Executive Summary

This Information & Communication Technology (ICT) Infrastructure Strategy sets out a medium to long-term vision of how the ICT infrastructure will develop to support the University in its increasing dependency on Information Technology (IT) and help enhance the performance of the University in achieving its mission. The ICT strategy consists of the following elements:

- A vision and set of guiding principles to shape the strategy
- Building blocks for the technical (IT) infrastructure
- A framework of processes to guide the implementation and evolution of the strategy
- A methodology for enabling the most effective use and support of information technology and systems through timely and effective training.

Integral to the ICT Strategy is a rolling three-year IT roadmap presented as an appendix for ease of annual update. The roadmap identifies the proposed work programmes that would be required to meet the strategic aims of the ICT strategy and includes budgetary estimates of cost for each of three financial years (current year and two subsequent years). This appendix will be updated and presented to IPSC each year for approval.

The strategy as a whole is intended to provide a clear articulation of the evolving ICT infrastructure to permit effective planning of central and faculty development.

The University IT Strategy is the set of documents comprising this ICT Infrastructure Strategy and the Faculty IT Strategies.

Introduction

The University’s ICT Infrastructure Strategy underpins the Information Strategy and identifies how IT resources can be utilised in such a manner that they are made to work towards the greater organisational objectives. The strategy is also a key element in the realisation of the University's Strategic Plan. Technological provision must be well planned and well targeted to get good value from the investment. The ICT Infrastructure Strategy is designed to achieve this as it provides a framework and set of processes for maximising the effectiveness of limited budgets.

The Technical Review Group (TRG) a group formed to report to IPSC on IT related issues, prepared this ICT Infrastructure Strategy

The rate of change of technology churn shows no signs of abating, indeed rather the reverse. The IT industry displays an increasing drive towards technology integration and “personalisation”. The widespread deployment of PCs in the early 90’s was the first step in the chain. This is the context in which the IT Strategy is set.

In formulating the ICT Infrastructure Strategy, the Technical Review Group (TRG) has:

- Engaged with faculties so that the ICT Strategy is based on clearly evidenced needs
- Drawn from the recommendations made by Information Strategy Working groups
- Taken account of feedback received
- Taken account of external influences or initiatives

Vision

“The University will provide a feature rich, integrated, supportable and secure technological environment that provides staff and students with seamless, any time, any place, access to the Information Technology resources that support and enhance their activities”.

This environment may be categorised as follows:

- Persistent – through an infrastructure that provides the facilities, security and support structures that facilitates “always on” services
- Transparent – through services that are integrated, easy to use and reliable
- Dynamic – will remain relevant in line with technological advances
- Borderless – accessible from any where, at any time and to anyone within prevailing technology and security limits
- Flexible – within agreed frameworks
- Community based - to enhance learning, teaching, research and administration activities

Guiding Principles

The University is committed to the following set of guiding principles

The University recognises the strategic importance of information technology and is prepared to invest in the continual development of its IT resources
The University will develop and communicate policies and strategies that will govern the use of IT and provide direction on support of IT resources
The University sees value for money as an important consideration in all IT investments and will seek to take advantage of economies of scale and solutions that reduce overall support costs wherever possible
The University will implement industry standards, best practice and supportable solutions
The University will promote an ICT Service ethos supported by the most appropriate technology
The University is a major research led institution and as such places demands on the technical infrastructure. The University will seek to maximise the opportunities offered by external funding where the activities to be undertaken can be properly resourced in terms of staffing and which dovetail with the IT roadmap. IT resources must be of a high quality, secure and universally available to authorised users.

The University recognises that support overheads must be addressed when costing IT investments. The University will increasingly adopt IT to support its core functions, users will become increasingly IT aware and expect access to feature rich, reliable, secure, integrated and easy to use services.

Users will increasingly require access to IT resources via a variety of devices including personal computers, portable computers, PDAs and other mobile devices. Communities will be established to promote effective consultation, knowledge transfer, sharing of best practice and avoidance of duplicated effort. The University recognises the need for user and IT support staff training.

Technical infrastructure to realise the vision

The following are the strategic building blocks that must be in place to establish the technical infrastructure that underpins the vision:

A pervasive communications infrastructure that must continue to be developed.

Standard platforms to host services with server and file store consolidation where practical.

A system for identity management, namely a directory service that links architectures as the basis for many future developments.

A security framework to preserve the integrity of the University’s information assets and systems.

A secure and consistent desktop environment as the norm for standard IT activities.

A set of standard applications for University wide functions that are site licensed wherever feasible.

Integration of standard applications, core services and infrastructure to provide a feature rich IT environment.

General Information Technology policies and guidelines covering security, core service direction and standards.

Strategic infrastructure direction will be to support and improve a set of generic core services, identified in the Roles and Responsibilities of the Central and Faculty Staff Working Group as being the responsibility of Computing Service and including:

Core Infrastructure services:

1. The campus network supporting high speed Local Area Networks, Routing services and external connectivity with ClydNET and SuperJANET.
2. DNS services and IP address management.
3. File store services including backup and retrieval services.
4. E-mail relays, servers and SPAM filtering.
5. End user personal communications services including standard e-mail and diary management.
6. Network Directory services for network operating system and resource management.
7. Network Directory service integration to synchronise relevant information between directories.
8. Authentication and authorisation systems providing near ‘single sign on’ and federated services between authentication domains including partner institutions.
9. Serviced Desktops providing a secure and productive environment for administrative, academic and student support.
10. Information Technology security services including policies, advice, training, best practises and incident handling.
11. Help Desk service.
12. Virtual Learning Environment to support new methods in learning and teaching.
13. Application support and training for standard packages.
14. Training programmes for IT support staff.
15. Negotiation and management of University-wide agreements e.g. Microsoft and other software licences.

All of these services will be the subject of Service Definition Agreements (reference Service Levels and Expectations Working Group). This set of generic core services will be augmented in response to demand and changing technology and will provide the basis for faculties and departments to develop added value or subject specific services.

Examples of new services that will be developed within the planning horizon are:

- Portals
- Virtual/Managed Learning Environments (VLE/MLE)
- Web Content Management Systems (CMS)
- Records management
- Unified communications including e-mail, collaboration tools and IP telephony
- E-Science support services

All of these institution wide developments will depend on the core infrastructure elements to underpin their delivery and support.

All services, whether centrally or faculty provided, will require to be monitored and managed effectively in order to maximise service delivery to the user community and reduce the support burden on IT support staff.

Process to realise the vision

The Technical Review Group (TRG), a group of nominated technology experts from AIMS and each faculty who have the authority to speak on technical issues, developed and maintains the ICT Infrastructure strategy.

TRG operates by establishing short life working groups of experts to investigate and report on various technologies as
and when required and make recommendations to IPSC on the costs, timing and manner of technology adoption. TRG reports will be published on the Web for a period of consultation allowing time for formal stakeholder feedback before they are submitted to IPSC for approval.

Working in partnership to identify, research and evaluate technologies that are potentially important to the University’s ICT strategy results in a broad consensus, helps develop commonality of purpose and promotes standard practice for implementation. This process enables faculties to develop their IT planning in a way that interlocks with the University ICT Strategy and is consistent with it.

TRG and the Information Strategy Development Group (ISDG) cross link, with ISDG providing strategic direction on faculties’ needs and TRG proposing technological solutions that may shape the aspirations of ISDG.

The critical importance of working partnerships to effective service delivery is being augmented by the continued development of links with the wider distributed support community through the Distributed IT Forum organised by the Computing Service Deputy Director for Distributed Support.

Management of Process

The implementation processes of many IT infrastructure activities are major projects affecting the entire University. For such projects TRG is the natural Programme Board as it is representative of all faculties. The TRG ensures openness and transparency in the work of the Project Teams.

Awareness and training

In a rapidly evolving technology environment there is a need for continual development of skills so that the University can fully realise the benefits that proper and confident use of technology can bring. This truism applies as much to IT support staff as to those using technological solutions as a tool to perform their daily work.

Computing Service, The Staff Development Service and other training agencies currently offer a range of courses from introductory to task orientated and will continue to develop new courses and appropriate delivery methods in response to user feedback and evolving needs. Whilst such training is essential, these courses are designed to meet end user requirements.

Commensurate resources must be targeted at IT support staff allowing them to engage in continual professional development so that they have a recognised level of skill before being able to undertake certain tasks. There is an obvious analogy with the function of staff recruitment where there is a requirement to attend a recruitment course before serving on an Interview Panel.

Roadmap for IT evolution

The developments are being done in a particular order because of dependencies of one area on another. Collectively they are crucial activities that underpin IT service delivery and enhancements e.g., the introduction of Portals, Virtual Learning Environments (VLEs) and content management all of which the University recognises as important developments. The availability of external funding also has an obvious influence on the timing of some developments.

The details of the roadmap are presented as an appendix to facilitate annual update.