

TECHNOLOGY AND SERVICES TO MANAGE INFORMATION

INFORMATION TECHNOLOGY STRATEGIC PLAN: 2005 UPDATE

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1. Introduction

This document is the 2005 Information Technology Strategic Plan Update to the original Information Technology Strategic Plan published in 2002. As part of the ongoing work on the Monash Information Management Strategy, the notion of the user centered information-technology model (shown in Figure 1 below) has been developed by the Information Management Steering Committee. This model places the user at the top of the model, emphasizing their importance and their close interaction with information. At lower levels of the diagram, the service, application and infrastructure elements should become increasingly less visible to the user.

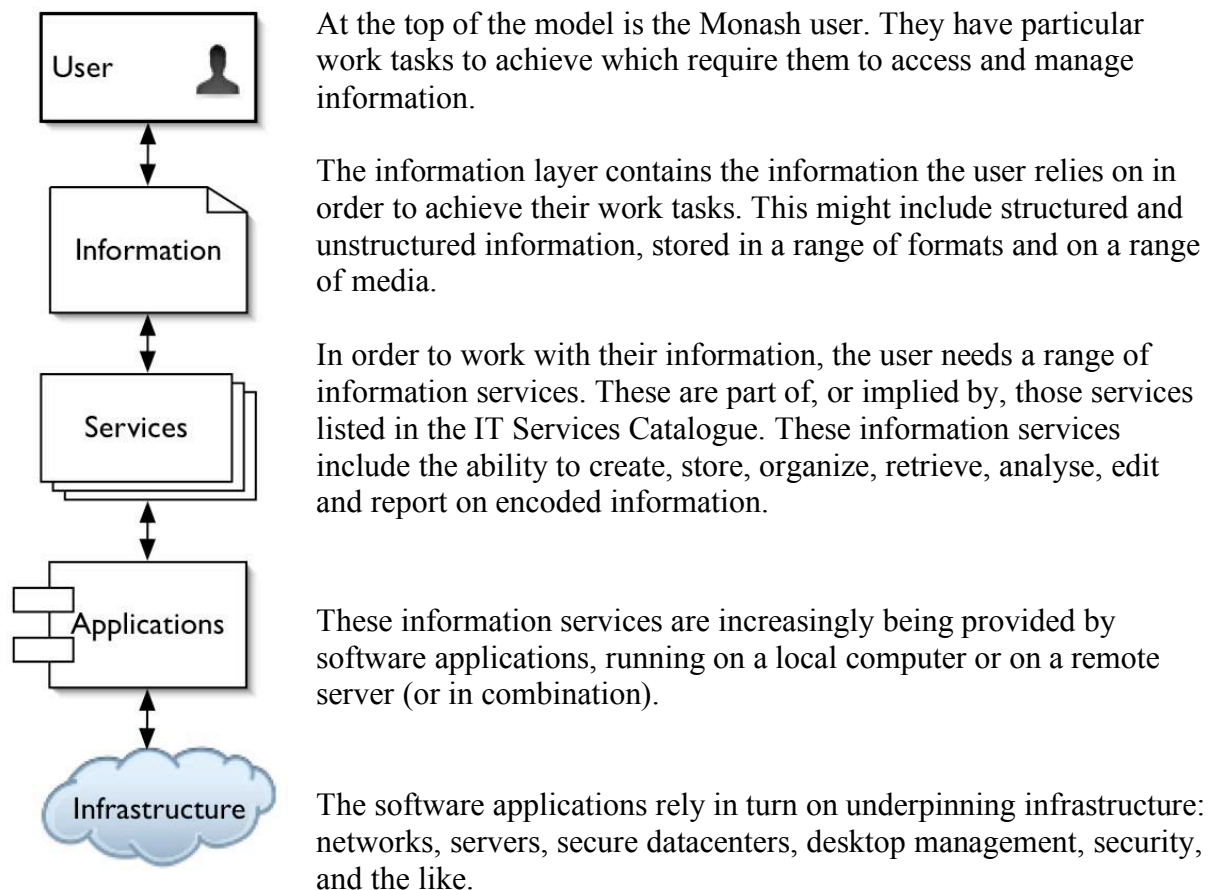


Figure 1: User Centered Information Technology

This model has been used to structure the 2005 Information Technology Strategic Plan Update. The following sections deal with Information Management, Services, Applications and Infrastructure. These sections do not attempt to deal with all the activities and strategies planned for 2006 and beyond. Rather, the document tries to highlight a number of particularly significant areas that relate to ongoing priority activities as well as the university priorities that have been identified for 2006. These are (1) implementing the Monash mobility scheme for students and staff, (2) improving staff research engagement, (3) improving the Monash student experience, (4) attracting the most talented students, and (5) implementing the information management strategy. Each of the identified actions in this document (except for the information management section) is prefaced by a table showing alignment with these priorities.

2. Information Management

Overview

The vision for information management at Monash University is

“managing information to better create and share knowledge”

In responding to this vision, Monash University faces a number of challenges:

- growth in the volume and complexity of information
- an increasing number of information islands
- convergence in digital content and media
- cultural issues around information ownership and collaboration.

The Information Management Strategy project has responded to these challenges by undertaking a program of external investigation into practices at relevant overseas universities and internal investigation into issues at Monash University through a series of interviews with a range of information stakeholders and users.

Drawing on the results of these investigations, the task of creating the resulting Information Management Strategy has been informed by a set of Monash Information Principles:

- **Corporate Importance:** Information is a strategic university-wide resource, and will be managed appropriately. Information requirements (needs and management) should be identified as a standard part of strategic and project planning.
- **Information Sources:** University-created information may be made available from a core source or a derived source. The core source for any item of university-created information must be identifiable and accessible. Any derived sources of information must be identified as such. In general, changes should only be made to the core source.
- **User-Centeredness:** Information systems and services should be designed (or re-designed) to operate in a way that is user- and task-centred. This should inform all aspects of system or service design.
- **Availability:** Information should ideally be accessible (subject to security and acceptable use guidelines) to:
 - anybody who needs it
 - at anytime
 - anywhere
 - and anyhow (i.e. on any device).
- **Staff and student development:** The university needs to provide an adequate, relevant and ongoing development programme to enable staff and students to create, access, manage and disseminate information resources effectively.
- **Productivity and efficiency:** Information, and the way it is managed, should contribute to the productivity of members of the Monash University community.
- **Information ethics:** Personal information must be managed in accordance with relevant privacy legislation. Information must be stored in such a way as to allow a timely response to FOI and local requests, as well as legally-mandated controlled discovery.

- **Trustworthy information and systems:** Information provided by Monash University should be, and be perceived to be, trustworthy (that is, relevant, accurate and timely) to the maximum extent possible.
- **Retention and disposal:** Essential information must be retained while required and then appropriately disposed of. While it is retained, it must be managed in such a way as to be recoverable in the event of loss on a timescale consistent with university requirements.

Monash University is an institution whose lifeblood is information and whose wellbeing depends on healthy information flows. All areas in the university rely on quality information (that is both accurate and reliable, and has integrity) to make good decisions and to ensure they do not need to 'reinvent the wheel'. Information management provides a framework that supports the creation or acquisition of such information and a methodology that manages this information to improve the effectiveness of the organisation.

The university has accordingly identified implementing the Information Management Strategy as one of its key priorities for 2006. This implementation will need to involve two components: implementing strategies related to the main themes identified in the strategy document that support the ongoing activities of the university, and implementing strategies related to supporting the other 2006 priorities.

Information Management Themes

The following underlying themes run through the entire IM strategy:

- Working with information efficiently and effectively
- Using the web to deliver information and services
- Providing high quality management information
- Supporting collaborative activity

So what do these themes mean and how will they work out in practice? What are the planned information management initiatives for 2006 and 2007?

Working with information efficiently and effectively

Most areas and users within Monash have critical corporate information stored in a number of locations across a range of information systems. Finding a piece of information is more difficult than it should be, and ensuring that the correct version has been located is sometimes impossible. The ways in which the information is organised are inconsistent across (and often within) information systems, causing further difficulties. Finally, there is little guidance for content creators as to the best ways in which to capture, organise and repurpose this information. Recommended high priority actions are:

2006:

- Use the ARROW research output repository, the RM4 research management system and the TARDIS research reporting system to autogenerate publications lists for different groups
- Pilot better information management support for eResearch
- Review requirements for better meeting and committee support
- Progressively implement a review of use of Novell/Intranet/Extranet storage across discrete workgroups
- Pilot an electronic document and record management system

- Provide clear guidelines on information retention and disposal
- Run information skills workshops
- Move to server-based storage for critical information)
- Implement the LOCATE classification tool for new staff

2007:

- Implement a production learning content management system
- Implement further information management support for eResearch
- Implement an integrated meeting and committee support system
- Progressively implement the LOCATE classification tool for all staff
- Embed the notion of information ownership in new PDs and performance goals)
- Implement a production electronic document and record management system
- Reduce barriers to greater use of server-based storage for corporate information
- Enhance the ability to search across different information islands

Using the web to deliver information and services

The web has already become the default way to publish many forms of information. It is rapidly becoming the default way to deliver information services and applications. Monash needs to strategically identify how best to use the web as a strategic information dissemination tool, a way of aggregating information and services, and fundamental piece of information management and communication infrastructure. Recommended high priority actions are:

2006:

- Implement the web strategy developed in 2005
- Move to the web-enabled version of SAP
- Progressively web-enable RM4
- Implement common portal services for staff
- Investigate requirements for a Monash intranet
- Complete the initial rollout of the Web Content Management System
- Implement the recommendations of the portal review

2007:

- Leverage the capabilities of the Web Content Management System
- Implement a range of targeted portals for different user roles

Providing high quality management information

Monash University is increasingly reliant on centrally-provided information systems. As this reliance grows, there is a corresponding demand from divisions and faculties to access reports and other information from across the range of administrative, teaching and research applications. This information may be in the form of static reports, drill-down information spaces, or visual graphs. There is also an increasing demand to report across the range of administrative, teaching and research applications. At present there is no mechanism by which to do this. A number of the existing silo applications provide inadequate support for end-user ad hoc queries and there can be delays in meeting requests for custom reports. A co-ordinated approach is required to provide *ad hoc* reporting and analysis that can be driven by end-users (with appropriate access rights), including data-matching across applications. Such an approach would include developing a reporting strategy to ensure better management information from and across existing applications, as well as investigating ways of providing query and analysis capabilities across the enterprise information collection. This activity will

need to be governed by a good understanding of what users require, an awareness of what the current technology makes possible and a commitment to meet the needs of the users. Recommended high priority actions are:

2006:

- Continue to improve the quality of data managed by RM4
- Pilot an integrated reporting system
- Continue to refine the capabilities of the TARDIS research reporting system
- Pilot a TARDIS-like environment for Learning and Teaching
- Plan for requirements of AUQA

2007:

- Pilot a business intelligence/data analysis offering
- Implement a production integrated reporting system
- Respond to requirements of AUQA process

Supporting collaborative activity

The need to collaborate exists across Monash University in each of its realms of activity:

- educators need to collaborate on the creation or updating of teaching materials
- students are required to collaborate on group assessment tasks and shared learning activities
- researchers need to collaborate during the process of research, while writing conference papers or journal articles, or when submitting grant proposals
- administrators need to collaborate when writing reports, creating strategy or undertaking new initiatives

All of the above examples demonstrate the clear nexus between content-creation and collaborative activity which also appears prominently in the research literature. Increasingly this collaboration needs to occur across organisational boundaries (including outside Monash University), across geographical boundaries, and across time zones. This brings with it a range of technical and governance challenges. The need for better collaboration support was identified in the *Information Technology Strategic Plan 2004 Update*, the *Support Services Plan 2005 Update* and during the Research Information Seminar held in May 2004. It will become a major issue as Monash University moves into e-Research and the activities that will coalesce around the Synchrotron.

Collaboration tools can be divided into Asynchronous and Synchronous. Asynchronous includes things like email, scheduling, and discussion groups. Synchronous Collaboration (or Real Time Collaboration) is an umbrella term used to describe the collection of technologies that revolve around immediate presence and interaction. Such collaboration systems might include some or all of the following: shared discussions that are stored and can be searched, instant messaging, collaborative online document editing, shared publishing spaces, shared online whiteboards, desktop videoconferencing, peer-to-peer file management environments, audio/video conferencing, web conferencing, and searchable information spaces. It is quite likely that what will be necessary will be a number of special purpose collaboration environments, structured around specific problems.

Recommended high priority actions are:

2006:

- Implement the recommendations of the 2005 review of asynchronous collaboration technologies
- Undertake a review of requirements for synchronous collaboration technologies
- Develop a strategy for email management

2007:

- Implement the recommendations of the 2006 review of requirements for synchronous collaboration technologies
- Implement the recommendations of the email management strategy
- Respond to the special collaboration needs of the eResearch sector

2006 University Priorities

The themes described above and their associated initiatives are part of an ongoing programme of activity which will take place over several years. In addition to this, each year the Information Management programme will need to respond to the annual priorities of the university. What specific information management strategies will support the university's activities across these priority areas for 2006?

Monash internal mobility scheme for students and staff

To implement this effectively, students and staff need accurate information at campus-level. Relevant IM strategies include making campus coding a mandatory data element (where appropriate) for all existing and new information systems.

They also need access to information services and to their own information whenever/wherever/however. Relevant strategies include:

- Reviewing access controls on web-based services to ensure access from off-campus wherever possible
- Moving to providing web-based access to core information services, thus providing access via any computer with a web browser, or ideally a wider range of handheld devices

Improving staff research engagement

This requires the ability to measure staff research engagement and to support/enhance this engagement. Measurement and management of engagement is supported in the strategy by the following strategies:

- Investigating the use of exceptions-based reporting for management purposes, thus focussing attention where it needs to be and improving efficiency
- Providing a range of high-quality, current reports on research performance
- Continuing work to improve the quality of data stored in RM4

Support for the process of doing and publicising research is addressed in the strategy by:

- Developing a grant information-base
- Ensuring eResearch initiatives address issues around managing the information at all stages of the eResearch lifecycle, as well as more specific high performance computing issues

Improving the Monash student experience

The Monash student experience will be improved by further information management data collection focussing on students' needs, systems that provide information that meets their needs, as well as by improvements to the information systems that underpin the university's engagement with them.

Better information systems for students will be supported by these strategies:

- Investigating ways to use MUTTS to provide an improved staff/student experience of teaching space by optimising according to a range of criteria
- Providing a student calendar, integrated with Allocate+, and taking feeds from a range of other sources of scheduling information

Improvements to supporting information systems are addressed by:

- Investigating options for a portable facility allowing digital capture of audio in a lecture or tutorial and later upload to Monash Lectures Online
- Investigating the usefulness of providing an integrated audio/video/slide lecture capture and presentation system

Attracting the most talented students

Attracting both undergraduate and postgraduate students will require better exposure/showcasing of what Monash has to offer, as well as improving our ability to attract and enrol students throughout the recruitment process.

The information management strategy proposes better exposing the attractiveness of Monash by:

- Producing an integrated website for prospective students
- Creating interactive online showcases for Monash innovation
- Ensuring the public-facing websites for Monash provide clear information about cultural institutions on-campus
- Implementing an integrated course and unit report card

Making it easier for students to come to Monash will be aided by:

- Extending ask.monash to support prospective student enquiries
- Providing better support for postgraduate student recruitment by exposing more information about research strengths and areas of possible activity
- Providing better support for improved interactions with postgraduate students, such as web-based systems for tracking progress and facilitating closer engagement between supervisors and students

3. Services

Services recommendation summary

- Provide greater access to wireless services.
- Focus on developing and providing integrated service offerings.
- Complete the Berwick Learning Commons pilot, and seek opportunities at all other campuses to implement something similar.
- Provide high-standard hot-desk locations at each campus for visiting staff.

- Improve the Monash meeting experience.
- Improve mobility support for staff and students.

Integrating information and services

Monash Internal Mobility Scheme	Improving Staff Research Engagement	Improving the Monash student experience	Attracting the most talented students	Implementing the Information Mgt strategy
✓		✓	✓	✓

Users are primarily interested in the information they need to perform their jobs, and the services that manage that information. The underlying infrastructure, while critical, is not, and should not be, at the forefront of their minds. This suggests an increasing focus on integrating services and information and delivering them in the most effective and efficient ways. In particular, the University needs to speed up its response to the perceptions and increasing expectations of the Net-Gen student population. These expectations coalesce in particular around wireless access, convergence of media/channels (SMS, real time collaboration tools, instant messaging, audio, video), access to information and services online or electronically, and support for mobile devices such as PDAs or smartphones.

Provision of services should focus on an online ‘student services’ environment to be enhanced to enable focussed, prioritised provision of integrated virtual services (mostly to be available through the portal). This in turn will require a review (currently underway) of the Portal strategy. Monash needs to improve its ability to quickly deploy new services/information in the online environment, and the portal could be a significant component of this. This online provision will complement existing face-to-face service options.

Collaboration should also be encouraged between organisational units and in particular SSSD/Library/ITS/CeLTS to integrate services and improve service offerings to students and to staff and other groups. The university should consider ways of re-envisioning service ownership and governance to improve Monash’s response to the need to integrate and enhance services. At the same time, ITS needs to assist in maintaining the balance between the corporate need for security of information and the individual requirement for access to that information.

Learning Spaces

Monash Internal Mobility Scheme	Improving Staff Research Engagement	Improving the Monash student experience	Attracting the most talented students	Implementing the Information Mgt strategy
✓		✓	✓	

Learning spaces can either be physical or virtual spaces that encourage and facilitate learning. The virtual learning spaces are currently constructed in Monash University Studies Online (MUSO) or Interlearn. The new collaboration environments being proposed may also provide additional possibilities. In the physical realm, a number of universities have implemented what are variously described as Learning Spaces or Learning Commons. These can be viewed as a physical environment that is rich in information technology and support services, providing information resources and collections (both print and electronic), technology (both software, hardware and communications) and mixed study spaces for students to work in an integrated location and with the necessary support services, including reference, help, information literacy and study skills support. Feedback from many sources such as MEQ and

Library surveys supports improving IT facilities and support services in study areas especially the Library.

Some of this activity is already underway at Monash. A pilot Learning Commons is being created at Berwick. The pilot will be completed in 2005/6, and opportunities will be sought at all campuses to implement something similar. This could take different forms in different locations. ITS should continue planning and implementation for IT support in Malaysia and South Africa, with an emphasis on this sort of facility. Appropriate governance including Campus Directors, Library, ITS, Facilities & Services and SSSD has been established. In addition, faculties could explore the set up of small technology rich lounges/study spaces within their own areas. These would be less formal and more collaborative than computer labs, and would complement the larger Learning Commons facilities. They could also provide dedicated study locations for post-graduate students, complementing the existing centre at Clayton.

Support for a multi campus Monash University

Monash Internal Mobility Scheme	Improving Staff Research Engagement	Improving the Monash student experience	Attracting the most talented students	Implementing the Information Mgt strategy
✓		✓	✓	✓

The vision of the multi campus Monash University is one where many students and staff will be based primarily on one campus but may need to/prefer to also work at other campus locations from time to time. This sort of movement should provide opportunities and options for students and staff to empower their learning and teaching, improve research and development and facilitate the management of the university. Each Monash campus will be a gateway to many of the facilities and services the university offers. How and where students and staff access facilities, should be largely determined by convenience to them (consistent with their task requirements). This would reduce costs across the university through:

- (i) Reduction in student and staff travel time and costs (a percentage of study and work done at the campus nearer to home, reduction in travel to meetings).
- (ii) Providing shared access to common resources, rather than duplicating them across the campus network.

Critical to the success of Monash as a multi-campus institution is more convenient access to campus facilities and services (e.g. library, computers, student administration, study spaces). One facility that would make a big difference to the staff experience in particular would be a supported office facility at each campus that would be designed as a hot-desk environment for staff roaming away from their home campus, and would be serviced by desktop support staff.

A number of facilities and processes could be introduced to support cross-campus work and study. At the individual desktop level, Monash does not deploy document sharing, voice conferencing or tele-conferencing software as part of its standard desktop operating environment. Greater integration between the desktop PC and the Monash voice / fax network could also facilitate easier communication with mobile Monash workers. The collaboration review will be considering some of these issues. Campus meeting rooms are a very important aspect of how Monash supports group work within a given campus and across its campus network, and many lack basic facilities such as tele-conferencing support, or more advanced facilities such as inbuilt data projection facilities and computers to support group work and document sharing between meeting rooms.

Monash also needs to examine how best to provide IT services and support at different locations. This will include dealing with differing local requirements, as well as infrastructure and support constraints.

Working anywhere - improved mobility support

Monash Internal Mobility Scheme	Improving Staff Research Engagement	Improving the Monash student experience	Attracting the most talented students	Implementing the Information Mgt strategy
✓	✓	✓	✓	✓

The previous section discussed the sort of physical infrastructure needed at different Monash university locations. This needs to be complemented by a range of services to support increased staff and student mobility. These include support for mobile devices, access to information anytime/anywhere/anyhow, better support for working from home, and better support for users travelling overseas.

An increasing number of staff and students are relying on mobile devices to access and work with information. These devices range from smart phones through PDAs to laptops. ITS needs to identify better ways to provide support for a manageable range of devices. Such support might include standard configuration files, ‘howto’ documents or training for support staff.

The information management strategy has as one of its principles the ability to access information (subject to security and access restrictions) anytime, anywhere and anyhow. Anytime involves designing systems so that they are normally available 24 by 7 (although support staff will not be available to repair faults for that entire period). Anywhere means ensuring that restrictions on where information can be accessed make sense from a business point of view. A number of core pieces of information (such as the Staff Handbook) can only be accessed from a Monash IP address, which causes problems for staff working from home or remotely. Anyhow involves ensuring that, wherever possible, information is published in a way that is as device-independent as possible. The information management strategy contains a number of recommendations relating to anytime/where/how that should be implemented.

Many staff work at home as well as in a Monash office location. There are a number of IT services in production (secure IMAP, authenticated SMTP, VPN) and new services which are still in a pilot phase (iFolder, NetStorage) which will make this easier. These pilot services should be moved into production and publicised widely. There would also be value in creating guides on how to make productive use of what is already available.

Finally, ITS in conjunction with Faculty and Division IT support staff should review existing information for staff and students travelling overseas and update this to provide better guidance on software and services that has been tested and found to work effectively.

4. Applications

Applications recommendation summary

- Finalise decision on future technologies required to support the University's portal needs, and implement packaged software if appropriate.
- Expand the portal functionality for research, students, staff and prospective students.

- Continue to support the rollout of Web CT Vista across the university and develop the implementation into a highly available, robust and scalable University-wide Learning Management service.
- Research, evaluate and test alternative Learning Management Systems.
- Continue to improve the system processes and quality of data stored in ResearchMaster 4.
- Continue to emphasise data validation and data integrity as key in the development of new Callista functionality.
- Continue to work to underpin the viability of Callista Software Services whilst simultaneously scanning for possible successors to Callista SMS.
- Pilot an application integration solution based on a hub-and-spoke model, then progressively implement it across the major central applications.
- Accelerate the move to a fully web-based SAP client.
- Investigate ways to deliver targeted subsets of SAP functionality via portal technology.
- Investigate ways in which SAP can service a broader range of business needs beyond the core financial and human resource functions.

Learning Management System

Monash Internal Mobility Scheme	Improving Staff Research Engagement	Improving the Monash student experience	Attracting the most talented students	Implementing the Information Mgt strategy
✓		✓	✓	✓

The Monash University Studies Online (MUSO) project currently underway is proceeding to migrate to WebCT Vista from the Business and Economics and centrally supported versions of WebCT Campus Edition running at the university. This project will continue through 2006. The market for Learning Management systems is changing rapidly and Monash needs to keep abreast of these changes and be in a position to take advantage of new developments in the area. Of particular interest is the rapid growth of software being developed on a collaborative basis amongst universities.

Research Administration

Monash Internal Mobility Scheme	Improving Staff Research Engagement	Improving the Monash student experience	Attracting the most talented students	Implementing the Information Mgt strategy
	✓			✓

The main application used for research management is ResearchMaster4. Following on from the implementation of the Publications, Publications Web Entry, Personnel, Funding, Projects and Finance modules, the Ethics module was recently licensed and is currently being implemented. TARDIS (a web-based information analysis and reporting tool for research activity and performance) Version 1.0 has recently been released, and will be further extended to provide consolidated management reports across SAP, ResearchMaster and Callista. At the same time, work needs to proceed on data quality issues.

Academic and Student Management Systems

Monash Internal Mobility Scheme	Improving Staff Research Engagement	Improving the Monash student experience	Attracting the most talented students	Implementing the Information Mgt strategy
				✓

Callista is the core academic and student management system. There are a number of other systems which are dependent on the information held by Callista – CUPID, timetabling, unit evaluation, load monitoring and planning.

Callista has in excess of 2000 registered users, most of whom work in the faculties. The distributed nature of Callista and the reliance of other systems on the integrity of Callista information means that quality control over the data is a significant issue. The university must ensure there is adequate user training and clear guidelines on information quality and security. Recently the Callista vendor, Callista Software Services (CSS), experienced financial problems and the eleven Callista universities are currently negotiating an agreement that will underpin Callista’s financial viability at least for the next five years.

Applications Integration

Monash Internal Mobility Scheme	Improving Staff Research Engagement	Improving the Monash student experience	Attracting the most talented students	Implementing the Information Mgt strategy
				✓

Currently, the integration of information between the centrally provided information systems is handled through 170 separate point-to-point application interfaces. This number is increasing each year as more services move online, with each new system requiring its own set of point-to-point interfaces. This exponential explosion in interfaces is both costly and a barrier to supporting upgrades and implementing new integrated solutions efficiently and effectively.

The complexities of the current point-to-point custom interfaces could be eliminated by adoption of a ‘hub-and-spoke’ integration model. This would improve the efficiency and accuracy of data feeds between applications, significantly reduce the effort required to integrate new systems and to maintain existing systems, decrease the time taken to test and implement upgrades, and provide a single point where integrated reporting and data warehousing may be possible.

Enterprise Resource Planning (SAP)

Monash Internal Mobility Scheme	Improving Staff Research Engagement	Improving the Monash student experience	Attracting the most talented students	Implementing the Information Mgt strategy
				✓

ERP systems attempt to integrate all departments and functions across a company onto a single computer system that can serve the needs of individual departments. Monash adopted SAP R/3 in 1999 to service its financial, human resource and asset management needs.

SAP is a powerful tool for those who use it regularly but infrequent users find the client interface difficult to navigate. Monash’s strategy is to segment user groups and provide SAP solutions specific to their needs. This will be easier with the next generation SAP software,

mySAP ERP, which offers browser-based subsets of functionality targeted at managers as well as continuing to deliver an extensive transaction processing suite for power users.

SAP offers a broad range of functionality which Monash has not yet tapped. It is entirely possible that many of the present satellite systems developed at a local level can be replaced with SAP functionality for little or no cost other than the implementation effort. Monash needs to work closely with all parts of the business to identify opportunities for exploiting the considerable investment in its ERP software and eliminate costly alternative systems.

Portal

Monash Internal Mobility Scheme	Improving Staff Research Engagement	Improving the Monash student experience	Attracting the most talented students	Implementing the Information Mgt strategy
✓	✓	✓	✓	✓

my.monash will continue to incrementally grow in support of students, but needs significant development to better support staff. At present, there is little on the portal that specifically supports staff activities. It would be possible to provide a range of customised portals for different staff roles. This might include improved support for:

- research activity and collaboration (Researcher's desktop)
- teacher/student engagement and student management (Teacher's desktop)
- Exposing the richness of the Monash student experience to prospective students ("Prospective student's portal")
- finance, HR and process/workflow reporting ("Manager's desktop") and more and /better-integrated self-management services like ESS (staff portal)

The my.monash software has been developed at Monash. However since its development packaged portal software has become available. Adopting one of these packages, particularly one with wide adoption by other universities, would enable greater agility in responding to the changing university needs, and less duplicated effort developing portal components.

5. Infrastructure

Infrastructure recommendation summary

- Plan to scope a new data centre in 2006 and build the data centre in 2007. The estimated cost for this would be several million dollars, but the data centre is critical to the vast majority of ITS service provision and the risks of continuing with the Clayton data centre will only increase with time.
- Expand wireless coverage and introduce managed wireless access points.
- Introduce ingress control software for wireless and home connected computers.
- Establish a limited Voice Over IP (VOIP) service to provide PABX Disaster Recovery (DR) and improved call centre capability.
- Establish and manage a Grid facility in collaboration with Monash researchers and the e-Research@Monash Centre, and provide associated facilities supporting a Grid such as storage technologies.
- Establish the nationally agreed federated identity management system as a service at Monash to enable Monash researchers to work collaboratively in virtual research teams.

- Develop an agreed IT architecture and use this to inform new projects as well as technology replacement.

Replacement Data Centre

Monash Internal Mobility Scheme	Improving Staff Research Engagement	Improving the Monash student experience	Attracting the most talented students	Implementing the Information Mgt strategy
				✓

ITS maintains equipment located at two data centres; one at Mantrack (on Blackburn Rd) and one on the Clayton campus. Substantial parts of the main data centre on the Clayton campus, housing most of the critical server and communications infrastructure, are up to 30 years old. There is an increasing risk of serious disruption to services as a result of failing equipment at Clayton due to deteriorating environmental conditions or services. These risks include electrical, air-conditioning and fire protection services and contaminating dust particles circulating in the air.

As well as the age of the current data centre there are other compelling reasons for establishing a new data centre. These include the risk of disruption from militant activity on the main campus, the risk of critical events that may affect both data centres (which are no more than 1 kilometre apart), and the possibility of the Clayton data centre flooding in storm conditions.

With the imminent roll-out of the all fibre VERN network, it becomes feasible to establish a new Data Centre at any of the Monash campuses connected to VERN. Whatever location is chosen should be close enough to Clayton for staff to travel between campuses on an ‘as required’ basis, yet far enough away to make it highly unlikely any single physical event would effect both data centres simultaneously. Modern computer and communications equipment can be managed effectively from a distance.

Network

Monash Internal Mobility Scheme	Improving Staff Research Engagement	Improving the Monash student experience	Attracting the most talented students	Implementing the Information Mgt strategy
✓				

As identified elsewhere in this document, the university needs to expand the wireless network to increase coverage on the main campuses and introduce new management capability to improve service availability. Until the recent introduction of the latest technology, it was not possible to effectively monitor wireless access points for correct functioning, which often resulted in poor service levels. A survey conducted on new students entering Monash in 2005 indicated at least 24% intended to use the wireless facility within the next six months and a further 35% were undecided. This indicates a significant increase in the number of students wanting to use the service.

This number of uncontrolled computers connected to the Monash network poses significant risks from viruses as well as trojan horse attacks from misconfigured, unpatched and infected computers. There are solutions available which scan computers for misconfiguration, appropriate patch levels and infection levels before allowing them to connect to the network, and Monash should be investigating the adoption of these solutions.

During 2005, ITS is conducting a limited VOIP (Voice Over Internet Protocol) pilot to establish its capabilities and determine how best to utilise the technology moving forward. VOIP technology will be used extensively by telecommunication providers in the coming years and will eventually replace PABX technology. In the short term, VOIP technology can provide some disaster recovery capability for the Monash PABXs and significantly improved call centre capability.

e-Research

Monash Internal Mobility Scheme	Improving Staff Research Engagement	Improving the Monash student experience	Attracting the most talented students	Implementing the Information Mgt strategy
	✓		✓	

“**eResearch** [sic] is research activity that is supported by electronic devices (for example, high-performance computers, large databases, scientific instruments and/or associated facilities) connected by high capacity communication links. When these machines and facilities are used in a cooperative manner to solve otherwise intractable problems, they are often referred to as forming a **Grid**.”¹ Monash is in the process of establishing an e-Research centre and ITS has made a significant investment in establishing a central Grid facility in cooperation with the Faculty of Information Technology (FIT).

Grid support

Researchers in the Faculty of Information Technology in collaboration with ITS have won a research grant for a 64 processor Sun Grid computer. This will be managed by ITS and initially form part of a Monash compute Grid facility. It is anticipated that the Monash Grid facility will eventually form part of a national Grid compute facility. The recently installed Storage Area Network (SAN) and Back-up/Restore facility will provide essential services to Grid researchers. The central Grid facility will initially join with other compute facilities scattered around Monash to establish a Monash Grid. After this initial stage, it is envisaged that the Monash Grid will be connected to a national Grid being established by the Australian Partnership for Advanced Computing.

Identity Management

A national facility will require identity management to handle authorisation and appropriate allocation of resources for external parties. Newly developed and evolving federated identity management facilities (eg. Shibboleth) will need to be deployed. Monash has for some time established and managed a Public Key Infrastructure (PKI) digital certificate service and is participating in a national effort to standardise on a sector wide PKI, which is an essential service underpinning federated identity management.

IT Architecture

Monash Internal Mobility Scheme	Improving Staff Research Engagement	Improving the Monash student experience	Attracting the most talented students	Implementing the Information Mgt strategy
✓	✓	✓	✓	✓

¹ eResearch@Monash Centre Strategic and Business Plan 2005

“The IT infrastructure at Monash is already very complex, given the diversity of hardware and software systems and the University's global activities. The increasing dependence on IT, the growing need for additional functionality, and the international developments of the university are all trends that necessitate the adoption of a structured approach to reduce the complexity of our IT environment. The implementation of a comprehensive IT architecture containing guiding principles, standards and models, and promoting reuse of existing data, functionality and capacity will:

- Facilitate a reduction in existing complexity
- Increase the reliability of IT systems
- Reduce the costs of IT systems and time to implement new systems
- Permit greater interoperability of existing and new IT systems
- Reduce the risk of security violations
- Provide the blueprint for the deployment of IT on Australian campuses, offshore campuses and centres, within ITS and within Faculties.”²

Significant work has been done to develop the outline of an IT architecture for Monash. This outline now needs to be:

- Filled out, in consultation with university stakeholders, to link to completed documentation on all aspects of our architecture
- Used to inform decisions on how to implement new projects as well as technology replacement
- Promulgated within the university as an example of best practice to be followed in systems development and implementation.

² The IT Strategic Plan - 2002 Update