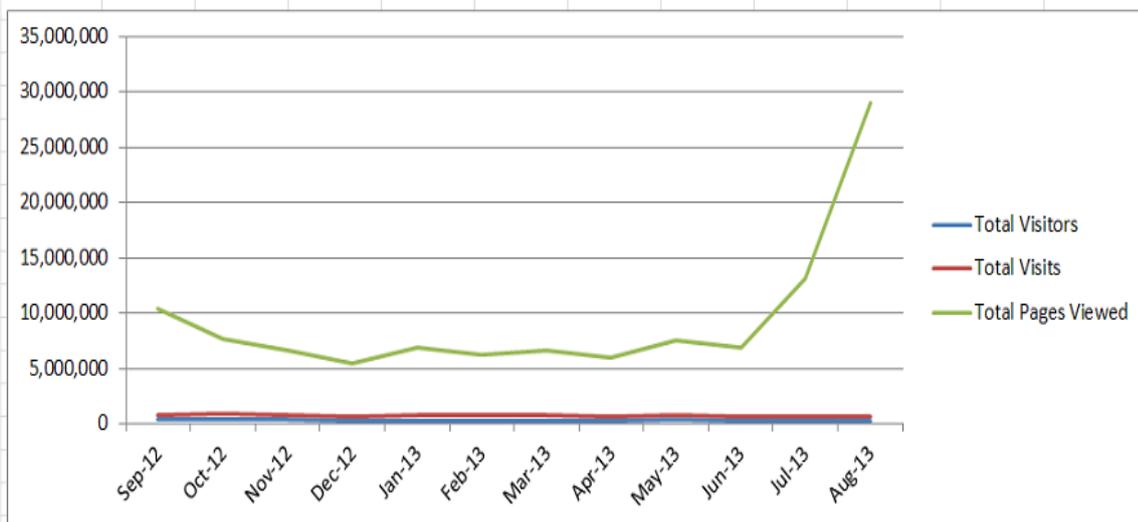
Appendix C - College Web Server www.tcd.ie

Web traffic to www.tcd.ie between September 1st 2012 and August 31st 2013

	Visitors	Visits	Pages
2012/13	3,883,634	9,249,937	107,698,899

Visitors 2012/2013

	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13
Total Visitors	345,384	349,316	346,023	290,854	336,402	313,338	335,850	275,385	346,689	314,449	306,435	323,539
Total Visits	795,529	868,761	855,633	666,657	834,759	769,166	849,337	697,699	839,025	703,599	657,988	711,784
Total Pages Viewed	10,367,038	7,628,133	6,640,744	5,436,385	6,926,513	6,319,823	6,603,091	5,971,220	7,555,677	6,943,950	13,169,054	29,029,971



Appendix D - E-mail statistics

Summary comparison to last year Oct 2012 to Sept 2013:

- All mail delivered to TCD staff and students - 80 million compared to 68 million last year.
- Spam blocked has decreased from 320 million to 270 million.

Statistics	Total for Year
E-Mail delivered from outside College to all Staff and Students @tcd.ie in previous year	80 million total. 68 million to Student 12 million to Staff
Number of SPAM Blocked from outside College to @tcd.ie Staff in previous year	270 million
Number of Viruses Blocked from outside College to @tcd.ie Staff in previous year	17,455 Virus infected mail blocked
Staff Phishing Redirects from outside College to @tcd.ie Staff in previous year	57,000 Phishing emails blocked
Total E-Mail Delivered to staff and students @tcd.ie in last year	Approx. 350 million