

**FACULTY OF MEDICINE, DENTISTRY AND HEALTH SCIENCES**

## Response to the Consultation Paper

“Scholarly Information in the Digital Age – Choices for The University of Melbourne”

*Professor Peter Harris – Associate Dean (Information) following consultation with members of academic, professional and clinical staff and student from the Faculty, affiliated research institutes and teaching hospitals.*

**Strategic comments:**

The 20 year Vision Statement of the Faculty outlines a world-class ‘Parkville Hub’ incorporating its affiliated Medical Research Institutes, University teaching hospitals and clinical research organisations, with satellite hubs based at Austin Health, St Vincent’s and Eastern Hill, outer metropolitan hubs at Western/Sunshine and Northern Hospital and rural and regional Victoria nodes.

The Faculty sees this information strategy consultation as a timely opportunity to plan the library and information and knowledge management system that will support the visionary ‘Parkville Hub and Victorian Satellite’ proposal described in the Faculty’s Vision Statement 2028.

The overlap was noted between the specific investment plan for the Library of the Future and the needs of researchers in the health and biomedicine areas being evaluated under the e-Research initiative. The FMDHS group sees these plans in the context of a continuum of information and knowledge and encourages the University to adopt a more unified approach including establishing a Centre for Information Science Research and Education (Informatics) and developing a University-wide knowledge management plan.

There was strong support for a seamless, integrated approach to health information across the faculty’s interests (basic and clinical research, clinical decision support and teaching and learning) and between organisations (University, institutes and hospitals). This would assist collaboration, reduce duplication of materials and resources and enhance the sense of identity and profile of the Faculty and University.

The Faculty’s emphasis on research aspects of information management reflects the current deficit in integrated access, support and services compared with international benchmarks. The 10-year plan should take a comprehensive approach that incorporates the teaching and learning and knowledge transfer aspects of the triple-helix that will allow sharing of non-sensitive information with students and graduates and provide limited public access to biomedicine hubs and satellites.

**Specific proposals:**

1. *Authentication*: A single sign-on procedure is favoured wherever possible, recognising the issues of licensing of materials and the requirements of patient data security.
2. *Privacy and confidentiality needs in education & health*: Health and biomedical researchers have very specific requirements for secure and confidential linkage between clinical and community-based research data and between biomedical (genomic, proteomic, metabolomic, etc) and clinical (phenotypic and social) research data. Outside of health and medical research, there are special requirements for the information flows between student and teacher, a situation similar to that between the clinician and patient. The participant in clinical or educational research is a key member of this triad. The management and governance of the information must be secure and flexible and consider ethical, legal and social issues. Socio-technical solutions e.g. removing or encrypting patient/student and clinician/teacher identifiers in conjunction with clear and transparent standard operating procedures can address this requirement for security and confidentiality. There are technologies and methodologies within the University to address this fundamental issue ([www.conduit.unimelb.edu.au](http://www.conduit.unimelb.edu.au)).
3. *Availability and access*: The faculty has a special relationship with more than 3,000 honorary staff providing very substantial teaching, training and research support across many parts of Victoria and are essential contributors to our programs. Improved access to the Library of the Future, whether virtual or physical, will be of great benefit to these collaborative activities and will add to the recognition of their vital role in health professional teaching and research. All staff with appointments at the University should have access to published information and also timely access to ephemeral information such as reports of conferences and seminars.
4. *Collaboration*: Research laboratories will require virtual organisation (VO) support by which data can be stored, shared, analysed and made available for publication. The VO platform should also provide access to published information from within the collaborating group and from external sources.
5. *Database hosting and support*: Many MDHS researchers are involved to an increasing extent with the development and use of large national and international data repositories. An effective 10-year strategy for the Health Sciences Library of the Future should include provision for the University to have a significant role in creation, maintenance and access of such essential resources. While there will inevitably be cost implications these should be weighed against the strategic advantages to the University. The business plan for shared database resources could include co-investment from national funds such as NCRIS and explore charge-out or subscription models for external users where appropriate.

6. *Flexibility of access*: Connection to non-traditional databases such as images, specimens and bioinformatics resources (eg BioGrid Australia, <http://www.biogrid.org.au>) will be essential for research and for post-graduate training. BioGrid enables dynamic linkage of data which includes dates of diagnosis, clinical symptoms, pathology, radiology reports, and availability of a biospecimen sample, genomic data, MRI images, treatments: drug therapy, radiotherapy and surgical status in a privacy protected way for authorised users. Capabilities include:
  - Data mining – looking at patterns and exceptions
  - Data analysis – associations between the genetic and clinical data
  - Evaluation of clinical services
  - Quality and audit reports of clinical treatment
7. *Clinical decision support*: the urgency was stressed for clinical staff to have access to research, clinical trials data and published studies and meta-studies for evidence-based decisions (“now – not in 10 years”).
8. *Connectivity and bandwidth*: Progress is now being made with the Parkville core network and there has been considerable improvement in the WAN services to the Faculty’s many locations within Melbourne and regional Victoria. The deployment of the Victorian Education and Research Network (VERN) over the next 2-3 years is expected to provide 1Gbps links between many of our sites of interest and other partner institutions. It is recommended that the 10-year plan for information and management should integrate with the eResearch plan to provide the necessary bandwidth and connectivity to support the growing requirements from areas such as sequencing, imaging and conferencing. This will require a systematic survey of current and predicted needs informed by a quantitative and organisational understanding of how similar requirements are being met in comparable Universities within Australia and overseas.
9. *Functional characteristics*: The consultation paper presents details of the availability of books and printed journals and compares the retrieval times for materials stored in local or off-site locations. A similar analysis should be developed for on-line resources such that the requirements of users for timely, accurate, reliable and secure information are collected to inform the specification of the ICT systems to be implemented. Characteristics of particular concern to the group were storage capacity, speed of access, security and integrity of information and long-term maintenance of complex data and image files to support the various data management plans of research groups. Appropriate consideration should be given to ‘future-proofing’ to allow continued access to data and compliance with data preservation requirements.

10. *Open access*: Open standards for data sharing and publication were supported with acknowledgement of the increased staff cost of maintaining such repositories. This may best be achieved through the analysis and adoption of “middleware” standards that translate between different systems rather than seeking agreement on single universal formats (of course we should have one currency and one language, but it should be ours!). In the area of scholarly publication the tension is recognised between Open Access and traditional publishing models that are firmly entrenched in the health sciences, with recognition of scholarly achievement through peer reviewed publications being a central feature of the competitive grant system and the University’s performance development framework.
11. *Global outreach*: Through the Nossal Institute for Global Health and several Schools of the Faculty there is a vision for sharing information and library collections with developing countries through electronic access. This represents a considerable extension of the current practices and policies but would further the global health agenda and raise the University’s profile using technologies that are largely already in place.
12. *Conferencing and collaboration*: The physical library would provide an ideal and logical venue for more extensive use of video-conferencing and interactive tele-presence facilities. Current installations such as Access Grids and the OziPortal are reserved for experimentation and for a restricted audience, mainly of researchers. The technology is now sufficiently mature that it could be made available to students and staff (and perhaps the general public) to present a focus for live interaction with lectures, seminars, demonstrations and other presentations. Presentations could be available as a catalogue of scheduled live or recorded events and the display area booked by groups or “browsed” by individuals. An initial set of events might be generated with existing partners such as the Pacific Rim or U21 Universities where contact networks are already in place and technology levels are comparable or more advanced (eg UCSD). There would be additional opportunities to evaluate the educational and collaborative benefits of a trial portal, which might then support more widespread use in teaching and learning and in research. Applications in telehealth would also use high definition resource centres with particular relevance to radiology and imaging, ophthalmology, surgical training using virtual reality and haptics, psychology, physiotherapy (eg gait analysis) and consultation and diagnosis in many specialities.
13. *Role of information specialists*: The increasingly important role of information specialists in providing education and training in health information tools and applications was noted. There is considerable value in including ‘librarians’ more directly in advising on information needs associated with curriculum development initiatives and examples such as Flinders University Medical School should be examined.

14. *Research, education and training in health information science (informatics)*: There is strong support for the development of a substantial capability for research in the collection, curation, analysis and presentation of biomedical and health-related information. The University should also be equipped to provide training and education in informatics in relation to the technical, ethical, legal and social dimensions of the creation, collection, search, appraisal, sharing and use of scholarly information in the digital environment. Health information has the added tension between the requirements of and implications for the individual and the community. It is important for graduates of the University of Melbourne to have a functional understanding of Privacy and other legislations that influence scholarly activities, research, teaching and knowledge transfer. From a practical curriculum perspective it is also important to develop competencies in the use of the technologies in scholarly and professional activities.

The Faculty would therefore support the establishment of an Informatics Research Centre covering bioinformatics and health informatics or within the broader context of information science if there were wider, cross-faculty support for this initiative.

15. *Teaching and learning*: Future developments will be driven by emerging technologies, known diversity in our student cohorts, changing patterns of technology use by 'net-generation' students, and increasingly IT-literate staff. Particular mention was made of social networking applications, 'pull' technologies, informal and mobile learning, and workplace learning trends. While personal styles vary according to individuals and disciplines, the personalized approach is a key requirement of students. As *digital natives* they are competent with digital technologies and the personalisation of their activities and virtual presence e.g. personal blogs and portals to publish and access information. Community members or industry collaborators have similar expectations for technically sophisticated and personalized information exchange and knowledge transfer. Such interactions will require adoption of recognized standards for interoperability.

Systematic learning and teaching activities and resources will need to be mapped into all coursework degrees, to develop clinical graduates who will be competent users of a range of health information systems.

Increasing internationalisation of learning and teaching will require better information access for students and staff who are located offshore or who are travelling, and also more sophisticated support for information access and communication in languages other than English.

16. *Search methodologies*: The single seamless portal to health information resources should be complemented by sophisticated search tools able to mine local, national and international data and present results in a range of useful formats (eg visualisation).

17. *Administrative and technical services integration:* This unique consultation around information futures presents a rare opportunity for removing organisational boundaries between services and supporting staff working within different institutions. The group was keen to explore ways of operating a single health information resources group combining library and information services currently distributed within the University, institute and hospital libraries and associated information and knowledge management resources. There is considerable duplication of materials (books, journals and other media), which could be reduced if more open access facilities were available.
18. *Staffing and culture change management:* It was recognised that a radical move towards an integrated information service would have substantial implications for staff, resource allocation and budgetary policy in organisations with a range of administrative and reporting processes. This would require modelling and negotiation but should not be a barrier to development of the concept and accompanying business plans. Additional changes will occur as new integrated resources become available and work practices and institutional responsibilities evolve. Since many staff in the health and biomedicine areas already have joint appointments in more than one organisation this may not be a major impediment. Appointments could be made within the professional or academic streams although there is support for a merged classification approach.
19. *Knowledge transfer:* The communities in which the Faculty's biomedicine and health professional activities are located have a growing interest in high quality targeted information about our work and its impact on personal and community health issues. Physical and virtual outreach facilities should be a high priority in any integrated program and would allow the Faculty to interact with patients, carers and the general community and with potential industry and government partners, highlighting the social value of our research and teaching.
20. *Physical facilities:* The concept of a single, integrated information and knowledge management plan for the biomedical and health professional areas has consequences for physical space planning in current and proposed buildings. Information resources such as books, bound journals and other media might be aggregated to a central repository at the main hub with additional current collections at the satellites and nodes as required. There needs to be greater awareness of the Faculty's physical and virtual environments across its numerous sites, the intersection between them and how they support students' informal incidental and social learning. A central Faculty Library could be included in the proposed new Faculty building and have a range of innovative displays and access areas, most of which would be open to all staff and students and some to the public. New technologies would be able to provide tele-presence and interactive video and data conferencing with national and international partner institutions, highlighting emerging activities in areas such as telehealth and telemedicine.

21. *Cross-disciplinary access and support*: Of particular concern is the increasing need for searching and access of information in other discipline areas such as engineering, computer science, social anthropology, medical history and basic sciences. This may require a specific linkage program to promote integration between discipline areas particularly with the re-establishment of discipline librarians. The implications of the segmentation of collections and resources into traditional disciplines should be considered in the context of MDHS needs over the 10-year lifetime of this plan. There are inherent challenges in optimising the location of physical resources in geographically separated areas if they are to be effectively used by a widely distributed population interested in issues that have rapidly changing subject matter boundaries.