



NUI MAYNOOTH

Ollscoil na hÉireann Má Nuad

COMPUTER CENTRE QUALITY REVIEW

PEER REVIEW REPORT

NOVEMBER 2002

Section 1 Introductory Remarks

The Quality Promotion Unit of National University of Ireland, Maynooth formed a quality review team consisting of:

Dr. W. J. Smyth - President NUI Maynooth

Professor Ann Burnell – Dean of Science NUI Maynooth

Mr. Brendan Tolan - Director Computer Services Department, Dublin City University

Mr. Don Wolfe -Vice President Emeritus CIS. Brown University

The purpose of this review is to examine the current operations of the Computer Centre with the intent of suggesting possible improvement to these operations where it is appropriate to do so. It is not the intent of the review team to pass judgment on the operations of the department or criticize past actions, but to help the Centre build on its past successes and experiences to create an even more effective set of services in the future.

The Computer Centre has been serving the needs of Maynooth since 1977 and has worked hard to keep pace with the changing requirements of the University as computing capabilities rapidly developed. The advent of low cost, powerful personal computers and departmental servers in the '80's and of data networking in the '90's has led to an explosion of computing in higher education. This transition has been difficult for the Computing Centre at Maynooth, as it has been for most computing organizations within academe.

The high regard that the University staff and faculty have for the Computer Centre, as evidenced by the recent self assessment surveys, demonstrates that the Centre has been successful in managing these transitions.

The review team recognizes a number of noteworthy accomplishments by Centre staff in the past. The recent successful conversion and installation of new administrative computing systems is a major accomplishment for the Administrative Systems Group and for the University. These systems are based on modern data base management techniques and form the foundation for further modernization and extension of administrative computing systems. Likewise the range and quality of services offered through the campus network is noteworthy. From reliable connection services to email, the Centre staff has been diligent in providing modern computer communications services to its users. To have successfully done so with the small number of personnel involved is a remarkable accomplishment. Along with the growth of network services has come a flood of new personal computers and new buildings with multiple access points.

Maynooth has experienced unprecedented growth in the number of students and in the facilities on campus in recent years. The construction of new buildings and occurrence of new students has created a rapidly growing demand for network access points and infrastructure. This demand has been met by the Centre with great success, largely through the efforts of a small and talented cadre of staff. According to the Strategic Plan

2000 - 2005, the greater part of the population and building growth has been achieved, and that the University is now entering a period of consolidation. Although the Centre can take justifiable pride in its accomplishments, significant work remains to be done to supply quality computing service to the University. The students are anticipating access to the network from the residences that have been recently constructed, as well as those currently under construction. They also expect more public access computing and improved printing facilities in the existing public access computing areas. These expectations require additional infrastructure and support from the Centre. The administrative systems require improved access to data through report writing tools and better integration of the subsystems. University administrative staff are looking to the Computer Centre to provide access to the existing systems through the Web, and there are still subsystems to be converted to work with the new database systems.

The University will want to make more use of the Web both in administrative and academic settings. As University operations become more dependent on the reliable operation of the data network, improvements must be made to enhance the resiliency and security of network facilities. Much has been accomplished by the Computing Centre but much work remains. The Centre will require the full support of the University to meet future demands.

It has been a pleasure to work with the staff of the Computer Centre. The staff members have been helpful and open in every instance. They have taken time from very busy schedules to prepare materials that helped the review team understand operations at Maynooth to answer our questions. We also wish to thank Ms. Saranne Magennis and Dr. Richard Watson for looking after us so well. Their help and many kindnesses are appreciated.

Section 2 Response to the Self-Assessment Document

The quality review team would like to thank the staff of the Computing Centre for the quality and comprehensive content of the Centre Quality Review self-assessment. There was abundant detail, presented with a candid and concise description of current operations, along with thoughtful ideas for improvement. We recognize the staff spent many hours preparing this report and feel confident that it will serve as a useful reference to them as they improve the future operations of the Centre.

Director's Report

In his comments, the director has expressed justifiable pride in the accomplishments of his staff during a challenging period of burgeoning growth and rapid change. In particular, the satisfaction of the user community, as evidenced by the self assessment surveys, is notable. The Computer Centre has handled a difficult set of user needs with remarkable skill.

However, as the director has written in his report, a number of problems remain. Foremost among these is the need for systematic development of one and three year IT strategic plans that are integrated with the overall University planning process. The Review Committee strongly supports the creation of the newly formed IT Management Steering Committee. This committee is well situated to provide both visibility and

direction to the Computer Centre, however the Centre staff must be prepared to develop the plans and policies upon which the Steering Committee will act. The computing staff needs to develop high level policies for security, network use and connection policies, and policies for maintaining infrastructure and setting priorities in a growing campus environment. The roles for user department computing staff and central computing staff need to be defined and published. With draft policies for these and other issues in hand, the IT Management Steering Committee can act to modify and implement the needed governance to assist the Computer Centre in its task. The IT Management Steering Committee will be able to provide strategic direction to the Computer Centre and coordinate computer planning with other units of the University.

New Buildings require more investment in the general campus infrastructure (not just in the buildings themselves). The Infrastructural Requirements of Data need to be recognised as being similar to water, power, storage etc. Because these data services are becoming critical to the successful operation of the University, they need to be as resilient and reliable as other campus utilities.

In the same manner there need to be more staff to support growing demand. There are 3 already approved positions that need to be filled as quickly as possible (2 in User Support and 1 in Networks). The reviewers also believe that 1 additional staff person should be authorized for both the Administrative and Systems units.

The data infrastructure at NUI Maynooth is in a very precarious position at present. There are multiple points of potential failure that could render the entire system inoperable. This includes lack of backup for key components, inadequate physical security, and key staff members who have no backup personnel covering for them.

Administrative Systems

The Administrative Systems unit has just completed a very successful conversion of the University's self-developed administrative systems to more modern database supported systems that are in use at a number of Universities. These new systems will provide new capabilities and a higher degree of integrated data. This series of projects was completed on time and under budget, which is unusual for this type of software replacement. The review team wishes to commend this achievement by the staff. The reviewers also note that the Administrative Systems Unit enjoys excellent relations with University Administrative staff.

There are a number of further improvements that the staff hopes to accomplish in the future, as time and resources permit. The reviewers believe that among the most important of these is the integration and consolidation of multiple sources of University personnel data into a single authoritative Staff Database. It is essential to develop this resource to support a staff directory for centralized authentication and authorization which will improve application security. This database will also provide more accurate information about the University staff.

The existing Administrative Systems require staff intervention to transfer and coordinate data among the systems. Additional development of these systems would allow for further data integration automatically, making manual intervention unnecessary. This

should be developed as it would provide more timely data and more efficient use of staff resources.

The reports included with the purchased systems have not been especially useful and the reporting tools provided are difficult to use. The use of Oracle's *Discoverer* report tool has been used with success for Student Records and is expected to be made available for the other Administrative Systems. This remains a high priority for the unit to further improve the user capability to develop their own reports.

The review team encourages the Administrative Systems Unit to further capitalize on opportunities provided by the use of the Web for Administration, Marketing, and Information Provision etc. Additional applications for access to administrative data should be developed using the Web interface. This will require the unit to acquire more Web skills, which the review team recommends.

There is limited opportunity to develop these systems since existing staff members are fully stretched just "keeping the ship afloat". As mentioned earlier in this report, serious consideration should be given to adding another staff person to this area. This addition of staff would have several advantages. It would allow more development of systems, an opportunity to cross-train unit members on the other Administrative Systems, and provide a measure of backup to the existing unit staff.

User Support and Reception

We have chosen to consider the User Support Unit and Reception together because both units appear to support each other and work closely together. By any measure, this is a group of people who are under severe stress. The workload is growing daily and the staff is doing its best to control the backlog with little success. This is the result of an expanding workload and a short-handed staff. The staff is currently missing 3 headcount which represents 1/3 of the allowed staff. The result of this understaffed condition has been a lengthening of times needed to resolve problems and in some instances, the use of shortcuts which ease the current problem but do not fix the underlying cause. The users understand and sympathize with the User Support staff as a result of understaffing problems. Regardless of the goodwill held by the users, long delays in problem resolution are not productive for the University and user patience is being tested.

Several steps to remedy this situation are recommended by the staff and have the agreement of the review team. The most helpful and immediate action would be to fill the two existing approved and advertised positions as soon as possible. It would be helpful to contract for temporary assistance until the permanent positions are filled, and the possibility of doing this should be investigated. At the same time, there seem to be opportunities to streamline the roles of Reception and the Helpdesk with a view to optimising the use of resources and providing a single point of contact for Users.

Another step to improving the efficiency of the unit is analysis of the unit activities with a view to reducing workload. Appropriate action, such as targeted user training, could avoid recurring problems and reduce the demands on the unit. The unit should make use of the *Remedy* reporting capabilities to analyze the nature of the user assistance calls and to measure the unit timeliness in responding and resolving calls for assistance.

Productivity improving technologies such as those enabling the remote control of PCs need to be researched and introduced.

The review team understands that both User Support and Quality Promotion are currently responsible for teaching computer training. If so, this situation needs sorting. If the Quality Promotion Unit could take over the teaching of user level computer training it would provide additional relief for the User Support Unit.

Systems and Network

The review team found the Systems and Network unit to be highly effective and very skilled. The unit manages all of the central servers and provides mail, web, and file services as well as the necessary services to operate the network. This unit consists of a manager, two systems programmers, and a single network technician. This is a small staff to manage the necessary tasks on the 24 hour by 7 day a week basis. As a result there is little cross-training of personnel and no backup for any of the required skill sets. In addition to the existing open position, a second staff position should be considered to provide flexibility and backup. Also, database management skills will need to be added in the future as administrative systems make more use of the existing administrative data store.

The review team believes that the University would experience a more reliable and secure Email system if the present collection of email systems evolves toward a single Email system that would be used across the University. It should be fully integrated with the Student Database (ITS) and a Staff Database that is consistent and correct. The systems and network unit should also investigate and implement software tools to automate routine systems tasks and troubleshooting. In particular automated data backup hardware and software would enhance the current backup process and make more efficient use of the systems staff time.

The Network Report presented in December 2000 presented a plan to reconfigure the network topology into a more efficient and secure configuration. This plan proposed two head end switches that would provide enhanced traffic control, performance, and security as well as failover capability to protect the network from disruption in the event of failure of one of the switches. Phase one of this plan has been completed with the first switch having been installed on the South Campus and the review team concurs with the Computer Centre staff that the next phase should proceed with installation of a second switch on the North Campus as soon as is practical. As the University becomes more dependent on uninterrupted data service, a robust and redundantly equipped network becomes essential to satisfactory operation.

Instances of contractors providing network wiring that operates poorly, or not at all, have occurred in the recent new constructions on campus. It is necessary for the Networks Area to become more involved in overseeing contractor installations, particularly in new buildings to ensure installations are to the agreed standards. The position of Services Coordinator as described by Finbarr Horrigan (Head of Buildings Office) could provide a means of resolving this issue.

Students

In our meeting with the students, the review team was greeted by a number of articulate and thoughtful individuals whose experience ranged from first-years to post graduates. It was apparent from our conversations that many of these Students are familiar with computing at other Universities and measure facilities at Maynooth against them. While students did not seem to be unduly disappointed with computing services at Maynooth, there were some issues that they wish to have resolved. The reviewers observed that the students were not very well informed about the actions and plans of the Computer Centre in support of student computing, and recommend that a more aggressive effort to communicate with the student population be undertaken by the Centre.

This group was universal in its belief that Arts Students have inadequate access to computers. There is an existing plan to provide a new Public Access Computer Laboratory with 80 PCs on the North Campus and the team recommends that this plan should be implemented as soon as possible. In concert with the implementation of a new Public Access Computing Laboratory, means of allowing Arts Students access to computers in other areas should be considered. During our tour of facilities it was observed that while Arts Students were queuing for computers, Computer Laboratories in other Schools were, at that time, seriously underutilized (e.g. less than 10%). This situation creates a feeling of unequal opportunity. In a related issue the students report that they are having a lot of difficulties with the printing facilities currently available to them. A review of the facilities should be carried out. Another recommended action would be to enhance access to the network for those students who own laptops through the creation of “hot” access points that the students could plug into and also to create areas of wireless access for laptops with wireless capability.

The students also mentioned that there are difficulties connecting computing equipment to the network in the Residences and that connections often work poorly. Given the demand on the Public Access Computer Laboratories, these problems should be investigated and resolved. There were a large number of the students who would like the University to assist in the purchase of a computer by negotiating a bulk purchase agreement that would offer the student a lower price than they are currently able to secure on their own. This has the two-fold benefit of helping the student and easing the support load by creating a standard configuration for students.

One member of the User Support staff mentioned that the University needs to accommodate Students with Special Needs - for example, Foreign Students and Students with Disabilities.

Environment

The reviewers received several comments regarding the unsuitability of the current location of the Computing Centre. Most important of these were the risks related to the existing computer room and the air quality (particularly in the User Support Area). The area that currently houses the computers, servers, and data of the university as well as the main network switch has poor physical security. Irish universities have recently experienced a rash of computing equipment thefts. The existing computing area should be altered to prevent similar incidents from occurring at Maynooth. These measures

could include better lighting of the rear of the premises, bars for existing windows, and strengthening the area's exterior door.

To address the quality of air issue, the University needs to complete the initiatives undertaken by Buildings Office and rectify the outstanding issues where practical. It is important to keep staff informed of these efforts and solicit feedback from them.

The Computer Centre needs to produce a document identifying the medium and longer term Accommodation Requirements of the Department. This should be fed into the Overall Campus Development Plan.

Staff

The recent period of unprecedented growth has severely stressed the staff of the Computer Centre. This has created some tension among department members, however the review team observed an over-all high degree of morale. These are people that know they are doing an excellent job of supplying needed services under difficult conditions. Their pride and confidence in themselves is evident. Even so there are a number of actions that need to be taken quickly. As recommended above, the Centre needs to fill the three positions already approved and advertised as soon as it can be accomplished. Further, the University should consider adding a position to the staff in Administrative Systems and the Systems Support and Networking (two additional positions in total).

The Computer Centre Staff is expected to provide services 24 hours a day, 7 days a week, and to support the systems beyond normal working hours. To date the University has relied on the goodwill of staff to handle this extra load. The reviewers recommend that consideration be given to an appropriate formalized reward system.

The Grading of some individuals in the Department might be incompatible with similar positions in other Universities. The staff positions should be reviewed by the Computer Centre together with the Personnel Department and the Centre should work to develop understanding within the Personnel Department regarding the unique difficulties in hiring and retaining skilled technical personnel.

To address the tensions that exist between areas within the Department, team building exercises would help create a better understanding of each other's tasks and would remove some of the existing barriers between the units. Also an improved system of communication should be implemented within the Department.

Section 3 Summary of the Recommendations

The following section summarizes the recommendations contained within this report. It is divided into two sections, the first being those recommendations that need to be undertaken by the University in conjunction with the Computer Centre. The second section contains those recommendations that can be undertaken by the Centre on its own. The recommendations are not ranked in order of importance but occur approximately in the same order as they occur within the body of the report.

Section 3.1

Director

There is a high expectation among the staff that the newly formed Steering Committee will provide needed strategic direction, and coordinate Computer Centre planning with that of the University. To insure that the maximum benefit is obtained, the Computer Centre must prepare one and three year draft plans for the committee's consideration.

In a similar manner, policies governing security, the roles of user department and central computing, and network use and connection need to be developed and vetted by the Steering Committee,

The University needs to develop a policy that governs the manner that the campus infrastructure, including communications, will be capital funded and maintained.

It is essential that the three staff positions that have been approved are hired.

The review team recommends that two additional staff positions are considered, one in administrative systems and one in systems and networking.

Administrative Systems

The review team recommends that the consolidation of staff personnel data into a single accurate database be a high priority project for the Administrative Systems team.

User Support

Investigate the possibility of consulting/contract assistance for user support while waiting for the two open positions to be filled

The Computer Centre and Quality Promotion should jointly decide which unit will provide user computer training and put all training in one unit or the other. Placing training in Quality Promotion would potentially free up personnel for User Support.

Systems

The Systems unit should purchase automated data backup and restore hardware and software. This will increase the reliability and functionality of the data recovery subsystem and free up time for the system staff.

Networking

The network area is very thinly staffed with one engineer. It is strongly recommended that the currently open position be hired as soon as possible.

The data network at Maynooth is currently very vulnerable to failures. To correct this condition the Network group must continue to design and install additional equipment to remove single points of failure. In particular it is recommended that the second network switch be installed on the North campus.

Students

Proceed rapidly with the plan to create an additional Public Access Computer Laboratory of 80 machines. Improvements need to be made to printing facilities in the Computer Laboratories.

The University should investigate any possible means of using restricted computing laboratories, such as those in the Computer Science Department, for general use, when not otherwise engaged.

Environment

Make the necessary alterations to increase the physical security of the computing hardware area in the Computing Centre Building.

Staff

Review with the Personnel Department those actions that can be taken to fairly compensate individuals who are performing duties that substantially extend the work week.

Work with Personnel to review the grade levels and compensation of the Computing Centre Staff to ensure that Maynooth continues to remain competitive.

Section 3.2

Administrative Systems

Projects that enhance the automatic transfer of data between administrative systems will save staff time and are important to continue.

Oracle's *Discoverer* report package should be implemented for all administrative systems.

The review team believes that the Web is the thin client of choice for users and that administrative systems staff should acquire more skills in Web development and deploy Web enabled applications as quickly as they are able.

User Support

The Computer Centre should investigate the potential for increased coordination obtained by combining the Reception Unit with the Helpdesk. This would provide coordination of user requests and more efficient communications between the staff.

The User Support unit should analyze their operations for possible quality improvements. Use *Remedy* to measure current status and trends and to communicate changes that will affect the systems. The Unit should research and implement, if appropriate, the capability to remotely access a user machine for repair after securing the owner's permission for access. This capability could shorten times to resolve problems by avoiding the "travel" time to the user site.

Systems

The review team recommends that the University standardize on a central Email system to enhance network security and to avoid duplication of effort.

Systems should investigate available software tools that will automate routine systems tasks and install packages as appropriate.

Networking

The systems and network staff should aggressively continue to reconfigure the network to provide for subnets and virtual private networks (VPN) to enhance security and performance.

Network staff should review the wiring installation of all new buildings before the contractor is released.

Students

Undertake better communications with students regarding Computing Centre plans that affect them

The Computer Centre should plan to provide network access for laptops by active access points and wireless areas.

In order to enhance more use of installed network connections User Support /Network should resolve the reported difficulties with connecting to the network from the residences

The Computer Centre should investigate, and implement if feasible, a plan to assist students in securing lower computer purchase prices.

The University should determine the special needs of foreign students and students with disabilities and plan for accommodation as necessary.

Environment

Continue to take all practical measures to improve the environmental conditions within the Centre Building. Keep the staff informed of your actions.

Develop a report regarding the longer range accommodation needs of the Computer Centre and feed it into the Campus Development Plan.

Staff

Investigate the value of team building exercise to improve relations among departmental units.

Continue to explore ways to more effectively communicate with and among the staff. Be sure the staff is apprised of University Plans that impact the Centre and facilitate intra-staff communications regarding actions or plans that will affect more than one unit within the Centre.

Dr W.J. Smyth, President, NUI Maynooth

Mr Brendan Tolan, Director, Computer Services Department, Dublin City University

Mr Don Wolfe, Vice President Emeritus CIS. Brown University

Professor Ann Burnell, Dean of Science, NUI Maynooth