From: oxsys@optusnet.com.au
Sent: Monday, 31 March 2008 11:44 AM
To: Information Futures Commission
Subject: Feedback via InfoFutures web site

From the Information Futures feedback form:

---------- Comments ----------

Information 'repositories' and communications enhancements in suppport of research productivity from initiation to outcomes, which may then be held by libraray repositories
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Discussions about Scholarly Information have an interesting and highly constrained assumption: that information in of value once it is archived and made accessible. This construction might be taken to imply that the "Library" functions are basic and the focus of attention...

However, there is a real opportunity to shift this perspective to one of productivity and communication enhancement of the research staff at the initiation, negotiation, build up execution, dissemination and exploitation phases of projects by using the now emergent Repository tools (operational and already in use examples include www.reorient.org.uk, worldnetproject.eu etc)

There are also a growing number of researc staff needs for their own simple document repositories (ePrints, Dspace, fedoria etc are adequate.. the data+geospatial+ communications+ document framewors of reorent et al are an overkill). UniMleb has ePrints as the Unviersity repository, an estimable and wise stratgegic decison, as it is bothj Open SOurce and also extremely advenurous in its development to a wider framework.

It is time that the OAI-PMH metadat brkong facilites of all the above repositories are used so that Research staff can operate their onw repositories and it will appear as a unified system through OAI-PMH.

Similarly the rapid approach of the Object model for OAI PMH updating will have significant effects to enhance the capacity to include learning objects in a unified framework..

I ALL these cases the lead is being taken by researchers in need of productivity enhancement, rather than systems librarian/IT/archival stance which is are focussed on exploiting the materials that emergent the end of a project A useful goal and one that should also be supported, but unless there is a move to speed up this encompassing of researcher needs for productivity support the submission rates to eve the simple document repositories will continue to lag, as the researchers will not "own" them.. once they do the problem is selecting out from the sheer volume what is needed for the libarary style document only repositories for a historical ("scholastic") range of uses by other parties.

This is as fundamental a shift as the split between IS and Comp Sci in the late 1980s.. and presages a major productivity and communication enhancement for researchers, and a (possibly controversial) shift in leadership to researchers.

Researchers have already been forced to create such doc/data/geospatial/analysis/communication repositories (call the Knowledge Bases) as the document repository movement has not yet sought out any serious participation and partnership with the research side...

The Director of eScience has asked me to give a seminar showing these systems in use and reporting on these various aspects (I will also report on the established collaboration with the authors of ePrints at Southampton University to start to move in the recommended directions)

For those who have an interest in seeing and hearing what the opportunities - and experiences - are, I gather that the date is to be lunchtime on May 27th. I am awaiting the detailed arrangements and

venue to be finalised.

As this is late in the consultation period, I can on request provide documents, papers and in some cases access to working systems, to enable discussion to be well grounded before that date.

Marcus Wigan
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---------- Contact ----------

marcus wigan

oxsys@optusnet.com.au

have read privacy

From: Marcus Wigan [oxsys@optusnet.com.au]
Sent: Wednesday, 23 April 2008 3:14 PM
To: Margaret Louise Ruwoldt
Cc: Information Futures Commission
Subject: cant be at your focus groups (overseas or in classes)

So I hope my input via meetings with mark Brodsky will turn out to have had some usable input.. sadly im in intensive law lectures until just before i go overseas and am giving a talk on soem other aspects on 27 may just after i get back.. here is something that Mark will recognise from our last meeting. I cant seem to get onto your website again.. ill be trying to do one on videoonferencing integration and another on learning objects beofre i leave, but it seesm ratehr doubtful that Ill ahve a second to do so after this email..

hope it goes well

marc wigan

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small submission

info-futures@unimelb.edu.au.

A basic tool for enhanced information management and use at UniMelb

It is probably apparently trivial in the broader context of the Commission, but my experience suggest that it is not- and that it could be implemeted very swiftly.

Much information and communication is now handled via a variety of Websites across the University. Some use FarCry and other customised inputs to standardised web frameworks (Law is one such case), but may other organisational and operational units and sub units roll their own.

A common framework that could be easily deployed would speed up the currency and use of web displays and information, and make the sites more effective for the units concerned, and far less effort while keeping decentralised 'ownership' at a high level.

This is not the place to debate centralisation v decentralisation principles, but it is a place to post a user expression of hope!

A very common need for a unit website is to manage and make accessible information about events, documents and people. This can (and has elsewhere) been done by using MySQl databases for each, with a simple 'webform input' for each type.

Any common scripting language (PHP etc) can autogenerate a standard webpage set for each type of entity in a good stand branded format, highlight the most recent inputs of each on the front page, and enable opt-in email list joining and mailouts. A common trigger is 'for any new event send an email of the direct URL'. or even a reminder 'event occurring tomorrow' etc

Without getting very complicated this can be used by many groups to meet their communication and continual updating (ie active and changing') website needs to ensure regular scanning by interested parties.

While this is not a large task – it can reduce costs and time delays for many units as well as enhancing the quality and a 'liveness' of their own sites…

Clearly one might want to complicate such a simple and easily implemented framework, but just the basics will help many people and many groups, especially those without internal webskills

If one accepted that this should be a generally available toolkit, it would not be hard to add links (two ways) to ePrints for the document aspects, thereby ensuring minimal effort in the central repository harvesting the document metadata (OAI-is already in use there). Such an small enhancement would ensure a federated set of ePrint repositories would grow: a direction in which the market leaders I document (and soon data) repositories are already moving.

While this small suggestion appears to be a simple tool, if it is designed to permit the integration of ePrints, then the results will be improved document capture for the university repository – and thus greater visibility and use of the materials.

Clearly, to maintain confidence of the users of these satellite sites, a two stage commit would be needed: simple posting for immediate public access would require no special action, but adding a bar on visibility outside the unit concerned would be desirable way to capture drafts and expose items for comment in a controlled manner.

Simply to link the documents always intended for immediate public access directly into ePrints (preferable invisibly to the end user simply using the input webform of course) would go a long way towards making the University ePrints repository an actively updated and lively site without needing an enforced submission Mandate.

This is just one of the possible transitional tools that can help to weave the different aspects of document information capture and use together on the way to more ambitious longer term approaches. The benefits of such transitional tool include:

1. the rapid deployment speed
2. the full ownership by the end users

Such tools are needed to secure goodwill and early confidence that the Information futures Straegy is not solely to invent more heavily in a digital library. But is related directly to end user needs as well

Marcus Wigan GAMUT Faculty of Architecture, & Hon fellow in Civil Engineering

From: Mark Brodsky
Sent: Monday, 28 April 2008 8:44 AM
To: Information Futures Commission
Subject: FW: video conferencing short bit for IFC

Submission from Marcus

Mark Brodsky
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From: Marcus Wigan [mailto:oxsys@optusnet.com.au]
Sent: Saturday, 26 April 2008 5:54 PM
To: Mark Brodsky
Subject: video conferencing short bit for IFC

Information Futures Commission

VideoConferencing Strategies

Marcus Wigan mwigan@unimelb.edu.au

Video Conferencing is not new. Certainly not in a mode using expensive fixed room system, ISDN lines and dedicated technician in support.

What is new is that increasing numbers of researchers are now finding way to use it for their own personal mobile use, PC to PC, rather than as a major formal process using expensive stand alone dedicated equipment and rooms.

Some ‘large scale’ fixed room equipment approaches at UniMelb

This does not minimise the advances made at an experimental level with Access Grid, the commercial spread of system such as Codian's (where AARNET is currently conducting trials, or indeed PictureTel or Polycom room based systems: all of which have gained a greater or lesser foothold in the formal processes of at least some Australian Universities and substantial small (up to 6) bridged networks in Medicine and Education in particular in the University of Melbourne.

However, to emphasise the lack of attention being paid to end user to end user connections, the University of Melbourne is neither a formal participant in the current AARNET[1][1] VideoConferencing trials using Codian (who are providing 30% of their bandwidth for these trails) for bridging, nor is the University part of the EuroRoam[2][2] networks interlinking mobile laptops across Asia Pacific[3][3] and Europe using the standard local logons[4][4] for the end users.

These systems are not well known to many interested users, but can be winkled out with some effort if one already knows what to look for. They are far from friendly to many highly desirable users, with a steep learning curve when multiple bridges are needed, and reliance on external commercial firms becomes necessary[5][5].

The two Access Grid systems accessible to the staff and students are still in real need of technician support while operating, and so are intrinsically costly and not suitable for many of the small group ad hoc linkages that are so beneficial in an knowledge environment.

Other services available via IT's good offices

At the same time IT[6][6]t at the University has made access to the Apple User Consortium so-called 'auditorium' on a Marratech[7][7] server, although this facility is neither well known nor are the necessary ports currently open in all faculties to allow (free) access to it. As it is not likely to be familiar to the IFC Team, I will outline its characteristics. It requires a server licensed fro a specified number of 'room's or 'seats'. The AUC service is unlimited seats, in a single 'room'. End use requirements are simply to download a free Java client and have a user name and password and address of a server. Clients operate n Linux, Windows and MacosX, and support audio, video, chat (as much as the end usr machine can supply), and includes a SIP gateway so that a telephone only user without a laptop can be brought into the conference via the PSTN.

The present author has 3 years of experience with a 10 seat system which was used to manage and support a globally distributed EU Framework 6 Project[8][8] team. The members were all itinerant, and it was common for US users to be in Lebanon, Australia in Germany etc. Support levels required were minimal, and set up could be done using VoiP using Skype at the same time as setting up and using Marratech…

This facility is ideal for global links and small groups, included shared applications, screen and whiteboards, side conversations and secure sessions and secure session recording.. and no special equipment at all. Often meetings were held over a wifi network in a hired otherwise unequipped room with participants linked in via video projector and others on SIP telephone links.

Skype: over this period Skype has expanded to several hundred million users, and added video and group conferencing, although far from efficient in video handling unlike the more professional system –

including Marratech..

Recently the University has agreed to open the necessary SKYPE communication ports so that it can be used more widely, although still with concerns over the P2P bandwidth takeup (not a problem with Marratech).

The Apple only iChat system is very good, but limited to a single platform, a highly undesirable feature, so too are several of the facilities in PolyCom offerings which are still limited solely to Windows.

Current position summary

There are a number of large scale systems in use on an uncoordinated basis, several trials of which Melbourne is not yet a participant, and a number of less resource hungry systems whose availability or access is widely unknown. Communication and accessibility have not yet reached a level where videoconferencing can be readily used unless at least one party is not technically faint hearted.

However the user community (students and staff) are certainly ready and able to use a better coordinated and less constrained family of videoconferencing tools. A clear strategy of tiered capabilities is needed. The top level (the ultrahigh resolution equipment recently shown in Electronic Engineering, and to some extent Access Grid installations) are fixed in location, need care and feeding and are aimed at group to group interworking for applications where the necessarily fixed locations, costs and active technical support are not seen to be a significant issue at either end. These will clearly continue to develop and should do so.

The next level down is now filled by PolyCom equipment with very limited bridging and thus a strong internal University campus family focus. There is still a reasonably level of location-specific constraint, but there are several suitable rooms and lecture theatres across campus for this to work tolerably well for the existing specific groups that house and use them.

Here a better mission statement and strategic goal is required to bring out the best in what is already ‘available’. This must include multi site bridging support if the global links now so standard in the experiences of staff and students alike are to be fully built upon. This strategic rethink would bring existing facilities into a greater level of effective usage, and would also underpin a different approach to enabling simple end user to end user linkage systems

Recommendations

VoIP and IP videoconferencing are invaluable tools, and the initiative to use them effectively is now as much a student driven as staff driven enhancement of the knowledge building and communication processes in which both are involved.

Clearly the ability to record sessions simply and securely is already in limited use, and raises questions about

1. What are the appropriate IFC strategies for handling sound and video objects
2. How are the Learning Objects now growing in number and complexity with such complex objects themselves to be handled?

These issue are addressed in other submissions I have not yet completed.

The clear recommendation is that there be a strategy to enable non room location dependent(ie mobile laptop etc) video and Voip communications to be handled with an appropriate layering of complexity depending on the purpose of the communications. This would leave the top level systems to continue, but focus on the middle range of enabling access more widely, and an examination of the support required to utilise bridging to other institutions in a less resource and support intensive manner.

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[1][1] http://www.aarnet.edu.au/Content.aspx?p=33

[2][2] http://www.eduroam.org/

[3][3] https://wiki.aarnet.edu.au/display/eduroam/For+End+Users

[4][4] Euroroam uses a RADIUS server approach and local certificates to allow transparent access as if at the home institution when at other collaborating locations

[5][5] A practical example is a US-Australian multipoint video conference chaired from Melbourne run by the Postgraduate Law Students Association http://www.masters.law.unimelb.edu.au/go/students/plsa/plsa---what's-on/index.cfm##

[6][6] Stephen Young is the contact point in IT

[7][7] www.marratech.com

[8][8] www.reorient.org.uk

From: Marcus Wigan [oxsys@optusnet.com.au]
Sent: Sunday, 27 April 2008 12:20 PM
To: Mark Brodsky; Information Futures Commission
Cc: Leon Sterling
Subject: Multimedia Object strategy: hard to find an appropriate place to post some for the items i had to send in to you directly.. for example, where would you post the enclosed?

mark

I tried to find a sensible place to post this on the updated IFC page, without success.. probably my problem! But at least you should know... Ive sent a number in directly to you or InfoFutures, which i hope end up in the 'right' places... feel free to post the item contributed below and indeed its predecessors anywhere you think sensible in your website,or not at all, I couldn't find anywhere really suitable.. my apologies.

.. including one on Federated repositories (under the guise of a web support tool), another on Video conferencing raising issues of student as well as staff empowerment.. and not this one, as promised on sound image and video entities...this one is aimed squarely at the target of IFC:

"what should strategy contain and why?"

Again, time permitting I could have written at sufficient length on VERS and the PRO (a far from irrelevant strategic issue), on eMedicine, legal, IP and eSocial Science aspects...or object [museum] collection philosophies and metadata issues and... but still, this is just for the STRATEGY!

Suffice to say that to undertake a serious IF Strategy, there are a number of research (not library) led issues that need cross linking, principles to be teased out.. mostly all problems of success in the first order strategies and projects to date, rather than any real deficiencies in current systems (there are plenty of posts on that aspect): but simply doing more on the different lines will run into a series of collisions if there is no strategy to address the area as a whole. I hope that this short piece has at least illustrated this point, if not established it.. i hope its at least a small contribution to the future vision on which any strategy needs to be founded to embrace the cooperation required to implement it.

Marcus 27 4 8
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info-futures@unimelb.edu.au <mailto:info-futures@unimelb.edu.au> .

Multimedia issues (1) repository (2) identity authentication

Image, sound and video objects or entities are critical components of an Information Futures Strategy.

There are (at least) five domains in which such objects are critical. Only five will be reviewed as they cover the majority of the strategic issues:

• The Performing and Media Arts (including sound and video, animations and paintings • Sports science and biomechanics • Learning Objects across all domains (including lectures and distance education support) • Audio and visual History • Medicine

The common factors between these areas are

• The sheer size of the objects (and thus the questions of authenticity and provenance in visual arts in

particular). For example compressed visual images may not be lossless: any inclusion of authenticity constructs in the compressed or uncompressed objects may prejudice integrity, long survival (if encrypted in any way), recovery and re-use.

• The intellectual property aspects, as such items usually have multiple intellectual property complexities, including not only creators but producers, recorders and other dimensions in terms of cultural aspects of image capture of living and dead persons. This places heavy demands on both the metadata and its quality, but also on contextual metadata relating to the cultural or derived rights or customs associated with the object.

For engineering drawings, architectural entities (which may now include master files for recreating 3D objects), further domains of intellectual property apply, including Designs and Trademark law.

• Questions of archival as distinct from reuse constraints, discovery and IP clearance. Museum collections are increasingly NOT scholarly archives, they are selective in what they will take, and even more selective as to what they will index for physical let alone digital discovery and use. A practical and immediate example is the Museum of Performing Arts[1], where all these factors are currently in play

• Formats: images are reproducible on physical media, which has endured for centuries: digital holdings (now enforced by the sheer scale of the number of objects involved) are technology dependent.

• Collections copyright under TRIPS[2]. Even a number of objects without copyright can under TRIPS be collected by a computer- and hold Copyright over the collection. This provision removed even the persuasive influence of the famous Feist[3] case in the USA (copyright over telephone directories). These TRIPS provisions apply quite broadly, and affect many areas in any Information Futures Strategy

The technologies to manage and retrieve multimedia objects have perhaps the longest history in museum management, in which Melbourne[4] has an honourable place. Recently commonly used software designed specifically for museum collections of heterogeneous objects have emerged (for example, KE Software's EMU[5], as used in Victoria and elsewhere in Australia, and many others – see the UK Collections Trust[6] for a good range which has met a quality review as being suitable for purpose).

The special requirements in terms of coverage and metadata for museum collections might at first sight appear to be appropriate for much broader applications, however the case of eMedicine and image recording and reuse in medical archives belies this.

In these cases the authentication of a series of objects, all related to an individual or group, with links to detailed medical histories raises a quite different set of considerably more intractable issues. It is simply not possible to create collections of this type without addressing serious issues of identification (and this privacy at a very intrusive level indeed) and authentication (required even if the privacy issues are fully addressed. If it is not possible to authenticate items that are connected then much of the purpose of the collection is destroyed.

The politics surrounding eHealth are intractable, including as they do the intellectual property asserted by medical practitioners over their notes- the most private descriptions of an individual identity short of a complete set of biometrics...and even those can and will be compassed in eMedicine systems now under development.

The principle that the collector owns the IP is a pivotal issue. There are collections of data about one

self that have accumulated to such a high level as to be a more complete description of ones own identity in all senses than anything one has any “right” to oneself. This includes medical a biometric data, and this head on conflict between individuals right to their own identity (one that currently does not exist, the mappings onto tokens are more important to governments and other organisations than the person itself). Discussions about multiple identity[7] and ownership of data about oneself[8] are covered elsewhere by the present author. A more detailed specification of the authentication v cross matching philosophies is also available from the present author if of interest to the IFC strategy team

Distributed image database computing work on eMedicine in the Uk (eg. the Diamond[9] eScience GRID project using a federated database and analysis system for breast cancer being an excellent example) has run head on into the identity and authentication issues- and Annamaria Carusi[10] in the Oxford eDiamond team (for example) has raised the ethical problems involved.

Summary of the present

With integration of the VCA and the good links with the Performing Arts collection of the Arts Centre (formerly the Victorian Museum of Performing Arts, the leading such centre in Australia) the questions of multimedia object collections, discovery, IP and reuse have become a matter of immediate interest, and need to be addressed as part of the IFC Strategy. The special issues of metadata formulation and quality cannot be ignored, and there is a real role for computer science allied to cultural and legal studies to ensure that such issues are worked out over the fairly short term.

These pressing needs of multimedia object distributed data holdings have been highlighted by medical applications: these are simply going to grow. The complementary issues here are those of identity, authentication and community negotiation of the Ip involved- as well as its clarification. Clearly any strategy to address this aspect of Melbourne University’s portfolio will need to include at least legal, computing, medical, and social research components. It is also clear that such a thrust would place Melbourne University in the forefront of information management on the broader basis that is envisaged by the Information Futures Commission brief.

Some recommendations’

It is clearly necessary to include multimedia objects in the IFC Strategy. Just as other submissions by the present author have highlighted the need to adopt a researcher led component, there are pressing strategic issues to be addressed in several faculties to ensure that any future strategy is a living and adaptive entity, as the context within which multimedia objects exist is strongly connected to both cultural and technical areas which are developing quickly.

Only a very small amount of the many cross linked issues can be raised in such a brief document, but as the IFC is aimed at creating a Strategy, establishing issues that need attention is the key goal of any submission: comprehensive and detailed analysis is not the role of a strategy consultation. Selection of which issues and themes should be focussed upon certainly is.

In addition, the role of the University as a whole in supporting, or holding, but supporting in a multidisciplinary (and not solely archival ‘library science’ mode) is essential.

Policy decisions need to be negotiated on the role of links with the museum networks, the medical networks (and of course many others, some very well developed such as physics, others less so, such a planning and transportation). This organisational review should form an early part of any IFC Strategy, and include for example the VERS[11] system set up for the legally required official archives of the public service, where document capture has been supported as it must be. Yet VERS still does not yet address data, let alone multimedia object issues, as its role is perceived in a manner addressing solely the perceived current focus of the Act that it serves. It is however interesting that some of the tools used for at least the trial stages of VERS were the same as used by major research led data and document archiving (TeraText, see also www.reorient.org.uk <http://www.reorient.org.uk>). There are real and emergent commonalities that can and should be pursued under the OFC Strategy

In such a compressed space (and limited time) it is possible only to illustrate some of the dimensions of Information Strategy already emergent, and show that the IFC timing was very well chosen. I could have expanded considerably on other links, examples and systems, and analysed the issues further, but this is I hope quite sufficient as a submission to a strategy formation process- yet so clearly

inadequate as a start to the technical tasks that will follow its final report, when cross disciplinary groups will be essential to position the most sensible early steps, and those that can safely be deferred to later on or to others. They certainly cannot be neglected or omitted.

‘Information Futures’ belongs to a broader interdisciplinary group than is at first evident, and the inclusion of multimedia objects make this conclusion inescapable.

Marcus Wigan
Partner GAMUT Faculty of Architecture
Hon Professorial Fellow Civil Engineering

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[1] Interview, Tim Fisher: 25 4 8
[2] http://www.wto.org/english/tratop_e/trips_e/trips_e.htm
[3] http://www.law.cornell.edu/copyright/cases/499_US_340.htm
[4] RMIT’s Ron Sachs-Davies led the TITAN ultra large scale flat file museum collection database system, applied to objects several decades ago. The more recent TeraText system (now owned by SAIC) has even larger capacities for documents, but is limited to objects as nontransparent items [5] http://www.kesoftware.com/ <http://www.kesoftware.com/> ; http://www.kesoftware.com/content/view/512/356/lang,en/ <http://www.kesoftware.com/content/view/512/356/lang,en/>
[6] http://www.mda.org.uk/softover
[7] Wigan, M.R. (2007) Owning identity: one or many: do we have a choice? IN K. Michael and M.G. Michael. From Dataveillance to Uberveillance and the realpolitik of the transparent society: Second workshop of the social implications of national security 29 October 2007. pp61-70 [8] Wigan, M. R. (1992). Data ownership. In R. A. Clarke & J. Cameron (Ed). Managing information technologies, organisational impact II, 1 (pp. 159-169). Amsterdam, North-Holland [9] http://www.e-science.ox.ac.uk/pressreleases/ediamond.xml , with an excellent expository .ppt series at http://www.i3s.unice.fr/~johan/miccai/Mike-Brady-040926-MICCAI.pdf
[10] A. Carusi. Ethics in e-science: Data as representation. Ethics and Information Technology, 2007.
[11] http://www.prov.vic.gov.au/vers/vers/default.htm

Information Futures Commission

Learning Object [LO] Issues

Marcus Wigan mwigan@unimelb.edu.au

The increasing reliance on electronically assisted or delivered learning and teaching is a key element of the Information Futures area. In a number of small submissions I have advocated a distributed or federated model, but here I advocate a centralised one. The standards are emergent (SCORM and IEEE 1484.1.21-200[1] for learning object metadata for example), and the volume is substantial. The widespread recognition of the need of all kinds of user to associate such metadata with LOs means that the accessibility is substantially enhanced. The metadata is complex and far from as simple as that which has proved to be largely acceptable in document description, and so the economies of scale in handling the quality of metadata and assisting in discovery and reuse will be well worth while. The metadata issues are those that enable discovery for use, and so plays a major role in the successful interchange and identification of suitable Los. The actual resources are the target of SCORM, and are more readily seen to be valuable.

This area has received a great deal of specialised attention, particularly in the metadata aspects. There are a number of Australian initiatives [2], and the area has attracted a very substantial investment all around the world, with Information Systems and educationalists alike[3]. As document and data metadata and repositories have grown, the common ground between all these areas has also become clearer, with digital libraries, Information Systems and Knowledge Management becoming a lot closer: the specialist research expertise has grown, and a steady blurring of boundaries continues.

In view of the close association with live and adaptive teaching, while a centralised repository is probably appropriate, measures need to be in place to encourage a substantial degree of interchange with teaching staff. The best organisational model is not obvious, but the issue clearly should earn a place in the overall Information Futures Strategy.

The economies of scale have already enabled Australian enterprises to make a business[4] out of Learning Object reposit One strategic question is the benefit or otherwise of a central UoM learning objects repository, linked to a cluster of education and related (or user) applied research fields as cluster. Other models including full outsourcing are possible. Any move towards broader ‘Knowledge Base’ or ‘Knowledge Management’ approaches to teaching and learning would tip the balance towards a central or federated model. An informed debate to pursue this question is needed. I have not focussed on the

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[1] http://www.ibm.com/developerworks/xml/library/x-think21.html
[2] http://socci.edna.edu.au/content/index.asp; http://metabrowser.spirit.net.au/
[3] http://www.oclc.org/research/projects/mswitch/1_crosswalks.htm; http://zope.cetis.ac.uk/profiles/uklomcore
[4] http://www.thelearningedge.com.au/, offer management tools for universites to handle their learning objects with

‘why’ of Los, simply on the strategic importance of considering as an integral part of the Strategy, and the governance issues that can constructively be applied.

I have concentrated on contributing very different types of measures to enable greater effectiveness of the growing volume of information of value (if not always known about) to many: the basic functions of information in a university in its teaching and research roles are in codification, collation, discovery, archiving, access, promotion, assessment and utilisation. It is clear that the general direction needs to be reviewed overall and brought within a coherent strategy, and one with a broad range of involvements as information is now so central to the teaching and research tasks. There are many more areas that one might have contributed, but the central message is that the responsibility and resources need to be spread more widely than the central library functions have been in the past, and that this may well involve different organisational structures to achieve than we have at present.

It is equally clear that there are now major overlaps with many different research areas, and the term ‘scholarly research’ must encompass many more fields of research as well as ‘Digital Library’ specialists.