

# The Centrality of the Integrated Library Management System: a Strategic View of Information Management in an E-Service Environment

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**Abstract:**

*This paper investigates the impact of the changing information environment on the expectations of academic libraries in terms of the functionality of their Integrated Library Management System (ILMS). This research finds that libraries still strategically rely on their ILMS for their services and are adding functionality from their system vendors as it becomes available. “Add-on” systems (non ILMS) are being used to cater for the requirements of digital data but at this stage do not dominate. The partnership between academic libraries and their ILMS vendors seems strong – as long as these vendors can continue to add the required functionality.*

# INTRODUCTION

Until recently the place of the Integrated Library Management System (ILMS) within the service context of libraries has been unchallenged. ILMS represent considerable technology investment by libraries. In 2002, libraries spent more than US\$530 million on library systems and related services, with vendors making 39% of their estimated overall revenue from maintenance of such systems (Breeding & Roddy 2003, p.52). For libraries, the ILMS is *the* corporate system. The success of library process change and information retrieval has been built around the functionality, or otherwise, of the ILMS. These systems have provided a solid foundation for both collection management and resource discovery.

Times however are changing. The information landscape is increasingly fluid and the role of the ILMS in this context is being questioned. Information retrieval is no longer limited to library-controlled resources. Students prefer access via Google rather than the library catalogue. Libraries themselves are recognizing the transient nature of electronic content. Content supplier generated MARC records are being downloaded into library catalogues as transient, not permanent, record markers of electronic content.

This paper will look at the pressures the changing information environment is placing on the continuing development of the ILMS as the central point of access to library mediated information resources. The focus of this research is the academic library environment. A case study of the Victoria University Library experience within the changing E-Service environment will be outlined. The findings of this study will then be set against a broader survey undertaken on the uses made of ILMS in 26 major Australian university libraries and one U.S. university library.

The hypotheses used to shape this research were:

**Hypothesis 1 (H1):** ILMS cannot cope with the range of E-Service requirements of libraries and their users, as they are bound to the MARC format and the bibliographic record. ILMS are being bypassed in their support of Library E-Services.

**Hypothesis 2 (H2):** E-Service requirements are met by a range of different systems – some proprietary, some home-grown, some even part of the ILMS. The range of systems required is causing dissatisfaction with current ILMS and introducing complexity into the management of library systems.

## LITERATURE REVIEW

There can be no doubt that much of the literature in this area speculates on the future role of libraries – none of which is particularly clear. Since 1995, or what Tenopir calls the “post web world” (2003, p.3), libraries have been seen as in danger of “substitution” (Hofman 1995, p.1). The web is becoming “a ubiquitous source of information” giving an “illusion of depth and comprehensiveness” (Griffiths 1998, p.230) that leads to a questioning of the value of libraries and their collections. This review will not speculate on these future roles, but will focus instead on the certainty of changing technology, increasingly digital information resources and societal shifts that have changed user expectations of library services.

### Strategic Role of the ILMS within Libraries

The ILMS is “a key piece of infrastructure of the library” (Tennant 2003, p.28). Its key value to libraries is its ability to offer a catalogue and to manage workflows. The ILMS is still seen as preeminent in offering “intelligent and convenient access to catalogue data i.e. effective access points which translate user needs with great precision and multi-layered end user

interfaces which can be adjusted to different levels of user sophistication.” (Hofman 1995, p.5). It is also seen as the most cost effective way to handle infrastructure tasks such as “acquisitions, cataloguing and circulation” (Tennant 2003, p.28). In fact its most cost effective feature is this integration of “workflows and processes ... closely tied to data flow”, even if this “integration of technical services often don’t get equal weight in library decision criteria” (Lugg & Fisher 2003, p.3).

Libraries have traditionally performed a role of physical repository, housing print materials, with a catalogue that provides access to these locally held resources. The accessibility of the web has seen this shift, and catalogue records describing local print materials now sit side by side with records providing links to external web resources. While the inclusion of these electronic sources may “enrich” library collections, they are also “inherently problematic” because they do not have the traditional standards base for inclusion that print materials do (Porter and Bayard 1999, p.390, 391). The scope of what a library catalogue system describes has broadened in a way that is only exceeded by the expectations of its digitally-literate end users.

Libraries are constrained in the amount of investment they can make on new systems. The marketplace is dominated by a restricted number of major vendors and once acquired, systems are retained for a considerable period. “Although few would characterise their current automation system as perfect, libraries rarely leave current systems out of dissatisfaction with support or functionality. Migrations are just too costly” (Breeding & Roddy 2003, p. 53). Library system companies “[have] pulled out all stops to retain customers and entice them to migrate to their replacement systems” (p.52). These replacement systems need to offer “tools to both help manage the electronic content they purchase and create content from digital products” (p. 53).

Whilst vendors are trying to change their systems to meet these demands there is also a questioning about whether one ILS can offer all these functions. Certainly add-on products are increasing in their use. As Kenney points out “integration, metasearching, open source software and the internet are all pushing the ILS in new directions” (2003). Investment in “standalone products for linking and digital management accounted for nearly 13% of the ILS market last year [in 2002]” (Kenney 2003).

## **Academic Libraries: a user context**

The growth and availability of access to information via the internet and associated technology has transformed the expectations of the client population as well as their service preferences. New technologies and developments have altered the perceived link between information and libraries. For students of previous generations the library stood clearly as the first place to “begin” research and offered a number of options within its physical locations including “librarian, journal indexes or perhaps the more modern CD ROM” (Thompson 2003, p.259). These students were “educated in a world dominated by the physicality of libraries” and as a result thought of “information residing in a particular place” (Lombardi 2000).

The coming of the “digital age” has fundamentally altered this. Research is no longer tied to a physical location. This next generation of students described variously as the “millennial generation”, “digital generation”, “Generation Y” “dot com generation” or “n-gen” may not be able to remember a time when their home did not contain a personal computer. They are characterised by the use and processing of information for education and learning. Their entire education “probably involved technology” (Way 2000, p.18). This generation is often adept at “multiprocessing”, undertaking several tasks simultaneously, such as using their

computer while listening to music or talking on the phone (Seely Brown 2000). In locating information their first instinct is the search engine rather than a library. In 2002 the U.S. based Pew and Internet Life project published findings that indicated that 73% of the current college students participating in their sample used the internet more than the library for information searching (Jones 2002, p.3). This same study also confirmed the preference for multitasking, describing students “browsing web pages while working on an assignment”(Jones 2002, p.18).

Related to this change in access to information and technology are the fundamental changes that have occurred in views of education and its role in society. Lifelong learning is the major educational movement discussed in relation to learners of this generation. Education as a continuing process throughout life in order to “maintain employment” coupled with the quest for “self improvement” and enhanced ability to solve multiple problems are major drivers for this (2002 Tam & Robertson p.370). Seely Brown refers to a “new literacy” going beyond text and image and encompassing information navigation (Seely Brown 2000, p.14). Tapscott expands on this idea with his “eight shifts of interactive” learning. He outlines a number of key differences between the old “broadcast learning” and the new “interactive learning”. The areas of major shift include the move away from linear learning to hypermedia, the importance of discovery as opposed to instruction, an emphasis on learner-centred customisation and learning how to learn. The move to lifelong learning and the role of teacher as facilitator are also important elements of this model (Tapscott 1998, p.143).

The range of services, functionality and “instant gratification” (Kenney et al. 2003) offered by sites such as Amazon and Google has much to do with the transformation of user expectations. Libraries need to incorporate the best features of commercial services into the best aspects of their own services. Pace suggests “not until consumer sites' features are folded into our traditional interfaces can libraries hope to make a library experience as engaging as an online experience” (Pace 2002). In noting that “Amazon.com is used by many in lieu of public access catalogs”, Kenney et al raises the idea that libraries need to adopt some of the practices of these services including “recommending like materials” or quantifying the value of information to the potential client (Kenney et al. 2003).

## **VICTORIA UNIVERSITY LIBRARY – A CASE STUDY**

Victoria University Library is neither large in academic library terms nor particularly well funded. It however demonstrates clearly the key characteristics of the literature i.e. the growth of digital information and its impact on information and staffing resources as well as the growth of systems developments to cope with these changes.

Victoria University is a ‘Dawkins University’ created in 1990 from the amalgamations of various Technical Colleges and a College of Advanced Education. Currently it is the largest provider of educational services in the Western Region of Melbourne, with some 30,000 Technical and Further Education students and 15,000 Higher Education students.

### **Changes in Information Resources and Services**

The University Library ranks 38th out of 38 Australian University Libraries in terms of serial acquisitions and 35th in terms of monograph acquisition. Its material allocation budget has remained relatively stable over the past three years at around AU\$2.5 million, with its most notable expenditure characteristic being the increasing dominance of electronic information resources. This trend has been especially noticeable in the last three years, with electronic information resources moving progressively from consuming 13.73% (2001) of the serial

budget to 18.6% (2002) to now being estimated at 50% of the 2003 serial budget. At the end of 2002, the Library held 32,048 electronic serial titles “accessible via the University Network” and had “in addition 5,118 hard copy subscriptions” (Annual Report, 2002). The expected impact of digital monographs has not really occurred.

Post the Digital Copyright Amendment legislation in 2001, the use of electronic reserve has exploded, with views per quarter climbing steadily in 2003 from 25,000, to 35,125, to this current quarter being 100,727. There is increased pressure for more online resources. In 2002 there was a 41% increase in the use of online database services. Some difficulty has been experienced in restructuring to cater for the ‘virtual campus’, as it is difficult to shift staff to the new job roles of web page maintenance as well as maintenance of electronic information resources and license management. New service support initiatives have also been launched to support this new environment, such as our email reference service (874 email enquiries received YTD in 2003). There has also been a move toward the use of online forms by clients for interlibrary loans and making book purchase suggestions.

## Library System Development

Table One reproduces a timeline of system developments reported in the Victoria University Library Annual reports. The key characteristics are the burgeoning system development post 1995, as well as the noticeable commitment to adding features to the current ILMS. Additional systems are incorporated but do not dominate development. For the sake of clarity, **non-ILMS developments are bolded to indicate differentiation.**

**TABLE ONE  
TIMELINE OF SYSTEM DEVELOPMENT**

1990	▪ Acquired Innopac (ILMS)
1994	▪ Acquired BISAC ordering feature
1995	▪ <b>CDROM Network operational via DOS based menu (in library use only)</b>
1996	▪ Patron self requests (holds) and renewals
	▪ <b>Library website launched with hours, telnet catalogue</b>
1997	▪ Major installations of 3M self service equipment with Innopac circulation 70% of loans now done via selfcheck
1999	▪ Serial invoices paid electronically
	▪ 5 years of Higher Education Exam papers digitised using Ereserve module
	▪ Major launch of Web OPAC
2001	▪ <b>Library acquires ERL server to mount databases and allow access outside the library.</b>
	▪ EReserve explodes as a major service.
	▪ MARC invoices accepted from book suppliers for invoice payment and order creation as required.
	▪ Advanced Search implemented on Library Web Catalogue (Alta Vista like search engine) and integrated Encyclopaedia Britannica in catalogue search results.
	▪ <b>Implementation of Ezproxy (for authentication of remote users for electronic products).</b>
	▪ <b>WebCT adopted as University online learning platform. Library under pressure to participate. Currently assists via help desk, modules on adding library resources.</b>
	▪ <b>ADT – participation in Australian digital theses. Very small number of theses added.</b>
2002	▪ EDIFACT orders
	▪ <b>LIDDAS – implementation project (ILL). Not yet functional.</b>
	▪ <b>AARLIN<sup>i</sup> – participate in this CAUL pilot portal development</b>
2003	▪ WAM – install new authentication system which unifies all library required authentication into uniform ID and PIN.
	▪ Library Ereserve becomes digital repository for all University copyright material offered online to the academic community.
	▪ <b>Implement Serials Solutions as primary search interface to Ejournal Materials</b>

## Staffing profile

The steady build up of staff to support these system developments is illustrated in Table Two. It is worth noting not only the steady increase in staffing but also the co-option of staff to systems support roles. This co-option is expressed in the addition of bits of staff to systems duties. This staffing addition is also reflected in the responses to the CAUL survey.

**TABLE TWO**  
**SYSTEM STAFFING GROWTH**

	<b>1995</b> Manager with part responsibility for systems + 1 day per week Cataloguer for additional Innopac support
+	<b>1999</b> Systems Librarian full time for the acquisition of computer equipment as well Innopac support + 1 day per week circulation system coordinator from Lending
+	<b>2000</b> Network Information Services Librarian: web coordination, databases, Web Opac

This case study illustrates the key characteristics further reinforced in the later survey responses. These key characteristics are the increasing need to adjust to digital information requirements (EReserve, WebPac), a steady investment in self-service features and additional investment in staffing resources. These key characteristics do not support **H1**, as the ILMS is not being bypassed but is still a dominant part of the Library's system development. **H2** is neither supported nor disproved, as there is both continued investment in the ILMS and increased complexity in range of services provided and staffing.

## SURVEY OF ACADEMIC LIBRARIES

In October 2003, via the CAUL<sup>ii</sup> network, the authors sent out a survey via the CAUL list to all Australian University libraries. Twenty-six responses were received. In addition, a response was received from a university library in the United States. This response was not sufficiently different to cause this case to be singled out for any differentiation in the reported results. (For full tabulation of responses and questions see: [http://w2.vu.edu.au/library/CAUL/CAUL\\_ILMS.htm](http://w2.vu.edu.au/library/CAUL/CAUL_ILMS.htm)).

Survey responses are grouped into three main areas. Firstly there are responses in terms of ILMS - brand, age, staffing support. Secondly questions on systems used to support E-Services are investigated, as is the integration with technical services workflow. Lastly responses are reported on the self-assessment given by respondents on their own system's capabilities.

## The ILMS

Responses to the survey indicated dominant library systems within academic libraries – basically Innopac was the most commonly reported in these responses. The systems used were:

Systems	Numbers
ADVANCE	1
ADVANCE	1
ALEPH	3
ALEPH	3
DYNIX	2
DYNIX	2
HORIZON	1
HORIZON	1
INNOPAC	11
INNOPAC	11
SPYDUS	1
SPYDUS	1
VIRTUA	4
VIRTUA	4
VOYAGER	4
VOYAGER	4
TOTAL	27
TOTAL	27

On the whole the ILMS were not new. Only five libraries had new systems acquired post 2001. The majority (13) had systems acquired between 1995 and 2000. Seven respondents indicated they had acquired their systems between the years 1990 to 1994 and 2 had systems dated pre 1990. Fifteen respondents indicated however that they were on new releases of their ILMS so libraries are upgrading systems purchased. These responses indicate coherence with the findings of Breeding and Roddy's ILMS survey article in 2003 with the library system market being dominated by a small number of vendors and vendors working hard to ensure they migrate clients to new versions of systems.

Support staff for library systems within the libraries clearly relate to the size of the libraries with some respondents indicating "nil" (or totally outsourced) to "10 full time staff". Of note is the number of 'parts' of staff used for the library management system. For example ".2 of a cataloguer", "50% Innopac Coordinator", "Module Coordinators for each functional module – 5%". The job titles ascribed to these positions indicate some staff are dedicated to the library management system, for example, "Innopac Coordinator" but others have broader system responsibilities, for example, job titles like "Systems Officer", "Information Systems Librarian", "Library IT Coordinator", "Systems and Electronic Resources Manager". The range of job titles partially supports H2 and the increasing complexity of managing library systems developments.

## E-Services Support Systems

A series of questions were asked to see if the ILMS incorporated some of the basic features seen as required in the new electronic information environment, i.e. URL access via the

OPAC; handling of digital data; learning system interfaces, self service features, and portal developments.

Twenty-six of the 27 libraries included URLs in their catalogues. URL's included can be characterised as coming from: *“online journals, web sites, image online, online books. If a URL is useful we include it in the record”* (Case 5).

Twenty-one respondents indicated they include digitised documents in their catalogue. These digitised objects largely consist of *“ereserve, lecture and tutorial notes, electronic course readings, exam papers, theses”* (Case 24). As well as these standard, almost to be expected inclusions, a small minority of libraries mentioned exceptional inclusions such as *“exhibition catalogues”* (Case 17), *“video, sound”*(Case 20) and one library (Case 3) indicated plans *“to add photos, sound and moving files”*.

Twelve respondents indicated the numbers of digital objects included in their catalogues. Some libraries have sizeable collections of digital documents included.

Number of Digitised Objects	Respondents
120-250	4
1,600 – 4,000	4
5,100 – 12,500	4

Seven respondents indicated they handled digitised objects *outside* of the ILMS. This was an early indication of where ILMS were being bypassed by add-on systems. It should be pointed out that some libraries chose add-on systems even though their ILMS appears capable of this implementation (i.e. other respondents with the same system implemented the feature). The bypassing of the ILMS may be a time, local requirement specification rather than an ILMS weakness. Some of the responses are reproduced below as they indicate the size and scope of these add-on systems:

- *Access to approx. 4,000 documents is provided via various links in the catalogue* (Case 13)
- *Separate locally-developed system for exam papers* (Case 11)
- *Separate websites accessible from XXX Library Website* (Case 9)
- *We also have digital documents available on our archives rare books website* (Case 3)

Another requirement of the changed information environment is the requirement to interface with teaching tools such as WebCT and Blackboard. In common with the case study it appears to be a functionality that is either not currently available within the ILMS or has not been activated or tested. Seven respondents indicated they had *“canned”* or *“precanned”* searches or links from the online learning platform to the catalogue. This is clearly an area that will need to develop in the future if library resources are to be integrated into flexible delivery teaching systems.

Libraries are keen implementers of ILMS Self Service Features. All respondents had self-service features on their catalogue. At the most basic these catalogues offered *“Place holds, view patron record.”* Most also offered *“Patrons can check the status of their record, place holds, cancel holds, and renew loans. Users can also email search results to the email address of their choosing.”* A smaller number of respondents allowed for *“PIN maintenance”*; *“messages to patron”*, *“request ILL”* *“Book audiovisual item; Book study carrel”*, *“Webcomments for queries”*, *“build cart bibliography/ email cart/ save search sessions; broadcast searches to linked Z39.50 library catalogues”*.

A much publicised future direction is the requirement for libraries to act as portals to other information sources. As many as 10 libraries either did not answer this question or indicated that their system currently had no portal features. Other respondents indicated that they were using products developed by ILMS suppliers (eg. Innopac's My Millennium/Metafind, Voyager's "my bookbag" feature), had a "*user driven customisable interface*" or were involved in the AARLIN project.

In terms of electronic information services requirements, ILMS are being used to incorporate URLs and self-service features. The inclusion of digital data is less popular although undertaken by a majority of respondents. Digital data is being either mounted via the ILMS or on separate systems. The decision on technology pathway does not seem to be related to specific ILMS but to specific local requirements. This therefore does not support **H1** as the ILMS itself seems to be able to adjust in these areas but is not being used by libraries due to local requirements.

In terms of portal and learning system interface – these areas are clearly under developed in terms of the ILMS and these libraries' implementation of their systems. This indicates a gap between the requirements of the new information environment as perceived in the literature and the actual implementation process within academic libraries. It also points to an area where systems vendors may need to take note.

## **Integration with Workflows**

This series of questions was to do with the use of ILMS as strategic infrastructure support. The questions were around the cataloguing of electronic aggregations, and integration of acquisition and serials workflows

### **Cataloguing**

In terms of the cataloguing of aggregated electronic resources, several Libraries indicated they were still working on procedures/practices and 4 had no response. To characterise response received – cataloguing efforts fell into three main categories. There was *in house* – via standard cataloguing practices (6 respondents), for example "*We follow a philosophy of "format" integration & therefore try to use a single record for print and electronic titles. We therefore manually update records to include URL, rather than bulk load MARC records from aggregator/publishers*" (Case 8). The *creation inhouse of MARC Records* via own programs (4 respondents), for example, "*Brief records created from spreadsheet data using AUTOCAT and MARCMAKER*" (Case 12). Lastly there was the *acquisition of bulk records* from vendors (11 respondents). Of note is that Serial Solutions is mentioned as a source by 5 libraries. Others bulk purchase from vendors and Kinetica "*Through loading of (a) purchased records from Kinetica (b) purchased record sets from Kinetica (c) purchased record sets from vendors (d) purchased records from Serials Solutions. Remaining material is originally catalogued to at least CONSER level*" (Case 18).

### **Acquisitions**

All respondents indicated a level of integration with vendor systems although some (2) did not send orders electronically, with one using "*e-order using vendor systems*" (Case 9) and another still trialling electronic orders. For the other 26 respondents, most commonly send email orders. Twelve respondents mentioned the downloading of MARC records for the creation of order and bibliographic records from approval plans. In terms of further connectivity of the library system, only one mentioned "*ordering outputs to central finance*" (Case 17). Electronic invoicing was indicated by 12 respondents, so was also a popular feature.

Acquisitions linkages to book supply vendors seem strong, with commonly used invoice and order interfaces as well as bibliographic record generation. Linkages however to other internal administrative systems, such as the University Finance Departments do not feature. The strategic potential of this workflow feature could be further developed by libraries and ILMS vendors.

### Serials

Many more libraries indicated *no* interfacing with serial vendors or that interfacing was under investigation. Seventeen libraries indicated some level of interfacing with serial vendors. Twelve respondents indicated electronic invoicing, 1 the use of SICI barcodes, 1 the downloading of accessioning data from serial vendors, 7 sent claims electronically. Serials interfacing with vendors is not as well-supported as those with acquisitions. Given the strategic value of workflow integration, this should be an area for closer investigation by libraries and system vendors.

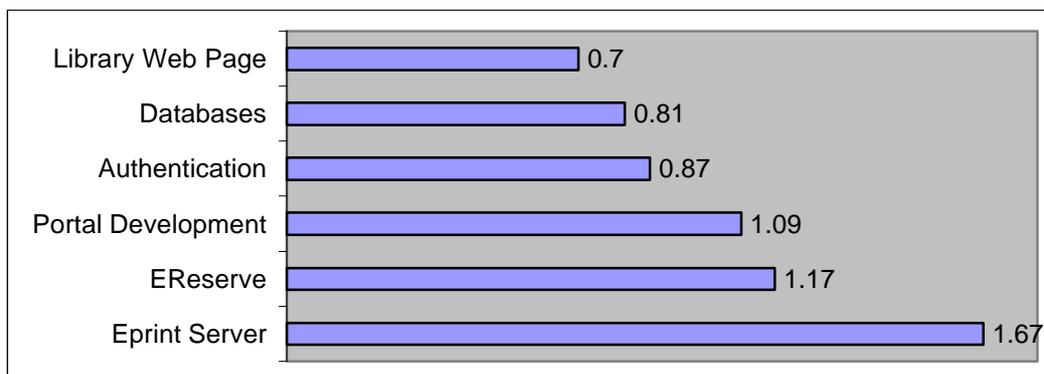
### Self Assessment of System Performance

To further investigate areas of strategic gap, respondents were asked to indicate how they rated their current systems' performance (not necessarily restricted to ILMS) and the relative value of this service. They were asked to nominate a figure from 1 to 5 (lowest to highest) in terms of Importance and Performance of several features on their library systems. In addition they were given an opportunity to comment on their assessment.

### Cross Tabulation of Data

A statistical analysis was done on respondents' ratings of various features of their systems performance and importance. A gap was identified between perceived performance and importance. This gap is the standard deviation calculated between High Performance (dependent variable) and High Importance (independent variable). The greater the standard deviation between these two variables, the greater the strategic gap between perceived importance and actual performance. Note the key critical areas investigated, in terms of electronic information services offered, were not necessarily part of the ILMS. The strategic gap analysis indicated a perceived gap, greatest in terms of the importance and performance of the Eprint Server, EReserve and Portal Developments. Figure One illustrates these results.

**FIGURE ONE**  
**STRATEGIC GAP BETWEEN PERFORMANCE AND IMPORTANCE**



## Comments on ILMS and E-Services

In order to get a general impression of participants' overall view on their ILMS and E-Services current performance and areas for future development, matching questions were asked:

- In your opinion what are the main strengths and weakness of the current functionality of the ILMS/E-Services?
- What features are you hoping will be developed in the next 2-3 years?

## ILMS

### Strengths

Standards, reliability, stability and integration were four areas of strength that were mentioned in various forms by a number of respondents in relation to their ILMS. The standards in MARC, AACR2 and Z39.50 were seen by a number of participants as providing a foundation for their system. For one library the AACR2/MARC combination created "*an environment supporting interoperability*" (Case 4). The reliability of the ILMS and its ability to allow staff to perform core functions was also emphasised. "*The strength of our current ILMS is its maturity in handling traditional core functionality*" (Case 17). Individual systems were variously described as "*robust*", "*reliable*", "*stable*". Many of the strengths nominated were related to traditional staff functions such as cataloguing, acquisitions, course reserves and serials. Integrated functionality across these areas was seen as important and the "*ability to move records between modules from a central point*" (Case 12) was highly valued.

Electronic Reserve, Open URL servers and federated search products were some of the newer client-focussed developments mentioned as strengths. One respondent indicated that their system "*develops new functionality with the changing environment*" and another mentioned "*self-service options*" as strength as they what one Library referred to as "*patron empowerment*".

### Weaknesses

While some respondents view the traditional standards of MARC and AACR2 positively, some libraries also mentioned them as a weakness. "*Basic system and products robust, but limited by MARC format*"(Case 15) and for one library, the ILMS' foundation on these traditions means their system is "*Somewhat rooted in the card catalogue*"(Case 6).

The need for accurate reporting was an area that at least 4 respondents nominated as a weakness of current systems. These include financial and collection reports and statistics. For one respondent, current reporting is "*unreliable*", while another indicated that some report functions within their system are "*not working*".

The importance of accommodating new online developments was also touched on. While noting the strengths of their systems in "*traditional*" functions, some respondents noted that there was "*no portal/meta search development path*" or that their ILMS "*does not cope well with online developments*" (Case 2). These developments also include interfacing with online learning platforms such as Blackboard or WebCT.

### Opportunities over the next 2-3 years

The majority of the respondents indicated that at worst their systems are acceptably functional, despite weaknesses and raised issues for development. A number of development areas nominated by respondents involved interfacing or integration with other systems. One

respondent referred to this as “*seamless integration with other systems (content and learning management systems)*” and another mentioned “*integration with e-learning platforms such as Blackboard*”(Case 2). There was also discussion of interacting with other “*University*” or vendor systems.

Related to this is the importance of portal developments, open URL technology and enhancement of the client interface. One respondent would like to see their OPAC able to present results more like “Google”, while another mentioned more features like “Amazon”.

Copyright and “*electronic resources management*” were suggested as definite areas for development, but there was almost no mention of metadata. It would appear, based on this survey, that while there is much discussion on metadata within the library and information industry, its adoption and incorporation within traditional library systems has not been readily seen by librarians as a development need.

## **E-Services**

### **Strengths**

Strengths of E-Services were seen as the range of materials offered as well as access. Several libraries placed value on “*comprehensive*”, “*integrated*” or “*seamless*” access to these E-Services from within the catalogue. Other responses nominated the idea of the catalogue as the main point of access and discovery for materials of any type “*All materials accessible from library catalogue*” and, not surprisingly, with particular emphasis on “*Integration of both print and electronic resources*”.

Keeping interfaces and systems “*simple*”, “*easy to use*” and “*user friendly*” was suggested by a number of libraries as a strength of their e-services, and authentication was a related area that was important. Maintaining a “*good authentication environment*” was seen by one library as “*enabling strong click-through access to services*”.

### **Weaknesses**

Integration and increased staffing and resources pressures were reported as weaknesses. Respondents noted the lack of integration between e-services and student/University portals and e-learning environments - “*links from WebCT to online articles not developed*” (Case 9). One respondent saw “*potential difficulties in integrating a range of different software applications*” and “*integrating with University systems*” (Case 25). A high number of respondents expressed concerns regarding the resourcing of services, whether it be staff or financial. The “*Inability to devote financial or staff resources to development*” was referred to by one Library, and this sentiment was echoed by a number of others. “*There's not enough money to buy what we need*” (Case 5), “*lack of infrastructure resources*”(Case 2) were just two of the suggested weaknesses of current e-services. Despite this “*innovative*” staff and their ability to “*do a lot with not much*” were mentioned.

### **Opportunities over the next 2-3 years**

Areas for development are not unlike those nominated in the responses regarding ILMS developments. Integration with other systems, portal features “*we need a strong portal*” (Case 15) and federated searching was seen as important. “*We look forward to integrating the library into the campus portal*”(Case 13). Again the growing emphasis on online learning platforms was mentioned “*Integration of library resources within courseware of increasing importance*” (Case 22).

At least 3 libraries made some reference to licence administration “*better control of licences*” (Case 15) and digital rights management as an area that requires development over the next

2-3 years. Authentication was also raised, as an issue with one library suggesting there is a need for a “*more granular and flexible authentication and access rights management system*”.

Eprint servers and the need for development in the area of digital repositories were raised by at least 2 respondents. It would appear to be an area requiring development and is perceived by some respondents as a gap in their current service provision.

In reviewing the responses to both questions, it becomes clear that there are a number of issues that are common. The need to integrate the ILMS and E-Services with other systems such as e-learning platforms and portal products is of concern to librarians. There is also an ongoing tension between the demand for increasing development of these services and an ongoing lack of resources to sustain this. The E-Services question elicited slightly more emphasis on end-user functionality than the one focusing on the ILMS. This may be explained by a number of factors including the traditional place of the ILMS in not only providing access to clients but as the main framework around which staff workflows have been structured.

Overall the survey indicates that in terms of the present ILMS, and possible add-on systems, academic libraries are searching for developments in portals, EPrint server functions, linkages to teaching systems and assistance with license administration. Present ILMS systems offer but need to consider strengthening the functionality of their services in terms of Ereserve and integration with other administrative systems such as University Finance systems. There needs to be consideration by both libraries and vendors of why existing ILMS facilities such as serials’ integration with supplier’s systems appear to be underutilised. The context of all these developments needs to be sensitive to cost and staffing pressures.

There is a sense throughout the responses of the need to increasingly integrate the ILMS within the broad range of electronic services. Despite this desire to achieve integration it still appears to many respondents that the ILMS is a distinct entity somewhat removed from electronic service provision. The commonality of issues raised however suggests maximising the effectiveness of the library’s ILMS performance would go some way to addressing broader questions regarding E-Services functionality. Libraries need to refocus on what they are trying to achieve via the use of the ILMS. The emphasis on staff functionality in the ILMS related survey responses indicates that there is a need to place significant effort into ensuring that its role as a discovery and access tool for clients is emphasised and developed. This is vital if the current level of investment of these systems is to remain and for the associated workflows to continue to be efficient and relevant.

## **CONCLUSION**

In many ways the ILMS is being overlooked rather than “bypassed” (**H1**). Some libraries appear to be choosing to look for solutions in other systems, even when their ILMS can accommodate the function they are attempting to implement. It would take an additional study to determine the reasons for this, but it may be possible to speculate that they include local specifications and integration, cost and ability to interface with other systems. For the future, and particularly for end users, the ILMS will need to offer more than the presentation of the library catalogue. ILMS vendors and developments must continue to incorporate more of an ability to customise, to allow client-centred development to reflect new learning styles and expectations.

**H2** is supported by the survey results. Libraries are using a range of solutions to meet their overall E-Service needs and do not appear to be completely satisfied with the patchwork of

systems that results. Areas for future developments must allow for new areas of services such as portals, EPrint repositories and linkages to teaching systems, but cannot be too staff intensive, as there is a general agreement that increasing financial constraints are creating a tension for resourcing of this area.

Based on the survey results and this study, the following issues will be important for the future of the ILMS, E-Services and their strategic position in the service infrastructure of the library. For libraries, the key questions relate to the place of the ILMS in the broader context of their E-Service environment and looking critically at what functions and services it can enable. The ILMS is a large investment in human and financial resources and maximising the usefulness of the system for both workflow and as a client centred interface to a “collection”, whether physical or virtual, will continue to be an important challenge.

For ILMS vendors, there is another set of challenges relating to the pace of development, interoperability and customisation of systems. Technology is more accessible than it has ever been, and there is no reason to believe that the proliferation of “add-on” or “third party” systems will disappear. Vendors need to look at this technological landscape for how they can integrate or enhance their ILMS to work with the best aspects of these systems. They also need to continue observing developments in client expectation and learning styles. These need to be reflected in any ILMS of the future so that it is not “bypassed”.

## **GLOSSARY**

### **EPrint Server**

A service that allows scholarly papers to be mounted in a non-commercial server environment. Eprint services often use a specifically designed software platform to mount, manage and make available content and can be discipline, institutional or region based. Content mounted on an Eprint server can include preprints (copies of papers or drafts prior to publication in a scholarly journal), copies of papers also published in another forum or the collected research material of a particular organisation or body.

### **EReserve**

Electronic Reserve or online reserve. A system that enables prescribed electronic course readings and lecture notes to be managed on a server space and accessed by clients. Security and authentication are often features of electronic reserve allowing access to materials to be limited to enrolled students and staff. Similar to the traditional ‘closed’ or ‘counter’ reserve within an electronic environment, electronic reserve systems can be part of the ILMS, a third party database product or locally developed system of integrated links.

### **Portals**

A portal or gateway is an interface that brings together a number of distributed electronic information resources under the umbrella of a unified interface. This interface may include the ability to search or link between the different resources in a seamless manner and allow the client to personalise aspects of the presentation of the resources and/or interface often retaining and reinstating these selections on future visits.

## REFERENCES

- “Academic Debate on Library Directions” (2003), *NSW Library Inform*, no. 6, June pp.1-3
- Breeding, M. and Roddy, C. (2003), “The competition heats up” *Library Journal*, April 1, pp. 52- 64
- Griffiths, J.M. (1998), “Why the web is not a library” in *The Mirage of Continuity: Reconfiguring Academic Information Resources for the 21<sup>st</sup> Century*, edited by B.L. Hawkins and P. Battin, CLIR and AAU, pp.229-246
- Hawkins, Brian (2000), “Libraries, knowledge management and Higher Education in an Electronic Environment” paper presented at *ALIA Conference 2000*, Available: [www.alia.org.au/conferences/alia2000/proceedings//brian.hawkins.html](http://www.alia.org.au/conferences/alia2000/proceedings//brian.hawkins.html) (Accessed 2003: September 9)
- Hofmann, U. (1995), “Developing a strategic planning framework for information technologies for libraries” *Library Management*, vol. 16, issue 2, pp.4-14
- Jones, Steve (2002), *The Internet Goes to College: how students are living in the future with today’s technology* Pew Internet and American Life Project : Washington 2002. Available: [http://www.pewinternet.org/reports/pdfs/PIP\\_College\\_Report.pdf](http://www.pewinternet.org/reports/pdfs/PIP_College_Report.pdf) (Accessed: 2003 : September 9)
- Kenney, A et al. (2003), “Google Meets Ebay” *D-Lib Magazine*, vol. 9, no. 6, June 2003. Available: <http://www.dlib.org/dlib/june03/kenney/06kenney.html> (Accessed: 2003: September 9).
- Kenney, B (2003), “The future of Integrated Library Systems: An LJ Round Table” *Library Journal*, 6/15/2003 Available: <http://libraryjournal.reviewsnews.com/ind...sp?layout=articlePrint&articleIDD=CA3024> (Accessed: 2003 : July 29)
- Lombardi, John V. (2000), “Academic Libraries in a Digital Age” *D-Lib Magazine*, vol. 6, no.10, October 2000. Available: <http://www.dlib.org/dlib/october00/lombardi/10lombardi.html> (Accessed: 2003: September 9)
- Lugg, Rick and Fischer, R. (2003), *The real cost of ILS Ownership*, R2 Consulting Services
- Pace, Andrew K. (2002), “Redefine the Experience, Not the Library” *Computers in Libraries*, vol. 22, issue 9, Oct 2002, p.47 Available: Ebscohost (Accession no. 7437809) Accessed: 2003: September 9.
- Pearce, J (2003), “One Search: Don’t make me think” presented at AACOC Seminar, 25 July 2003, Sydney. Available: <http://www.nla.gov.au/lis/stndrds/grps/acoc/papers.html> (Accessed 2003: September 9)
- Porter, G. Margaret and Bayard, Laura (1999), “Including Web Sites in the Online Catalog: implications for cataloguing, collection development, and access” *The Journal of Academic Librarianship*, vol. 25, no.5, 1999, pp.390-394

Seely Brown, John (2000) "Growing Up Digital" *Change*, Mar/Apr 2000, pp.10-20.  
Available: Ebscohost (Accession no. 2962189) (Accessed: 2003: September 9)

Tapscott, Don (1998), *Growing Up Digital: The Rise of the Net Generation*, McGraw Hill, New York

Tam, Lawrence W.H and Robertson, Averil C. (2002), "Managing change: libraries and information services in the digital age" *Library Management*, vol. 23, no. 8/9, 2002, pp.369-377. Available: Emerald Fulltext. (Accessed: 2003: September 9)

Thomas. Sarah E The catalogue as portal to the internet, pp1-11 Available: [www.loc.gov/catdir/bibcontrol/thomas\\_paper.html](http://www.loc.gov/catdir/bibcontrol/thomas_paper.html) (Accessed 2003 XXX)

Tennant, Roy (2003), "Digital Libraries" *Library Journal*, February 15, p.28

Tenopir, Carol (2003), *Use and users of Electronic library resources: an overview and analysis of recent research studies*, CLIRS Washington D.C.,

Troll, Denise A. (2001), "How and Why Are Libraries Changing? (Draft)"  
Available: <http://www.diglib.org/use/whitepaper.htm>  
(Accessed 2003: September 9)

Victoria University Library, *Annual Reports*, The Library, 1995 - 2002

Way Nick (2000), "Battle of the Chromosomes" *Management Today*, Aug 2000, p.14-18  
Available: APA-FT (Accessed 2003: September 9)

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## FOOTNOTES

<sup>i</sup> AARLIN: Australian Academic Research Libraries Information Network. A portal development using Metalib and SFX software. A collaborative development across a majority of Australian University Libraries.

<sup>ii</sup> CAUL is the Council of Australian University Librarians