IS Services

Annual Report

2003/2004

Introduction

The year 2003/2004 was another difficult one for IS Services due mainly to the continued reduction in budgets. Despite this, the successful implementation of the first phase of the Student Administration System was a major highlight that went largely unnoticed to most of the College community; it is a measure of its success that it was introduced without major disturbance to the users.

Security was and will continue to be a major concern; however it was possible to make major advances in upgrading the security of the College systems. The approval of the College IT Security Policy lays the framework for the continued enhancement in the security of information systems in College.

It was also possible to renew some of the audio visual equipment in a number of the major lecture theatres. These theatres are in very heavy use and are one of the public faces of College; the new audio visual services should enhance the use of the theatres.

Cutbacks

Staffing

The continuing problems with funding in College have resulted in a degradation in service levels, mostly due to the cutback in staffing levels. Whilst the position of User Support Manager is still outstanding since November 2002, funding was made available to start recruiting a replacement manager for the Management Information Systems Group who retired at the end of September 2004.

The policy of only recruiting staff on short term contracts is causing a variety of problems. Some staff feel that the lack of permanent positions threatens their career development and have sought permanent employment elsewhere. The costs of such short term contracts cannot be understated, it usually takes between three and six months for a staff member to become truly productive and external training is usually required. As well as the recruitment costs, difficulties in identifying suitable people suggest that staff are reluctant to move from more stable organisations.

The organogram and the staff statistics section in the appendices shows an increase in staff numbers in recent years. This is due to the direct funding of staff in IS Services by user departments in College to perform specialised activities for these departments or areas.

It is worth noting that the range of functions provided by IS Services is not comparable to the services provided by similar services in other universities. IS Services in Trinity cover a much wider range of activities than some of its counterparts and so the direct comparison of staff numbers or costs does not result in meaningful comparisons across the sector.

Non-Pay

While the cutbacks in the non-pay funding were not as severe as in the previous year, the uncertainty in funding levels meant that it was difficult to build a full plan for the year and some equipment had to be purchased in a suboptimal manner as funding was made available.

<u>External Environment</u>

Security

Once again, network security was a major issue and there were several serious events that had worldwide implications for computer and network users. Whilst there was an increase in the security risk, there was also a tightening of the budgetary situation which left some risks exposed. The major risks were the lack of provision of a secondary secure computer room with appropriate power supplies and air-conditioning in compliance with best practice.

The College's IT Security Policy had been agreed by Board just before the start of the year, however it was quickly realised that the policy did not cope adequately with the special needs of some research areas and departments.

A system of licenses to operate autonomous networks in College was agreed by the Information Policy Committee. These licenses will be issued on an annual basis and a review of the performance of the licensee will be carried out prior to it being reissued. It is expected that there will be relatively few such licenses required in College.

Spy Software

Most users are familiar with computer viruses; however a new breed of nefarious software became more prevalent during the year and is likely to grow in the future. This software is known as "Spy ware", specially written software to capture personal information that people enter onto a PC. The software can capture passwords that relate to bank accounts etc and transmit them across the globe.

Experience of the User Support staff as they handle problems with College machines suggests that some 80% of computers in College are infected with at least one form of Spyware.

Whilst tools exist to protect against Spyware, a central College system will have to be implemented to protect users, to minimise risks and to comply with security requirements.

Virus outbreaks

While there were several high profile virus outbreaks during the year, the use of scanning software at the perimeter of the College network and the extensive use of a different package on desktops has proven to be successful in minimising the impact on most users in College.

The major virus outbreak of August 2003 had long lasting repercussions for the provision of services during Michaelmas term. Because there were so many infected machines and machines suffering re-infection, the plan for general service development had to be put on hold pending the more urgent remedial action.

Implementation of a managed anti-virus system, e-Policy Orchestrator (epol), was facilitated by the publicity surrounding the world wide virus attacks and the problems encountered in College. User acceptance of the managed system increased greatly and resulted in a large number of users signing up to the system; this has resulted in enhanced security for all users.

Like the managed anti-virus software environment, some scheme will have to be put in place to ensure that all users manage their desktop machine and install security software updates shortly after they are released. These software updates, or patches, are used to fix coding faults in software packages. Because of the nature of work in a university, virus outbreaks are at their peak following the vacation periods when machines fall behind in their software levels.

Support Activities in IS Services

User Support

A total redesign and rewrite of the IS Services web pages was undertaken in order to present information to users in a more structured manner. The site now conforms to the College's agreed accessibility guidelines.

The objective is that the IS Services web pages should be the first source of information for users and that they should be able to request information and software via the web as well as being able to download the software immediately where the license permits.

Based on the usage count on the website, the redesign appears to have been very successful and it has proved to be one of the most used areas of the College web.

As a result of the financial cutbacks, staffing levels fell so low that the walk-in helpdesk had to have its opening hours curtailed several times during the year; any absence of staff due to illness exacerbated these restrictions in opening hours.

An ongoing project for the whole of IS Services has been the planning and introduction of a directory system that would simplify the management of identities and roles of users in College in relation to the use of IT services. Users, in general, have too many passwords for access to information resources and the use of a centralised directory system would help rationalise these procedures.

In conjunction with Microsoft, major work was performed in planning and implementing a directory system and in migrating users to the new system. This work will be ongoing for the coming year and the benefits will only be realised as new systems interface to the directory. In time, it should be possible to eliminate many of the passwords that users are required to remember and rely on a single one. It should also be possible to fine grain access to sensitive information, so that people's privacy is enhanced.

Training Programme

The number of staff and students attending the IT training courses continues to rise. New courses were introduced covering the use of graphics and thesis production. The series on web page development was particularly popular.

In conjunction with the Library, all incoming students are provided with a familiarisation course on network and computing services in College. This early training is especially useful in that it eliminates many problems that students have when they are required to use IT resources as part of their coursework.

Training and certification for the ECDL is provided for all staff. Special training course are provided for the Trinity Access Programme.

Audio Visual and Media Service

A major programme has been undertaken to upgrade the audio-visual equipment in all the major lecture theatres that are the responsibility of AVMS. A tender process was undertaken for the supply of AV facilities for theatres and seminar rooms. Standard equipment has been defined for a range of rooms which can be purchased relatively quickly from the appointed suppliers.

The main lecture theatres in the Arts and Hamilton Buildings, have been upgraded with top quality lecture equipment, audio, wireless internet as well as video conferencing facilities. The equipment that has been installed in these theatres will become the model for other theatres in College. Users of the new facilities have commented on how simple and intuitive the equipment is.

A video conferencing suite is being established in the Arts Building, this should allow for meetings and interviews to be held without staff having to travel.

The special Women's Honorary Degree Ceremony was broadcast live on the web and was recorded by AVMS. Demands for live web broadcasts are increasing as it allows people worldwide to share in the events.

Student Facilities

Student Printing

The growth in the use of the student printers over the last few years has been phenomenal; this is mostly as a result of lecture notes and reports being placed on the web for students to read and print themselves. Indeed, this represents a transfer of the printing problem from lecturers and departments onto the students.

Coupled with the financial cutbacks, this growth in printing meant that it could not be provided from the resources allocated to IS Services and a tender was prepared to seek a company to supply the student printing service.

The new system was introduced in January and following some teething problems, performed reasonably satisfactorily. Some ongoing problems exist and are being worked on by the supplier. One of the aims of the service was to minimise the cost per page for the students and this was achieved with a charge of 5 cents per black and white page. All of the service is provided by the contracted company and all the revenue is collected by the company. The contract for the service is governed by a service level agreement.

Student Computer Rooms

Investment in the students' computer rooms had to be curtailed in the 2002/03 academic year due to the funding restrictions. During 2003/04 College provided some extra funding to help address the previous year's shortfall. Combining this special funding and the normal allocation, it was possible to upgrade most of the teaching facilities in College.

New data projectors were installed in most of the rooms to facilitate computer based teaching and training courses.

Extra space was made available in the GMB and a new student computer room was created in this space. The planned 24 hour facility in the Ussher Library was equipped with computers but it was not possible to open the room for the start of the new year due to security and access considerations. The facility was subsequently opened.

The Health Sciences Faculty supported the installation of new student computer rooms in the St. James's campus and in the School of Nursing and Midwifery Studies in D'Olier Street. Finance for support staff for these new facilities is being provided by the Health Sciences faculty.

Webmail system replaced by MyMail

A new email interface was tested during the year; this is an open-source package that has been rebranded in College as "My Mail". MyMail proved to be highly popular with students and staff alike and was selected by a majority of users as their email agent of choice. The facilities provided by MyMail largely mirror the facilities of the old Webmail system which was no longer supported by its supplier.

During the summer, MyMail was implemented with a new server and the Webmail system was withdrawn. This caused some minor problems with accessibility issues in the student computer rooms and a facility to cope with these issues was implemented.

Student Owned Computers

There was a worldwide virus attack on systems in August 2003 that resulted in major disturbances across the globe, College was affected and remedial processes had to be put in place quickly.

One of the results of this virus outbreak was a delay in connecting students' computers to the network in Library areas and in the student residences. Even though the major virus outbreak was handled rapidly, minor outbreaks happened repeatedly as staff and students connected unprotected machines to the College network following the vacation.

A procedure was implemented whereby all student computers were checked for virus infection and all operating systems were upgraded before connecting them to the network, this process was handled by having the students attend special clinics. This resulted in a more reliable network connection but also resulted in delays for the students.

Problems arose with unsupported operating systems and especially so with operating systems in languages that the User Support staff were unfamiliar such as Chinese and Arabic. The increasing numbers of foreign students mean that the support issues are compounded by a lack of familiarity with the students' native language.

In excess of 600 student computers were connected to the College network during this year, this included students in bedrooms, students connecting to the network in the Library and students using the wireless network. With the cost of a laptop PC being in the region of €1,000, it is expected that there will be a major growth in demand for this service in the coming years.

In conjunction with the regular tender for desktop and laptop PCs, it was possible to arrange special prices for laptop purchases by students. The laptops, purchased directly by the students from the suppliers, come configured for the College network and have standard College software pre-installed.

College Networks and Services

New email server

Once again, email proves to be one of the most vital services provided to the College community. The investment in, and the reorganisation of, the service resulted in an efficient and resilient service with no significant interruptions during the year. One incident did occur where a server, not managed by IS Services, in a user department flooded the network with junk email and resulted in a delay in delivery times in the order of approximately an hour. The culprit was identified and removed from the network.

Following the continual growth in the use and dependence on email in College and a series of additional facilities surrounding the service, a review was carried out of the total email system in College. This review led to the redesign and restructuring of the service to provide for easy maintenance, easy addition of new facilities and a degree of resilience should components fail.

The mail system is now configured with multiple servers so that any single incident should only result in a partial failure of the system with little or no degradation in service. This scheme also allows for the scanning of all email for viruses at the gateway. A different anti-virus product is used at the email gateway from the one that is deployed on the users' desktop. This diversity of products provides extra security so should a virus make its way through one product it is unlikely to be able to pass through the second one. With the implementation of the new security scheme, the number of viruses being promulgated throughout the College has decreased enormously.

Junk email was a major annoyance to all users in College with volumes increasing day by day. A new series of measures were put in place in June 2004 which resulted in a massive decrease in the volume of junk mail being delivered to the users. One of the additional features that was implemented was an extra spam scanning feature that detects spam using probability theory. A number of users in College contribute by providing emails that they regard as spam and these are dynamically fed into the scanning software in order to improve its reliability. In general, users were very pleased with the success of the system and the low levels of spam that are now being delivered to users. However, some 80% of email that arrives into College is being rejected as spam.

The chart of email numbers in Appendix 7 clearly shows the effect of the new system as it was gradually introduced in the first half of 2004.

College Network

The College network proved to be highly reliable during the year with little or no downtime on the core of the network. Some areas did encounter short periods of downtime when individual switches failed or power was interrupted to buildings. There was a major failure of one of the central networking components on the network, however due to the purchase of quality resilient components a number of years ago; the network automatically reconfigured itself to bypass the failing unit. The unit was quickly replaced.

As reported a number of years ago, the shared co-axial method of network cabling has been eliminated from College. Another milestone was reached during the year when the use of shared network hubs was totally phased out. All network connections now use the switched technology which provides a much greater degree of throughput as well as enhanced security for all network users.

The network was extended to cover the new student accommodation in Trinity Hall in Dartry; a high speed connection was acquired to connect all of the residences back to the main College network. Similarly a connection was made to the new Nursing building in D'Olier Street to connect the staff and students in that building. It is hoped that the ad-hoc connections to the various buildings can be replaced by a city-wide metropolitan area network from HEAnet in the near future.

Wireless Networking

In line with the College's Strategic Plan and despite the lower availability of funding, it was possible to implement a limited wireless service in the College. Parts of the Hamilton and Ussher Libraries, the converted 1937 Postgraduate Centre, House 7 and the Arts Building and Hamilton Foyers are now wireless-enabled.

There are approximately 60 wireless access points deployed at present and there is a programme in place to increase this as demand and funding allow. It is planned that wireless access will be provided in the major lecture theatres in College. As part of the support to research in College, one of the major SFI areas was wireless enabled, allowing the researchers with laptop computers to roam around the building whilst still connected to the network.

Whilst wireless access is a major driving force for users in College, there is a requirement that such facilities are restricted to authorised College users; this is a challenge in a city centre environment where wireless signals do not respect the physical boundaries of College. Similarly, other wireless networks in surrounding buildings leak into College and cause interference with College services. A wireless access policy was approved by the Information Policy Committee and should assist in the extension and management of the network.

The use of wireless is a great aid to mobility for staff and students; however there are physical restrictions on the spectrum and bandwidth available, so while new technologies may use this spectrum more efficiently, there is a possibility that the technology may get congested in the future.

Servers

The proliferation of servers continues unabated and attempts to rationalise servers has not succeeded so far. Most suppliers of software packages require their system to run on about three servers which cannot be used for other applications. Some system for managing these servers will have to be put in place in the coming year.

Some rationalisation has been made in relation to operating systems, which should mean that a number of operating systems can be phased out in the coming years. It is planned to support both the Linux and Windows operating systems on servers as the application systems require. Where possible, Open-Source applications are deployed, this is especially true in the provision of internet services.

Internet Developments

The internet continues to be one of the major research tools available in College. In order to enhance and underpin this role, the connection to the internet and onward connections to the world are under continuous review between College and our internet service provider HEAnet.

During the year the Colleges connection was enhanced by a new fibre link running at 10 Gb/sec. Ironically, College is now connected to the outside world at a higher rate than any computer in College is connected to Local Area Network. The new connection is part of a metropolitan area network (MAN) that HEAnet are building around Dublin and the whole country. It should be possible to use this MAN to connect the various College buildings that are not situated on the main campus. The MAN should also provide an enhanced degree of resilience for internet connectivity. The existing internet connections, along with their backup links, proved highly reliable with no unscheduled breaks in service to College users.

As part of the work HEAnet carries out on our behalf, they have now established direct fibre connection to some major research networks across the globe. It goes without saying that connectivity is provided to the main research networks in Europe and North America, but special connections were installed to Japan, South Korea and Taiwan. This should make research collaborations with these locations much easier.

Administrative Developments 2003/2004

The manager of the Management Information Systems (MIS) Group in IS Services, Gail Hogan, retired early on the 30th of September 2004. Due to the ongoing financial difficulties, it was not possible to initiate the replacement process in time to provide any degree of overlap and handover. Whilst the recruitment for a replacement manager is in process, the lack of a permanent MIS group manager is causing difficulties for some College information services.

Student Administration

The strategy that was undertaken to choose and implement a new Student Administration System (SAS) for College was outlined in previous years. This resulted in the project being partitioned with the first phase delivering a new timetabling, room booking and exams administration system and the second and more substantial phase replacing the home grown Student System.

Timetabling

The first phase of the project went live in Spring 2004 with the launch of the new College timetabling, room booking and exams administration system. Most users would have been unaware of the implementation of the system, as the old system was retained to see out the rest of the academic year. Most of the timetabling information was re-entered into the new system on a manual basis to ensure that the new timetable did not contain items that were left over from previous years.

The launch and the final rollout of the system was very successful. There were several minor problems that caused users difficulties but these were sorted out between the supplier and the SAS Project team.

One lesson that was learnt in the timetabling implementation was that problems were most likely to arise where special code had to be enabled to handle the way that College works. Most of the incidents related to the special requirements of College. Had our processes been more standard, the system could have been implemented more easily, would have been cheaper and would have taken less time.

The timetabling system has proved itself to be robust and has coped with examinations, room bookings as well as the scheduling of lectures and laboratories. The direct users of the system have expressed themselves as satisfied, particularly with the major speed enhancements.

The system provides extra functionality such as automatic scheduling that has been used for the scheduling of laboratories and tutorial groups and can be exploited in the future as the users become more used to the facilities that are available on the system.

Student Administration System (SAS)

The selection process for the new SAS identified the QuercusPlus product from CampusIT and a detailed planning programme was undertaken to start the implementation of the system. A schedule was drawn up detailing the project from initiation to final delivery of the system.

The first phase of the implementation involves extensive training and familiarisation of the system by all users and maintainers. This was scheduled for the start of the 2004/05 year.

Much of the work that was required to implement the timetabling system can be reused for the main SAS project, the preparatory work including the definition of issues and the preparation of documentation will help the rollout of the SAS and will speed up the project.

Treasurer's Office

The system for the payment of fees by credit card was extended to all students and the upper limit per transaction was removed. The value of the fees collected by credit card more than doubled in the period compared with the previous year.

Distribution of regular financial reports to all departments and researchers was completed. This eliminates the central printing and collation of these reports and provides a simple electronic repository of the reports which can be searched and retrieved more easily than in paper format.

A system for the electronic reimbursement of expenses and the online delivery of the remittance advice by email was implemented; once again this eliminates a major effort in printing and distributing paper remittance advice notes.

Accommodation Office

The second phase of the new Accommodation system was implemented during the year. This is the system that manages the summer rental business of the College rooms and complements the student system that has been in operation for the last year. This system allows for the management of conference and individual tourist bookings and automatically reserves appropriate rooms.

The student system was extended to allow for rent and energy charges to be paid directly by credit cards and almost all payments for the 2004/05 year were made in this way. This form of payment eliminates a large number of errors and almost totally removes the reconciliation of bank statements and booking forms.

Web Portal

A number of extensions to the web portal were made, including the people finder, the telephone list management system and a number of student accommodation systems. The portal is personalized, so users only see the information or facilities that they are authorized to see or use.

Research Support System

The Research Support System was launched in the summer of 2004 and provides information on researchers, their publications and research interests. The system contains the researchers CVs and an extensive list of their publications. The system is integrated in to the Expertise Ireland's "All Ireland Research portal"

Statistical Information

Notes:

1. The number of computers on the college network has been increasing year on year. This year the rate of growth appears to be decreasing having reached almost 9,000 machines on the network.

2. In a year where one of the major factors was coping with cutbacks in the budget, it will be noted that there was an increase in the non-pay budget; this is explained by an allocation of €676,000 for the Student Administration System and €300,000 for the upgrade of the audio visual facilities for teaching.

3. For the last number of years, a graph of the number of undergraduate users of email has been published in this report. It was noted that in the earlier days there was an annual pattern that showed a large drop-off in usage over the summer. Since the introduction of the Webmail service, no such drop-off in usage has been observed and in the current year the usage of email by undergraduates students shows a flat usage across the year with about 80% of the students using their College email account in any given month. As the graph of usage does not provide any useful information, it has not been included in this year's report.

Appendix Statistical Information 1995 to 2004

1. <u>Estimated Number of Computers in College</u>
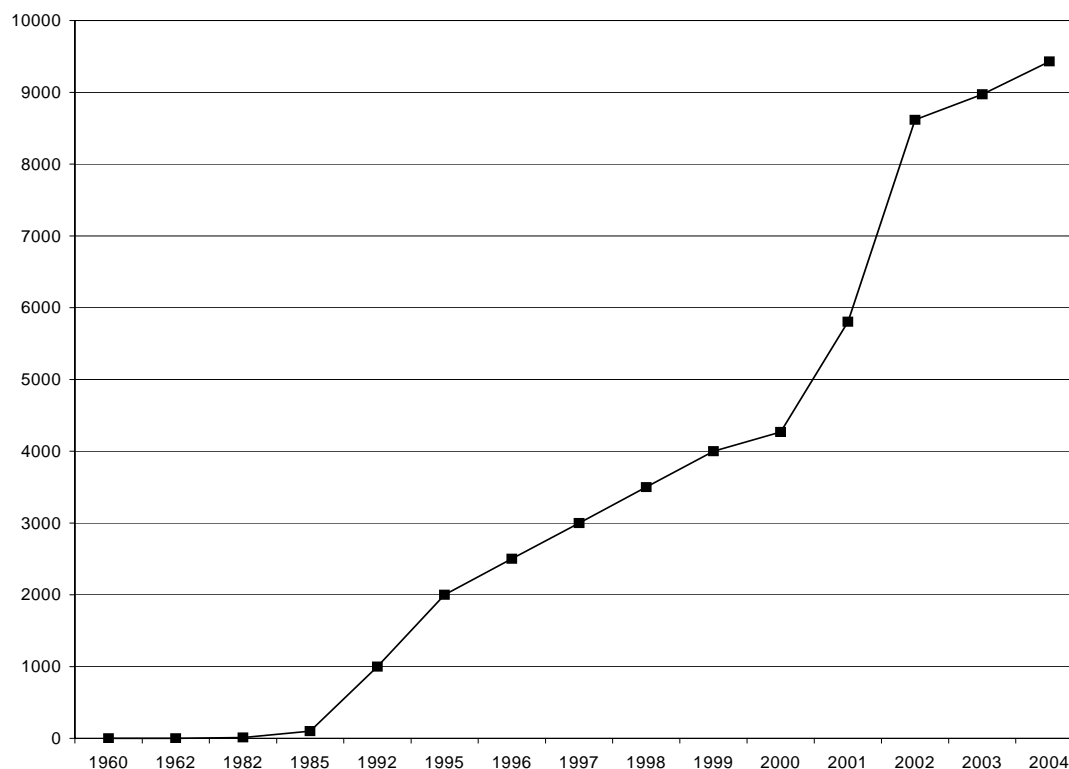
2. <u>Changes in funding and staff numbers in IS Services & AVMS</u>

	Non-Pay Allocation €	Pay Allocation €	Total €	Staff Count	Notes
1995/96	1,511,793	1,414,120	2,925,913	48	
1996/97	2,076,542	1,633,463	3,710,006	52.5	
1997/98	1,866,738	1,730,324	3,597,063	59	
1998/99	1,766,748	1,999,171	3,765,919	63.5	
1999/00	2,049,200	2,371,637	4,420,837	62.5	
2000/01	2,172,768	2,723,611	4,896,379	61.5	
2001/02	1,691,278	3,729,419	5,420,697	70.5	(1) (2)
2002/03	2,816,756	4,021,089	6,837,845	72.5	(3)
2003/04	2,283,696	4,500,842	6,784,538	76.5	(4)

1) Figures from 1st October 2001 include AVMS
2) Extra allocation for Student Administration project
3) Extra allocation for Student Administration project and special allocation for Audio Visual
4) 2003/04 includes special allocation for Audio Visual equipment and the final allocation for the Student Administration system purchase.

3. Number of Public Access Computers and Laser Printers

	Number of Computers	Number of Printers
30th September 1995	223	18
30th September 1996	247	19
30th September 1997	367	56 (trials using small printers)
30th September 1998	379	29
30th September 1999	408	38
30th September 2000	494	38
30th September 2001	526	38
30th September 2002	534	38
30th September 2003	540	38
30th September 2004	625	35 (service externally managed)

4. Internet Connection speed

| Date	TCD Internet Speed
30th September 1992	64 Kb
30th September 1993	128 Kb
30th September 1996	512 Kb
30th September 1997	2 Mb
30th September 1999	5 Mb
30th September 2000	8 Mb
30th September 2001	30 Mb
30th September 2002	40 Mb
30th September 2003	1 GB (effective speed 125 Mb)
30th September 2004	1 GB (effective speed 180 Mb)

5. Documents Retrieved by Proxy Servers

Year	Number of Pages
1998/99	197,857,969
1999/00	333,983,923
2000/01	525,977,517
2001/02	791,051,179
2002/03	883,301,476
2003/03	923,679,308

6. Pages Printed in Student Computer Rooms

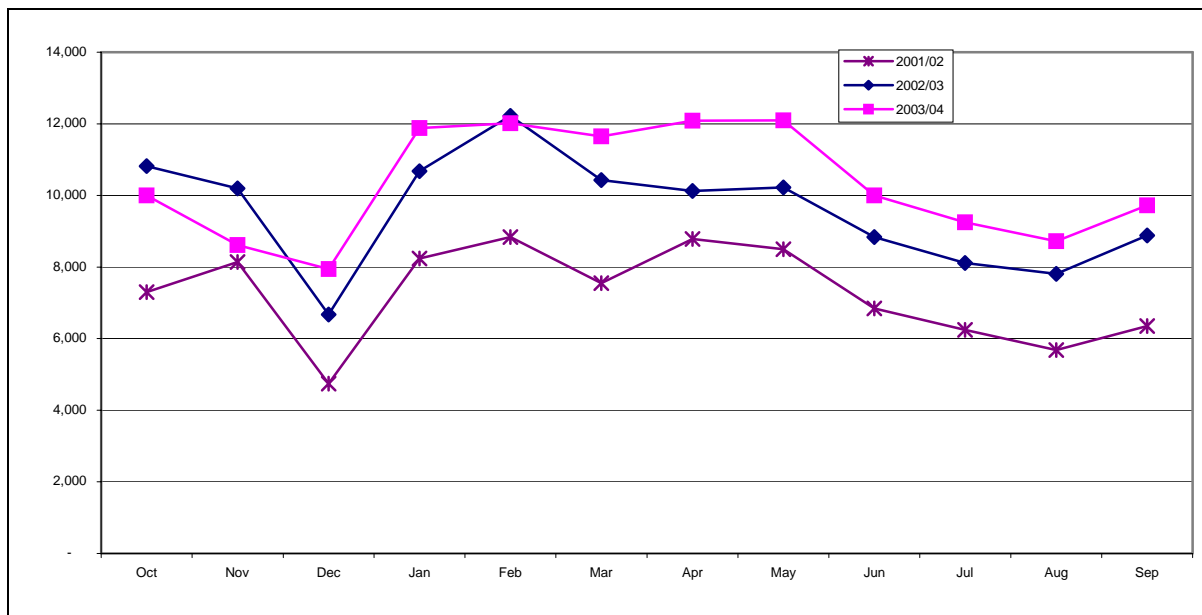| Year	Number of Pages
1999/00	2,066,667
2000/01	2,393,939
2001/02	3,216,362
2002/03	3,317,923
2003/04	3,780,123

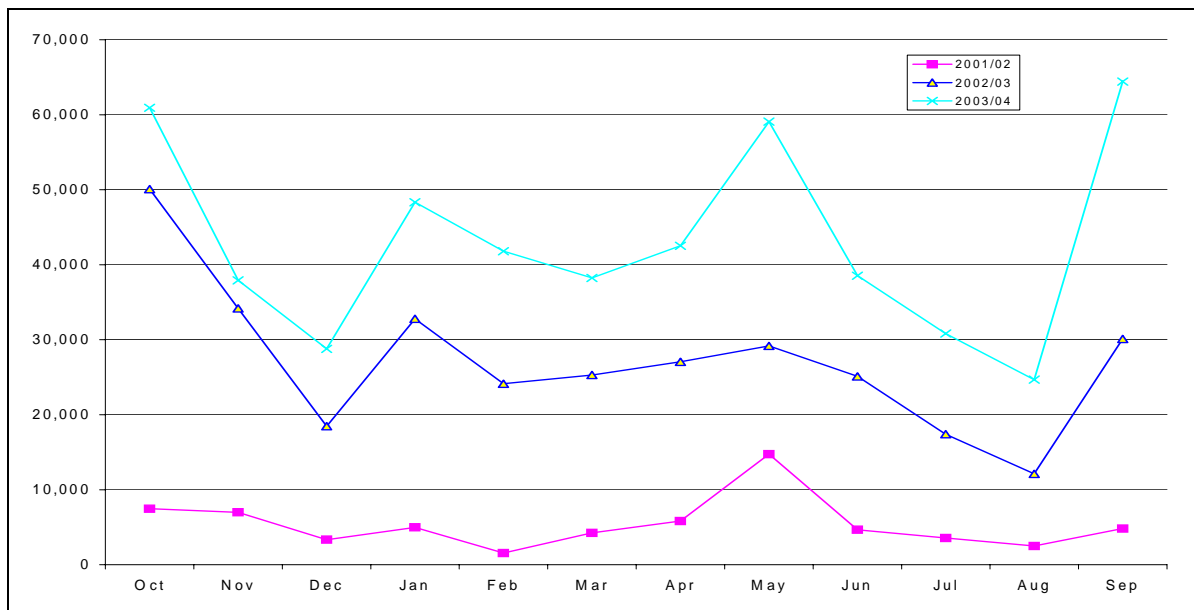## 7. __Number of Walk-In Helpdesk Incidents__
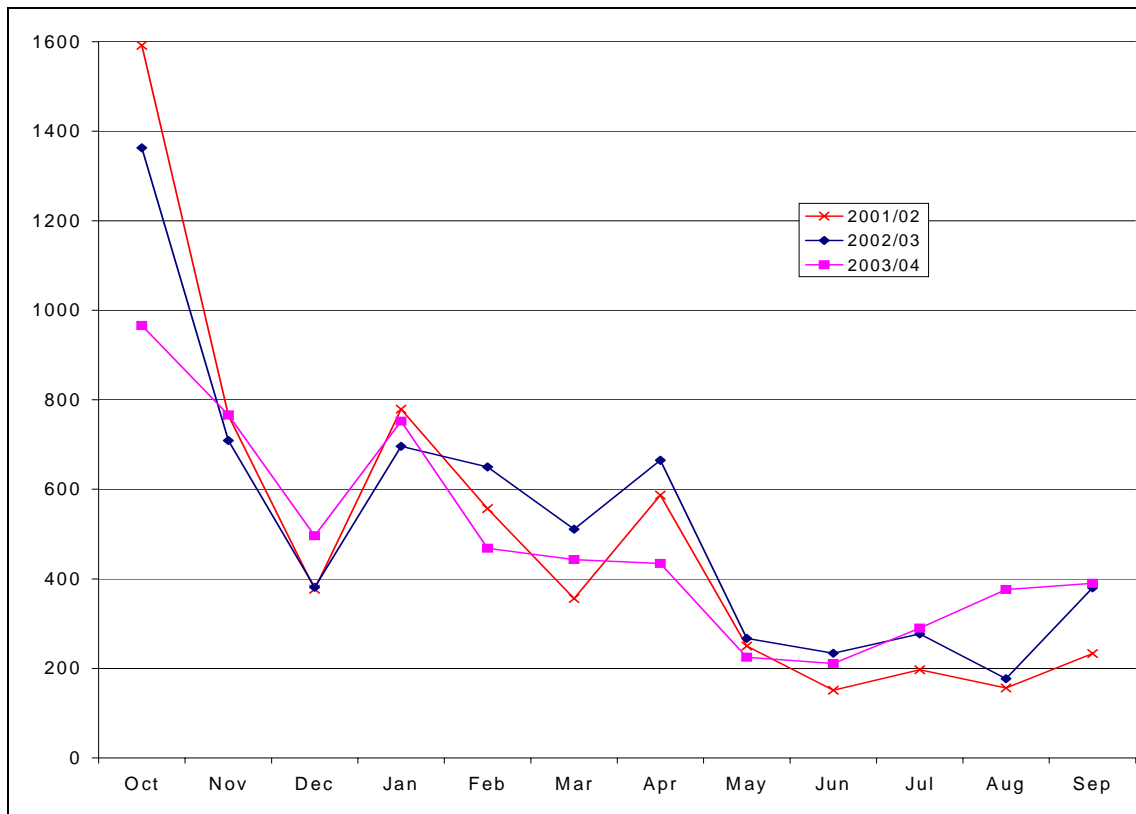
8. __Count of emails to and from TCD__
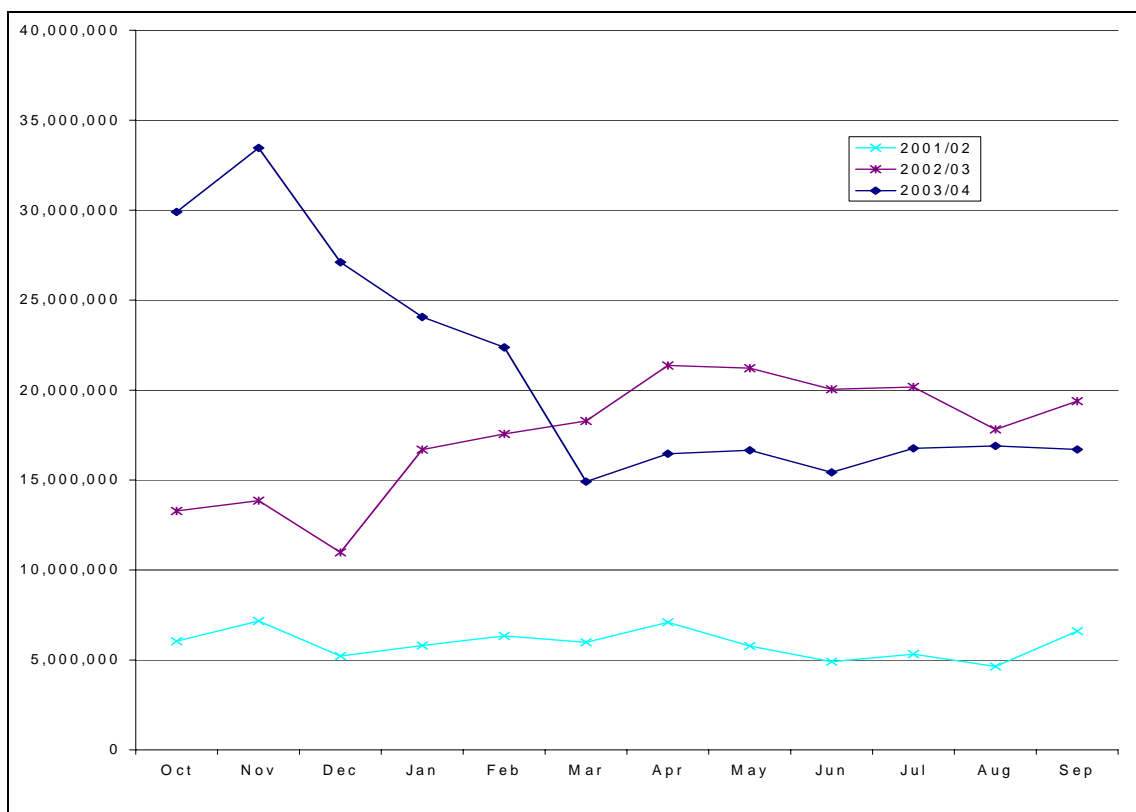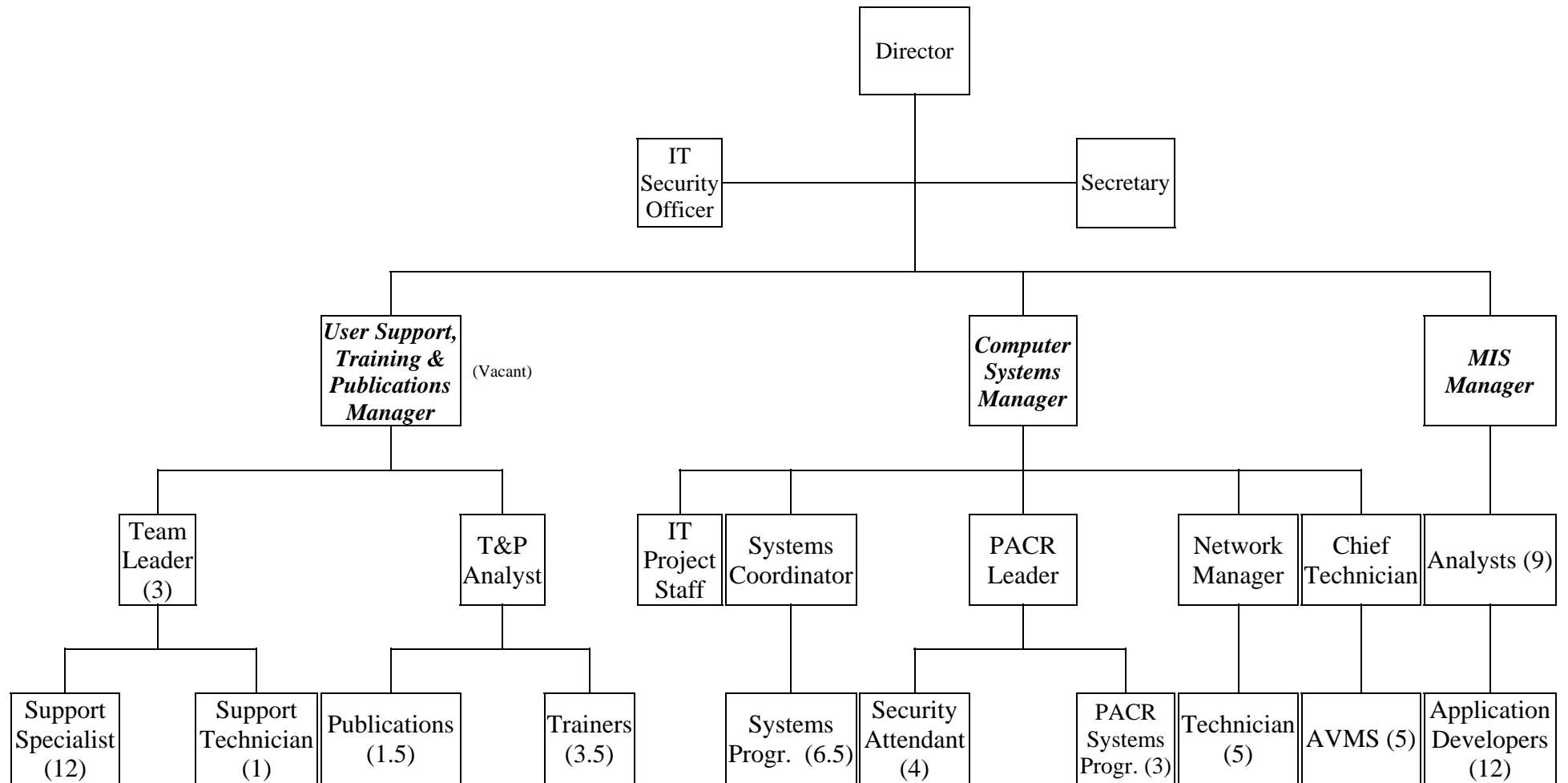
9. Number of Accesses to TCD Home Page

10. Access Count of Web Portal

11. IS Services Organisational Structure 30th September 2004

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                                    Director


         IT
      Security                                              Secretary
       Officer


  User Support,                   Computer                         MIS
  Training &        (Vacant)      Systems                        Manager
  Publications                    Manager
  Manager


  Team                  T&P       IT      Systems      PACR      Network   Chief        Analysts (9)
  Leader                Analyst   Project Coordinator  Leader    Manager   Technician
  (3)                             Staff


  Support    Support  Publications  Trainers  Systems   Security     PACR      Technician  AVMS (5)  Application
  Specialist Technician (1.5)      (3.5)     Progr.(6.5) Attendant   Systems   (5)                   Developers
  (12)       (1)                                         (4)         Progr.(3)                       (12)
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12. Notes in IS Services Organogram 30th September 2004

- MIS Manager retired on 30th September and recruitment process in train
- User Support Manager position frozen in staffing cuts in 2002
- Manager of Computer Systems Group is also managing the User Support Group as an interim measure
- 2 staff members funded by the Accommodations service
- 1 staff member funded by the Director of Buildings
- 1 staff member funded by the Faculty of Health Sciences to develop the web portal
- 1 system administrator based in St. James's and funded by the Health Sciences Faculty
- 1.5 staff on assignment to the Centre for Learning Technology
- 1 MIS Developer part funded by the Foundation