



The University Of Melbourne

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# Information Technology Paper for Information Futures Commission

AUTHOR: RICHARD SLAMKOVIC

A PAPER FROM INFORMATION SERVICES

## TABLE OF CONTENTS

Introduction .....	2
Considerations .....	3
Workshop attendees .....	6
Document control.....	<a href="#">6</a>





## Introduction

The University Of Melbourne is currently undergoing one of the most challenging periods in its history. It is embarking on many changes that are required to support the Growing Esteem strategy, part of which is the Melbourne Model. This involves a major shift in the way the University will deliver its courses to both undergraduate and postgraduate students in the future. As such, the Information Futures Commission has been established to ponder questions such as:

*How should we develop our scholarly information and technologies, services and infrastructure to achieve our research, learning and teaching and knowledge transfer aspirations over the next decade?*

A group of individuals from various parts of Information Services held a workshop to brainstorm suggestions and strategies to promote further informed discussion around these challenges. The outcomes from that workshop are presented in this document. This paper does not contain any prescriptive technology suggestions; its aim is to raise awareness of items that should be considered in order to progress towards the achievement of the Information Futures Commission's, and subsequently the University's goals. Before any actual technologies are considered, the University's requirements and constraints need to be clearly understood.



## Considerations

### 1. Storage

Looking at the potential amounts of data that will be required to be kept for extended periods, it is quite clear that very large amounts of storage will be needed. Policies need to be put in place to define the life-cycle of various data sets. This includes data retention policies, for example:

- How long to keep the items in primary storage before archiving them to secondary storage.
- How long will they be kept there before they are moved yet again or discarded completely?
- Which data sets require DR (Disaster Recovery) and backup processes?
- Which data sets (if any) require instant access perpetually?

Other issues that arise regarding storage are:

- Where are we going to physically store the data?
  - Do we keep building our own data centres or do we outsource the storage to a third-party?
  - Floor space, where?
  - Power and cooling, is there sufficient capacity?
  - Disks, tapes?
- Are there particular data sets that we cannot outsource due to privacy, confidentiality or legal reasons?
- What happens when the application and/or media that created the data no longer exists?
  - How do we access / make sense of the data?
  - What sort of metadata needs to be created / managed to ensure that data sets may be searched and accessed?

### 2. R&D for new technologies

New technologies are being introduced at an unprecedented rate. The University needs to invest in keeping abreast of these new technologies and conducting research as to where and how they may be applicable.

- Prototyping facilities
  - Establish a group that investigates these new technologies and creates prototypes to determine the levels of interoperability with current systems / technologies.
- Update staff skills
  - As new technologies are adopted, staff skills should be updated so that the best use is made of these new tools.

### 3. More flexible IS capabilities

This refers to selecting technologies and building our systems in ways that allow a more rapid response to changes. These changes could occur within the University,



such as new business needs, or be the result of some external edict (e.g. the recent RQF requests). Some considerations towards achieving flexibility are:

- Streamline processes (consistent, repeatable and measurable)
- Have an Enterprise (whole of University) perspective when making technology decisions
- Support open standards and migrate systems accordingly
- Consider open-source alternatives to COTS (Commercial Off The Shelf) packages and in-house development
  - Need to be mindful of support
    - Internal group (maintain and extend)
    - External vendor (e.g. Redhat Linux)
- Agile and adaptable to mitigating risks

#### **4. Support for researchers**

Different researchers have different needs, some for example wish to basically own their IT environment, whereas others are quite willing to let someone else manage those aspects. The University needs to set-up some policies and procedures, which govern the extent of support for researchers. There need to be some boundaries set, especially when it comes to storage of huge volumes of research data (see 1 above).

#### **5. Improved cataloguing**

This involves the collection / creation of metadata surrounding the collections. With improved cataloguing, comes an improved search capability.

#### **6. High-speed networks**

In order to deliver new technologies and large amounts of data within a reasonable (response) time, high-speed networks are a necessity. The University needs to have procedures in place to ensure that its networks remain fast and flexible.

#### **7. Flexible computing power and storage**

Both computing power (server machines) and storage units need to be flexible and re-configurable. This means that units may be added or re-deployed with minimal impact. To achieve this requires a base shared infrastructure, which is capable of being virtualised so that physical equipment may be moved around.

#### **8. IdM and SSO**

Identity Management (IdM) and Single-Sign-On (SSO) are critical for the support of a consistent student and staff experience, and also to support collaboration, both between researchers within the University and across other institutions.

- Identity Management is where an individual has a single consistent identity across the University and any external collaborators (e.g. student number).
- SSO allows a user to have only a single user-id and password that are propagated across all systems that the user interacts with. There is no need to have separate credentials for each system. If there are separate credentials required for some reason, these are abstracted by the Identity Management system and the initial sign-on credentials are used to map these values.



## 9. Quality of user experience

The quality of the user experience also needs to be considered. Given the vast amounts of information that may be presented from a number of sources, the user experience should take into account:

- Standards compliance
  - Usability standards
  - Accessibility standards

## 10. Data quality

This is very important given the projected volumes of data that will require storage. Data quality is best achieved by having single sources of data, commonly referred to as point-of-truth and DBOR (Data Base Of Record). These data sources require ownership to ensure accuracy, that is, a specific business unit is responsible for the management of a data set related to its primary activities. As an example, the student System should own student data as its primary business function is managing student records. The owner of the data is responsible for setting the life-cycle policies and access rules relating to that data. There should also be a single system responsible for updating of the DBOR. No other system should be allowed to make direct modifications to the data.

## 11. External market influences

Changes in technology, coupled with emerging IT market trends and forces in the delivery of such technologies, will have likely impact on current service delivery models (that is, how these may be delivered in the future) to provide and support scholarly information. In particular, IT is becoming more of a consumer service available through subscription costs. Whether we continue to invest internally on IT infrastructure and services or purchase some external ready-made facilities and services would be considered options in the future.

## 12. Funding

This is a critical factor that must be kept in mind during any IT related activity. Important considerations are:

- What will it cost to initiate?
- What will it cost to implement?
- What will it cost to maintain?
- What is the priority of this initiative against competing initiatives?

Without cognisance of cost and funding during IT planning there may be many innovative initiatives that never make it to fruition.



## Workshop attendees

Shirley Sullivan  
Andrew Yeoh  
Colin Blythe  
Guy Sangwine  
Jacob Rhoden  
Greg Morgan  
Naomi Burke  
James Hale  
Kevin Nguyen  
Patrick Wong  
Richard Slamkovic

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