

Updates on ICT applications and infrastructure at the University of Malaya Library

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Abstract

With the advances made, ICT has become an invaluable tool in automating many library tasks as well as providing services and facilities for information sharing. As the users and collection of the University of Malaya Library grow, the information needs become larger and more complex requiring ICT applications and requirement to be upgraded and enhanced.

This report describes updates on computerization at the Library which involve the library systems, various digital initiatives developed by the library and new means in communicating with the users to disseminate information.

Library Systems

The University of Malaya Library (UML) started using an integrated library system (ILS) in 1992 known as DRA. An integrated library system is a crucial tool for the Library even back then because many library tasks such as cataloging, circulation and acquisition are automated in view of the huge amount of data as well as to better serve its patrons. In November 2004, UML migrated to a new system called Unicorn due to the previous system's inadequate support and other shortcomings. Unicorn enabled easy access to library materials and facilitates generation of records and easy retrieval.

In order to provide improved functionalities and personalization, the system was upgraded to Symphony 3.2.1 in October 2009. The upgrading did not involve any data migration and users as well as staff were given the option to make the most of new capabilities while continue using familiar features and functions. In November 2011, another upgrading path was considered necessary to take advantage of the enhancements as well as bugs that have been fixed in order to ensure the smooth running of the system. The current SirsiDynix Symphony ILS features :

- a. Network capabilities - can be accessed anywhere as long as the user has access to the internet including mobile devices
- b. Main functions of library management such as acquisition, user management, transactions, serial control and online end user searching which are integrated using the same interface
- c. Bibliographic control where by bibliographic records can be imported from external library catalogs through Z39.50 facilities
- d. Full Marc 21 compatibility
- e. WebPAC with Basic as well as Advanced Search capability with Boolean operators, truncation and field limitation
- f. Alerts which allows the library to alert users when new materials of interest arrive and permit end users to keep bibliographies of materials that they wish to use in the future
- g. WebPAC personalization

The current Symphony 3.4.1 supports day-to-day tasks of all the Library's operations throughout the network even for remote branches such as the City Campus and Nilam Puri.

Hardware

Hardware needs in relation to underlying infrastructure such as server, disk space and back up capability increases as the ILS grows. The system was migrated to an Oracle database in 2004. Currently the system is supported by SunFire V880 using the Sun OS 5.9 Platform with 12 GB RAM and 200 GB Hard Disk.

The User Interface : Pendeta WebPAC

iLink uses public access catalog terminal technology to search the catalogs comprising of a keyword search or the catalog browse. An administrator can create and define additional elements which can include the addition of Z39.50 destinations, pre-defined searches and announcements. The appearance of the interface can be modified through the use of WebCat designed environment variables and the creation of custom pages and images.

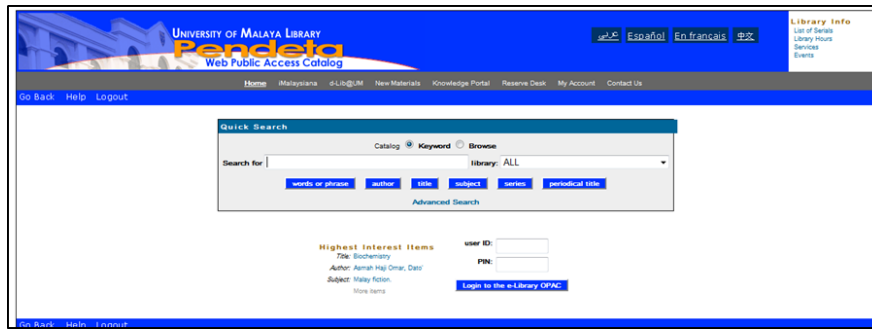


Figure 1 : Previous Pendeta WebPAC interface using iLink (from 2004 to December 2011)



Figure 2 : Catalog Record of previous Pendeta WebPAC

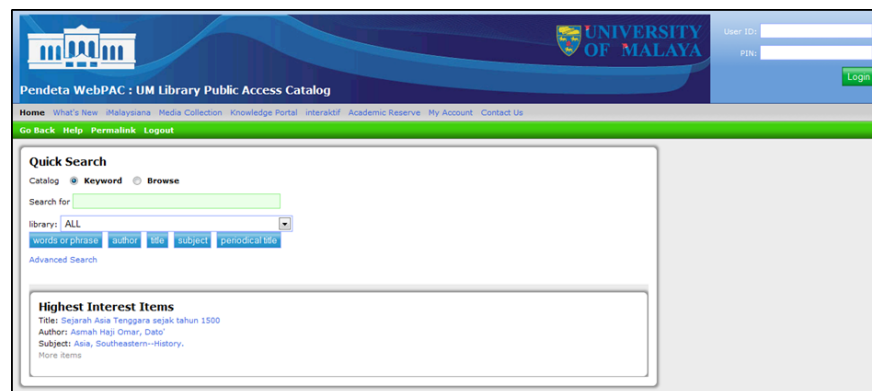


Figure 3 : Current Pendeta WebPAC interface (E-Library from 2011 till now)

Two new tabs have been added, namely the Media Collection and Academic Reserve. A new function is also made available ie. permanent link (permalink) in the e-Library page. The permalink can be copied and used in a Web page, e-mail message, or a Web log (blog). With a permalink, the link to return to a particular e-Library page, including a Search Results page or a Details display page for an item, can be clicked. Other changes include provision for academicians to reserve books that have been checked out via the web.

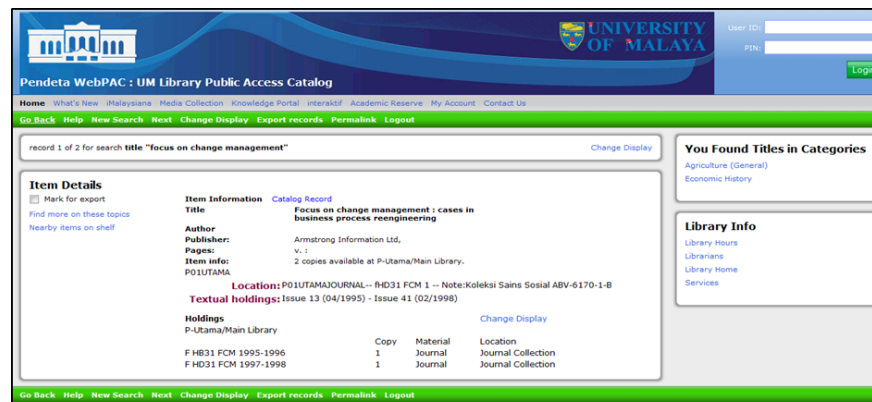


Figure 4 : Catalog Record of current Pendeta WebPAC

Self-Check Machines



Figure 5 : Self-check machine

At the end of 2009, the Library invested in four self-check machines to help improve services and reduce costs. Valuable human resources were thus redeployed from repetitive and mundane tasks to other activities that could make a more direct and positive impact. The SirsiDynix Standard Interface Protocol (SIP2) program provides a standard for sending circulation transactions or patron information between automated systems. The SIP2 server passes circulation information such as circulation policy, borrower and item information to allow patrons to check out library items on their own.

RFID

The use of barcodes, magnetic strips and other identifier tags have long been used in the Library to improve the quality of service to users. In 2008, the Library started a gradual implementation of RFID (Radio Frequency identification) tags to help streamline major Library processes such as stocktaking, circulation and optimizing the handling and processing of items. Roy and Basak (2012) noted that “RFID is a combination of radio frequency based and microchip technology. The information contained on microchips in the tags affix to the library materials is read using radio frequency technology.”

They also stated that the main objectives of using RFID technology in a library are as follows :

- a. to improve operational efficiency
- b. to achieve accuracy i.e. to remove staff manual processes and error
- c. to improve staff productivity
- d. to save the time of the user as well as staff
- e. to make stock verification an easy process
- f. to increase user satisfaction.



Figure 6 : Tag Dispenser, RFID Tag & RFID Label

An RFID tag consists of an integrated circuit (IC) or chip attached to a tag antenna. The antenna enables the chip to transmit the identification information to a reader. The reader converts the signals received from the tag into digital data that can be passed on to a host computer. UML is currently using passive tags which do not contain self-power and relies on the power transmitted by the reader to the tag.

The initial cost of implementing RFID technology is very high. Besides the tags, the reader, staff and pad staff workstation, scanner and associated services are very expensive. Due to budget and manpower constraints, not all items in the collection could be tagged at the same time. To date, the total number of items that have been tagged are 220,000.

It is in the planning of the Library, once all the items have been tagged, to use them as stock verification measures and inventory control. High speed inventory can be done by scanning the items on the shelves without having to move them.

Director's Station (DS)

In order to make sense out of the vast amount of data available in the system, the SirsiDynix Director's Station is used to analyse the data systematically, to establish trends and patterns and to automate alerts.

DS is due for an upgrade in January 2013 to accommodate compatibility with the later versions of operating system as well as having enhanced features.

Support and Communication

There are several options available when support is needed. These are via email, telephone and the portal (SDSC). The usage of SDSC was enforced this year so that cases can be documented and any issues that require attention could be solved quicker.

Training, Professional Development and Planning

With the retirement of senior staff, UML faced the loss of institutional knowledge. Eventhough problems related to managing explicit knowledge such as facts and figures could be solved, many tacit knowledge such as tribal knowledge, "how work really gets done", are lost when employees leave. Furthermore, there is a need for additional training to enhance the traditional knowledge base with a competency in ICT use. As such, a retraining workshop was held in the middle of the year to go through all the modules and procedures to ensure that correct workflows are being followed as well as to resolve any outstanding issues. Rebecca Chiles from SirsiDynix was commissioned in September 2012 as an educator as well as intermediary collaborating closely with the Information Systems Division of UML and other process owners such as Cataloging, Acquisition and Circulation to improvise specific work process and enhance service.

With the onsite training, the following issues were tackled and resolved successfully:

1. Self charging machines can now charge Academic Reserve items.
2. How to set Behaviour properties globally in Utilities so that the system will operate more efficiently.
3. How to address security issues correctly and organize policies including hiding those that are redundant
4. How to customise the library, language and pickup list.
5. Problems concerning authority issues
6. Serial matters

After the training, the interface of Pendeta WebPAC is further boosted by it's capability to reach out to entire communities, with the ability to serve a range of languages (Figure 7).

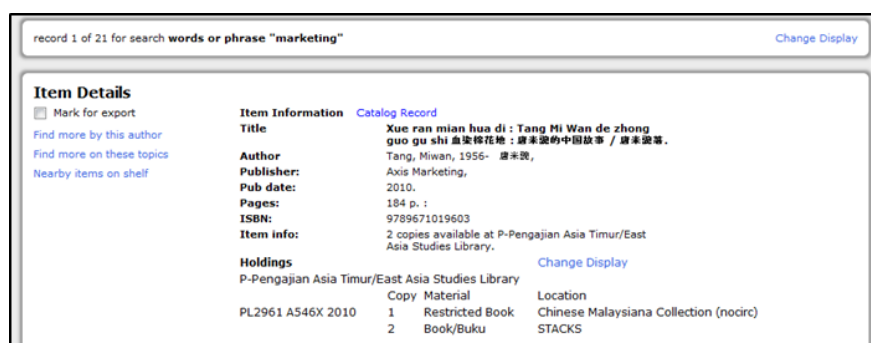


Figure 7: Interface of Pendeta WebPAC

record 3 of 4 for search words or phrase "marketing" [Change Display](#)

Item Details			
Mark for export Find more by this author Find more on these topics Nearby items on shelf			
Item Information		Catalog Record	
Title 'Aqd al-tijarah al-ilktruniyah : 'aqd al-bay' 'ibra al-intranat : dirasat tahiliyah الإقترانية : عقد البيع عبر الإنترنت : دراسة تحليلية / تأليف عمر خالد زريقات زريقات, عمر خالد.			
Author			
Publisher:			
Pub date:			
Pages:			
ISBN:			
Item info:			
1 copy available at P-Pengajian Islam/Islamic Studies Library.			
Holdings			
P-Pengajian Islam/Islamic Studies Library			
BP158 C6ZUR	Copy 1	Material Book/Buku	Location STACKS

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Table 2 : Other digital initiatives

record 1 of 1 for search words or phrase "marketing" [Change Display](#)

Item Details			
Mark for export Find more by this author Find more on these topics Nearby items on shelf			
Item Information		Catalog Record	
Title Viya:paraththai athikarippathu eppat:?= marketing management விவாபாரத்தை வியாபாரத்தை அதிகரிப்பது எப்படி? : marketing management / விமலநாத்.			
Author			
Publisher:			
Pub date:			
Pages:			
Item info:			
1 copy available at P-Pengajian India/Indian Studies Library.			
Holdings			
P-Pengajian India/Indian Studies Library			
HF5386 VIM 1994	Copy 1	Material Book/Buku	Location STACKS

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Figure 8 : Various Unicode displays

Interaktif Portal

The rapid growth of technology has enabled communications among applications giving dynamic and responsive display of users' profile and behaviours. Based on this technology, the Library has developed the "Interaktif Portal" which serves as a centralised gateway for all digital resources and online services (Sutarmi, 2010).

Interaktif (Figure 9) currently indexes over 70,000 subscribed e-resources including 20,000 e-journals and 50,000 e-books. It is able to arrange, package and display dynamically to users' using recommendation and personalization tools. Recommendation tools filter contents and match it against user profiles while personalization tools enable users to build MyLibrary with selected sources. Reduced searching and access time are among the visionaries besides being a medium of communication and information for all activities in the Library.

Figure 9 : Interaktif Portal

In 2010, Interaktif was integrated with EZproxy® to enable user automatic off-campus access to online database.

Computer Laboratories/Public Terminals

The Library has invested a huge amount of money to provide high tech computing facilities to its patrons. In 2009, undergrads have started to enjoy thin clients (server based computing) for activities that require access to an internet-connected computer. The purchase of thin clients have enabled the Library to have better control over issues such as speed and viruses. Dedicated terminals to access Pendeta WebPAC are also made available at Level 2 of the Main Library.

State-of-the-art computers are extremely hard to maintain. High performance computers would be the reversed after a couple of years in terms of their ability to run the latest suite of applications. As such, different physical layout of public computing stations are offered from computers with minimal array of applications to mid range to high end PCs for the postgraduates requiring more applications such as the SPSS and EndNote.

Digital Initiatives

As the growing interest of library collection shifts to digitized content, the Library is pressured to develop repositories which could collect, preserve and disseminate the intellectual output of its population. According to Wikipedia (2012) the four main objectives of having institutional repositories (IR) are :

- a. to provide open access to institutional research output by self-archiving it;
- b. to create global visibility for an institution's scholarly research;
- c. to collect content in a single location;
- d. to store and preserve other institutional digital assets, including unpublished or grey literature

The UM Research Repository was set up in 2007 and was given a facelift in 2011 with enhanced features such as usage statistics and a more structured template. Currently, there are over 2,500 articles available in the repository. Two other repositories were also set up namely the Students' Repository and Commons Repository. Table 1 provides a list of existing repositories set up by the Library catering to different user needs.

Table 1 : List of open access applications initiatives by the Library

Name	Description	URL
UM Research Repository	Open access digital archive containing details of published and unpublished research work produced by the University of Malaya researchers	eprints.um.edu.my
Common Repository	Any other work belonging to the University that requires archiving	commonrepo.um.edu.my
UM Students' Repository	Work of students eg theses, dissertations and academic exercises	studentsrepo.um.edu.my
UM Memory	Preserving photos and documents in digitized format in order to provide access to the historical heritage of University of Malaya for the campus community and nation at large	ummemory.um.edu.my

Other digital initiatives include the Exam Papers collection (available in the interaktif portal), the UM Newspaper Cuttings Collection (library website) and ERIC database.

Table 2 : Other digital initiatives

Name	Descriptions
Examination papers	Contains past exam papers from various faculties which can be downloaded and printed.
UM Newspaper	UM in the News are news coverage relating to the University of Malaya, namely the staff, students and alumni that have appeared in the local, national and regional newspapers. It also provides newspaper reports and pictorial coverage of events, announcements and achievements of the University. The news are updated regularly by the Library staff as featured in the public media. To make the news more accessible and organised, each newspaper cutting is accompanied by several subjects descriptions.

Name	Descriptions
ERIC database	<p>Microfiches@UMLib is an in-house developed database of library records which are available in microfiche format. The database contains Educational Resources Information Center (ERIC) microfiche information of journal articles, books, research syntheses, conference papers and technical reports. Apart from ERIC records, the database also contains bibliographic information of microfiches in other areas such as science and technology and social sciences.</p> <p>The Indonesian Microfiche Collection consists of historical documents of Indonesia pertaining to government administration, education, culture, ethnic and social relations, language and literature.</p>

Sutarmi (2010) noted that libraries should overcome several issues before developing and implementing IRs. These include:

- Issues on copyright should be given appropriate attention
- Standardization of records to facilitate retrieving
- Support from skilled IT staff to ensure uninterrupted service
- Changing researchers' perception so that they would not hesitate to deposit their items in the repositories
- Redundancy of systems would discourage users and a waste of manpower because duplicate information are being published by the same institution on several platforms
- Sufficient fundings to support expenditure of infrastructure and data growth

Communication with Users

Besides the existing modes of communication such as email, phone and feedback forms, the Library has also embarked on using social media such as Facebook and Blog since 2008 to engage users in promoting its messages, products and services. Although no longer a novelty, the focus now is more on using social media as a tool for strategic planning, communication and engagement. Breeding (2010) commented that the use of social networking sites can attract the attention of user segments that it might not otherwise reach. For users who might not regularly remember to make use of their library's resources, social networking sites provide important opportunities to promote the Library's content, services and activities.



Figure 10: University of Malaya Library on Facebook

Mobile and Wireless

The Library is also working with the IT Centre to provide adequate infrastructure for mobile computing within the Library. In the midst of 2012, the number of access points were increased at various locations of the library to cater for the growing demand. More power points were also made available at Level 3 to accommodate users who bring their own laptops or notebooks.

Wifi Printing

Apart from accommodating computing needs, the Library also provides printing facilities for students to print notes, assignments and reports. To reduce cost, Ambang Ideal was selected as the service provider. The service uses a centralised cloud-based solution that is accessible by any student from the campus network, allowing them to print documents via their own computer or laptop, and making a short trip to the printer, where they just need to tap their matric card to the sensor and get their desired documents. As with any other printing services, there is a small fee that needs to be paid in order to use the service.

Media

As part of the effort to improve its facilities, the Library has also invested in acquiring ten units of high performance iMac desktop computers which have given users the opportunity to enjoy better graphics and sound. These PCs are located at the Media Collection on Level 4 of the Main Library. The Library's other purchases include new titles of Blu Ray discs, three units of Blu-ray player and a LP (Vinyl Record) player.



Figure 11 : LP (Vinyl Record)

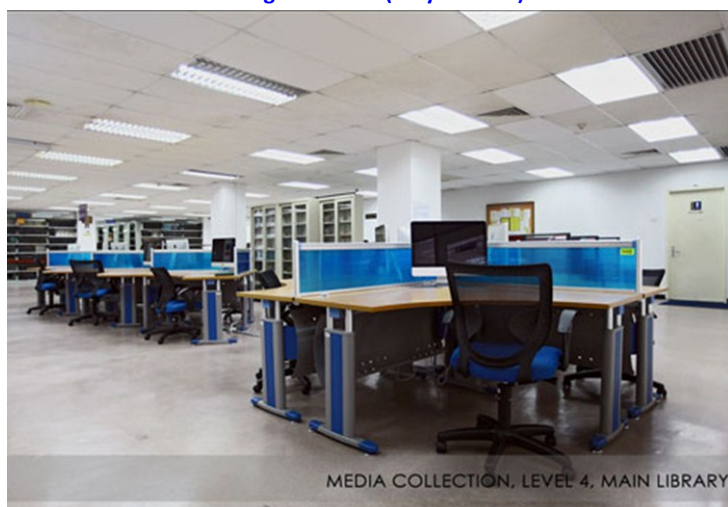


Figure 12 : Media Area

DVD and CD collections are now placed on open shelves. Users can browse these items and borrow them for three hours to be viewed at the iMac multimedia carrels provided.



Figure 13 : Media Collection

Conclusion

Computerization at the University of Malaya Library has developed significantly over the past five years. The developments of various automation products have enabled the Library to offer new services as well as to rejuvenate existing operations in a way that becomes more interesting and appealing to the Library users. The impact of sustaining many new initiatives, however, presents additional load for the Library staff handling technical issues. Skills need to be enhanced on a regular basis to ensure the technology used is at par with international standards.

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