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OPEN SOURCE IN LIBRARIES : IMPLEMENTATION OF AN OPEN SOURCE ILMS AT ASIA E UNIVERSITY LIBRARY

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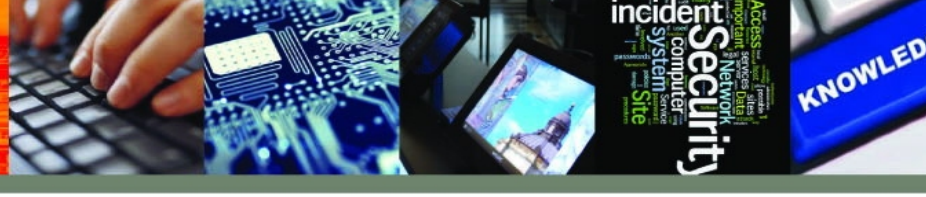


OPEN SOURCE IN LIBRARIES : IMPLEMENTATION OF AN OPEN SOURCE ILMS AT ASIA E UNIVERSITY LIBRARY

Abstract:

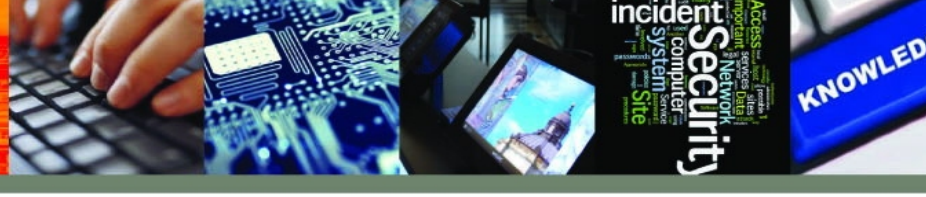
Open source systems for libraries have improved significantly to gain the confidence of librarians. The main focus of the paper is to describe the selection process and criteria that led to the implementation of Koha the first open source Integrated Library Management System at the AeU Library. A study was made based on the set criteria used to compare and contrast with the more popular propriety library management systems. The paper presents the findings of the study which led to the selection of Koha, and a brief introduction to features of open source systems for libraries. The reasoning and conditions for accepting Koha are discussed. A brief account of the implementation process and related experience of the open source ILMS are given. AeU library implemented the various modules of the system: cataloguing, online public access (OPAC), circulation, patron management and acquisitions. The expanding influence and acceptance of OSS in libraries is here to stay. Malaysian libraries may need to look into the credible options and benefits of utilizing open source systems and harness this development in ILS.

INTRODUCTION

Asia e University (AeU) is a flexible mode, international university established under the auspices of Asia Cooperation Dialogue (ACD) in June 2008. An initiative of Malaysia, as the prime mover for e-education AeU enjoys the resources and strength of 31 different countries in Asia. AeU developed partnerships with foreign universities and industries offering specialisation programs catering for current demands of the industry. At the start, three schools of study are established, School of Management, School of Education and School of ICT. In the dual or flexi-mode of Asia e University, online learning (ODL) is offered alongside conventional face to face learning. Online learning requires students to be resourceful with a greater portion of the learning activities being independent learning. Students acquire learning materials for the courses from the online modules, accompanied by references from textbooks, e- books and e-journals e- theses etc. obtained from the library, Internet, and other sources. It is essential that students are to have access to resources over the Web at any time and from anywhere. The needs for both online and conventional learning modes are to be considered in the planning of the University and it facilities.

The setting up of a library to cater for the university's needs is among the many requirements at the start of a University. A state of the art library including a digital library component which is reliable and scalable is a must for AeU. The task of setting up a viable and practicable library from scratch was indeed a challenging operation. It is further constrained by time, young and inexperienced staff and budget. The choice of a library system that allows the library to fulfil the University's needs was indeed part of the challenge. An overview of the many library systems adopted in Malaysian academic libraries gave an insight into what is available in the library scene. It also allows AeU to be aware of the problems faced by many library management systems, to benefit from lessons learnt by others in the selection and implementation of the most appropriate library management system.

The traditional practice is for libraries to turn to vendors to purchase licences for propriety software packages of Integrated Library system to manage and implement library services. The package normally includes the functional modules of Acquisition, Cataloguing, Circulation and the OPAC. Propriety ILS software systems come with a price. The ILS software licence, maintenance and technical support are usually the bulk of the library's operating expenditure. In addition to high initial implementation cost, annual license and support charges, system librarians over the years also have been faced with poor support from vendors, limited flexibility, and not in keeping with new developments in the technology. To add to these problems some of the biggest vendors of systems have merged and some have been acquired by different companies resulting in some popular systems being withdrawn or cease to exist and replaced e.g. Dynix acquired by Sirsi and came out with SirsiDynix and replaced Horizon and later Symphony replaced Horizon This adds to the dilemma of the library community in the choice of library systems. With these objectives and constraints, AeU embarked on its journey to select an ILMS for Asia e- University Library*



SELECTION AND EVALUATION CRITERIA

It is most difficult for a library to come out with a common or generic set of selection criteria for evaluating an ILMS. Each organization may have its own unique preference and constraints. We devised our own method of assessment to compare and contrast common and popular library management systems (LMS). At the AeU Library, the mission started with a survey of the different library systems available. We first identified the features and capabilities that we require in a system. Amongst the features that we were looking for were:

- **Reliable support -** If an ILMS is currently being used or adopted by many other libraries in the region it may indicate that the ILMS would have reliable support and was meeting end-user expectations.

- **Training -** The vendor is to provide training, with manuals and other documentation which should be available and in a suitable language.

- **Scalable -** The system should be scalable as our physical books and digital collections will be expanding and the number of users and transactions will continually increase.

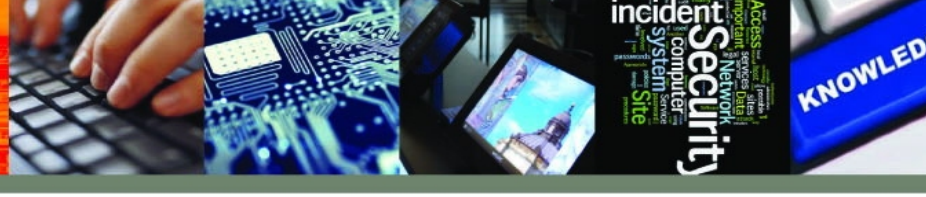
- **Digital library -** The system should be able to manage, both digital and physical book collections simultaneously.

- **Feature/modules -** The integrated system is to have comprehensive functionality with solutions in the various modules: Acquisitions, Cataloguing, Circulation, Patron Access, OPAC and Report Writing.

- **Modules -** The modules in turn are to have features that are necessary for a comprehensive ILMS. The cataloguing module is to support UNIMARC and MARC21 standards, importation of records via Z39.50 interface with a global updating and real time indexing. The circulation module is to provide the range of facilities managing user transactions and supports RFID system. It should be fully integrated with OPAC to display circulation status and the user should be able to view his own account of checked-out items, fines etc. The Web OPAC with a single sign-on should have various levels of information searching facilities with a user friendly user interface and services like viewing reading history and creating virtual shelves, and print or email search accounts.

- **Cost -** The cost factor was an important criterion in our evaluation of an ILMS. The initial investments in an ILMS should require as little as possible of the capital expenditure (CAPEX) of the University. Our university being very new had been investing heavily on its infrastructure. A savings in the procurement of its ILMS would be a welcome relief. The cost of the license fee of the ILS was to cover for an unlimited user license. Check on the cost for system upgrades. The lower the initial and maintenance cost of a system the better. The system we required had to have low initial investment expenditure, and at the same time the long term cost of the annual license fee and upgrade fee should also be kept to a minimum.

The system AeU selects should have as many of the capabilities of a high - end library management system as possible, together with good support, flexibility, and with low installation and maintenance cost. We also needed to look for an ILMS which was adaptable and user friendly and it should be easy to learn and use.



In our search for an ILMS we did not exclude open source systems. Open source has been defined as:

> '*a development method for software that harnesses the power of distributed peer review and transparency of process. The promise of open source is better quality, higher reliability, more flexibility, lower cost, and an end to predatory vendor lock-in 'or technology lock in.* (http://www.open source.org)

When a system is developed using open source technology it may be made available for free. At the same time there is active development under way, continuously being enhanced and new versions would still be available at lower cost as compared to licensed software. For an open source ILMS, the current source code and documentation of the system would be available for downloading under the GNU (General Public License). The user may change and improve the software to redistribute it with or without the modification. The community of users or team of software evolves to provide support and advice for the new users. An open source selection may be based on the following:

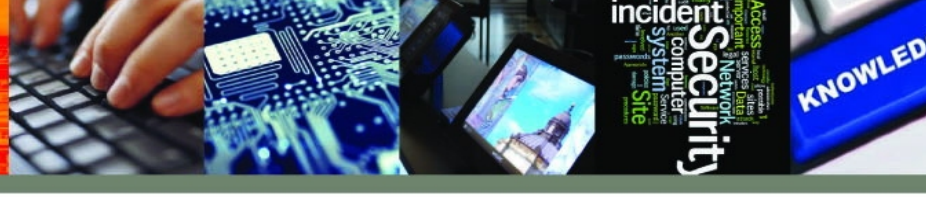
- The source code is provided.
- The application is released under a recognised OSS license.
- The development process are public.
- The system has a track record of adoption in libraries (Balnaves,2008).

We selected KOHA as the open source ILS as it meets the criteria of an open source ILS and at the same time it fulfils the requirements that was set up to evaluate a library system. Koha's growing popularity is an indication of its usability and sustainability. It was first introduced in the year 2000 and to date has been applied in more than 1000 libraries worldwide and is beginning to make its mark in Malaysia. This is viewed as confidence in the system being future proof and **reliable**. The Nelsonville Public Library in Athens County Ohio migrated from the stable vendor based Spydus ILS to Koha in 2002. Today, in Malaysia, there are at least 3 firms offering support for Koha installation and **maintenance** service. **Training** is provided for installation and application by the same group.. The dual base database design in Koha ensures that it is **scalable** to meet the transaction load of any growing library. A big library like the Delhi Public Library in India with a collection of 1.4 million has recently adopted Koha. The full **features and functionality** of an ILMS with all the necessary modules: acquisition, cataloguing, serials, and patron management are available in Koha. As an open source software, the Koha licence is distributed free under the GPL licence with no vendor lock-ins. Companies involved in open source generally only charge for services and not for the development of software and would therefore **cost** much less**.**

Koha which means 'Gift' in the Maori language is considered to be a first full-featured Open Source Library Management System. It was first deployed in January 2000 at Horowhenua Library Trust, in New Zealand. Its development is steered by a growing community of libraries collaborating to achieve their technology goals. Koha is a Web-based system and is designed to work with a minimum of hardware resources. It runs on the Linux operating system. **(http://www.koha.org)**

EVALUATION

To assist us in making the decision to select the best system LMS we first compiled a list of popular and commonly used integrated library systems found in Malaysian academic libraries. The next step was to gather as much information as possible mainly from the vendors supplying the systems on the features and capabilities of the systems. In most cases we were given demonstrations on the functionalities and capabilities to allow us to have an overview the system. Site visits were made to see the systems in operation. Several library management systems were finally selected for evaluation.



Among the reasons for the choice of systems being included in the list were 1) Documentation was available and 2) The systems were already in place in several institutions around the Klang Valley and other parts of Malaysia. It was possible for AeU to make contacts and gather information and assessments from the hosting institutions. The systems selected were: Virtua, Spydus, Horizon, ILMU, Millennium SIRSI and the Open Source System KOHA. A check list of all the features and functionalities that a complete Integrated Library Management System can offer was drawn up. Each of the systems with their own features and functional modules of each package were measured against this 'check list' By analyzing and matching the features of a desirable system with the features and functions of the above selected library systems we were able to evaluate and identify the system that would suit our needs.

With the above criteria and constraints clear in our minds, we identified five main areas for evaluation for an ILMS. They are:

- System functionalities
- Technical aspects
- Interface
- Miscellaneous
- Price

Each of the above areas or criteria is made up of several sub-criteria. In each of the ILMS that was being evaluated, for each sub criteria met / satisfied, a score of '1' was awarded. At the end of the assessment, we added the total for each ILMS. The actual results of the full assessment exercise are tabulated in Appendix 1. The findings of the assessment exercise are as summarised in Table 1 and Table 2.

a) System functionalities (Modules)

The basic functionalities of the system are to meet with specifications and requirements in a system. We studied each system and looked at the modules offered in the ILS: Acquisition, Cataloguing, Circulation, Integration with OPAC, Web OPAC, Serials, and Statistical Report Generation. Each one of these module is made up of several features or criteria that are important for a comprehensive ILS. From Table 1, the score showed that system A obtained the highest, followed by system E and KOHA as the third. Therefore, in terms of system functionalities, system A then would have been the best choice for us.

b) Technical aspects

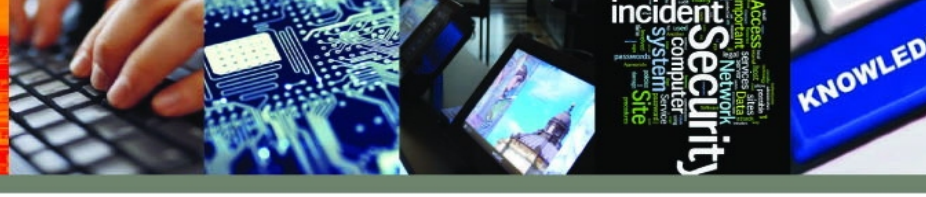
In this area, we examine the operating systems that the ILMS can be supported by, the programming languages that can be used to maintain the ILMS, the industry standards that the ILMS supports and finally the hardware required to host and implement the ILMS. The ranking is similar to that of system functionalities. System A scored the highest, followed by system E and KOHA. Our observation suggests that system A was the most superior ILMS where technical features were concerned.

c) Interface

For the Interface evaluation, we considered whether the ILMS is user friendly or not and whether the ILMS comes with comprehensive links. In this aspect, all the ILMS considered gathered the same score. We can say that all these ILMS have user friendly interfaces and comes with comprehensive links to all its components. Therefore, from Table 1, we can say that all the ILMS A, B, C, D, E, and KOHA compared had the same score and are equally good.

d) Miscellaneous

Barcode Labelling, Spine Labelling and RFID Interface are grouped under this category. Our study revealed that all the ILMS considered obtained full marks. Again, from Table 1, we can see that all ILMS compared are equally comparable as they all recorded the same score.



e) Price

For which we had price quotations. We could not conduct a perfect comparison in this aspect for all the ILMS considered as we could not get the specific pricing for A and B. However upon checking with libraries where these systems were in place we had some idea of the costs involved. When considering the price of each ILMS, we looked at the1) initial procurement cost 2) installation charges as well as 3) the annual maintenance charges. Each category was made up of chargeable items as tabulated in Table 2. Our analysis showed that system C and D have an equal high number of chargeable components, followed by system E and lastly by KOHA. In this aspect, the best choice was obviously KOHA.

Table 1: Comparison of Integrated Library Management System (ILMS)

FEATURES	A	B	C	D	E	KOHA
1. System Functionalities (modules)						
▪ Acquisition	23	13	15	15	20	21
▪ Cataloguing	17	12	7	7	14	10
▪ Circulation (10)	10	10	9	6	10	10
▪ Full integration with the OPAC (11)	11	8	9	8	10	10
▪ Serials	12	7	7	5	12	8
▪ Web OPAC (14)	14	7	10	7	13	14
▪ Report statistic generation (7)	7	7	7	7	7	7
Total	**94**	**64**	**58**	**55**	**86**	**80**
2. Technical Aspects						
▪ Operating System (4)	3	3	1	2	3	4
▪ Programming Languages (4)	3	3	3	2	3	2
▪ Industry Standards (4)	4	4	2	2	4	2
▪ Hardware (4)	3	1	0	1	3	4
Total	**13**	**11**	**6**	**7**	**13**	**12**
3. Interface (2)	2	2	2	2	2	2
Total	**2**	**2**	**2**	**2**	**2**	**2**
4. Miscellaneous (3)	3	3	3	3	3	3
Total	**3**	**3**	**3**	**3**	**3**	**3**

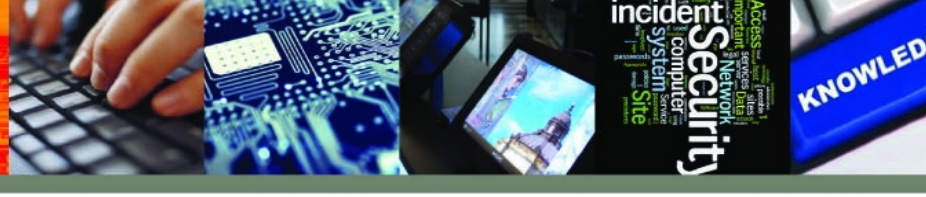
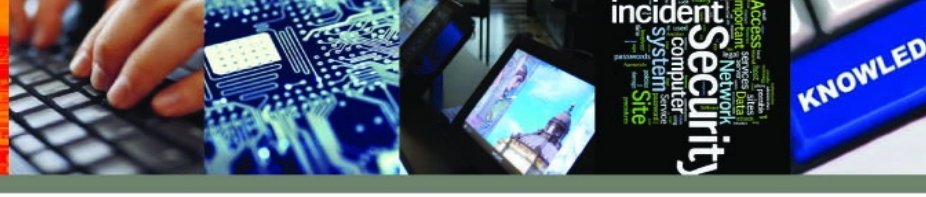


Table 2: Comparison on Cost

FEATURES	A	B	C	D	E	KOHA
Charges for items						
▪ Basic modules of the library management system	N/A	N/A	√	√	X	X
▪ Training charges	N/A	N/A		√	√	√
▪ License statement	N/A	N/A	√	√	√	X
▪ Additional modules (optional)	N/A	N/A	√	√	X	X
▪ Data migration	N/A	N/A	√	√	√	√
▪ Installation and maintenance charge	N/A	N/A	√	√	√	√
▪ Other hardware/software, if requested (i.e. web server, client workstation, barcode scanner, operating system etc.)	N/A	N/A	√	√	√	√
Maintenance charges						
▪ Labour charges for installation, on-site visit.	N/A	N/A		√	√	√
▪ Cost of parts replacement	N/A	N/A	√	√	√	√
▪ Cost of system upgrade	N/A	N/A	√	√	√	X
▪ Cost of phone/email services	N/A	N/A				X
▪ Free operation manual(s)	N/A	N/A				X
▪ Upgrading time frames	N/A	N/A	√			X
▪ Technical support	N/A	N/A	√	√	√	√
Total Chargeable Items	**N/A**	**N/A**	**10**	**10**	**9**	**8**

In summary, the 'Checklist Assessment' method we chose revealed that for *Functionality* and *Technical Aspects,* Koha came out third after system A and System E. For the test on *Interface* and *Miscellaneous,* Koha and all the other systems have an equal score which means they are all equally good. When it came to pricing even though we did not get the prices for two of the systems, Koha with the lowest number of chargeable items obviously incurred the lowest cost. All things considered Koha was the obvious choice.

The Asia e University Library then made the bold decision of adopting and implementing the open source Integrated Library Management System Koha as its library management system. This was in line with the government's policy to adopt Open Source technology and the Asia e University's initiative of promoting Open Source Computing. The Asia e University is among the first in Asia to offer degrees in Open Source Computing i.e. the Executive Master in Open Source Computing and Open Source ERP (Adempiere) and Bachelor of ICT (Open Source Computing).



IMPLEMENTATION PROCESS OF KOHA AT AEU

Stage One – Installation

Upon making the decision to adopt the Open Source ILMS Koha the project started in Nov 2008. A consultant firm *Ricom Trading* was engaged, as their staffs have been involved with Koha development and installation. They have provided support services for at least three (3) other small libraries in the Klang Valley. Based on their experience and advice it was decided that the stable Koha version 2.2.9 be adopted as Koha version 3.06 was still in alpha development stage.

Among the problems faced during installation was to fulfil Koha dependencies. Most of the packages which were pre requisite to Koha installation were downloaded online from different sources and server locations. The 'Koha dependencies' server availability was one of the major installation issues. Not all the packages were available for downloading at the same time. If the package was not found, the installation procedure had to be postponed to another time. In the case of AeU, the whole installation process took about two weeks. Today the installation can be completed within two (2) hours.

Another related issue was the network requirement. Normally Koha would need network access from outside to port 80 for OPAC, 8000 or 8080 for the librarian interface and port 22 for the backend administration (to be used for trouble shooting). All these three ports were needed to ensure that the Koha service consultant could troubleshoot the system from a remote location. AeU IT department had to be convinced to comply with these requirements. The Department was most willing and gave full cooperation. The system was successfully installed with minimal hitches. As the AeU library started from scratch, we did not have any data migration work to carry over.

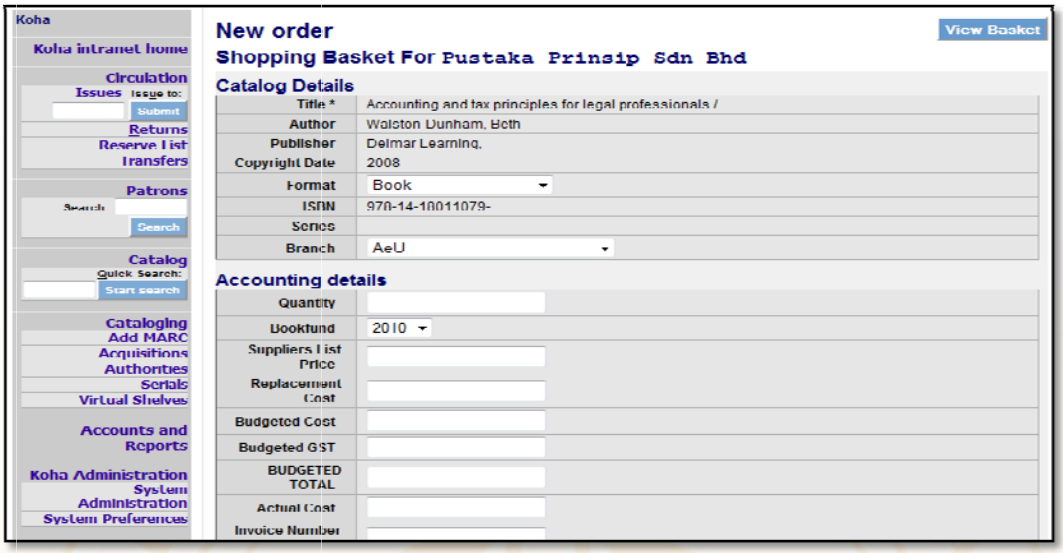
Stage 2 – Training

Training was conducted in December 2008. The library staff and the trainer had a number of very productive and interactive sessions. The training went on smoothly with the librarians eager to learn. The fact that they were all familiar with at least one ILMS made the training short and sweet.

Stage 3 – System Usage

AeU is one of the earliest academic libraries to choose to use Koha ILMS. Although there were several libraries that have used use Koha prior to AeU, not all modules available in Koha were installed, as most of them were special libraries. There were initially a number of bugs to be ironed out in its implementation. One significant module used by AeU is the acquisition module. Between Dec 2008 and May of 2009 there were at least 20 implementation issues reported by AeU library. One peculiarity of Koha was that some procedures and workflow had to be adjusted. The workflow as is practised in AeU library is as follows: when a book is required, the library has to first create a bibliographic record in the C*ataloguing mode.* The same bibliographic information is imported into Acquisition mode and is used to place an order. When the ordered book arrives, we first confirm receipt in the Acquisition mode, it is then added to 'holdings' information in the Circulation mode.

More than half of the issues during this period were minor technical glitches, while the remaining was practical advice. With cooperation and close working relationship between AeU library and the consultant, and with support from the Koha community via mailing lists and Koha documentation website (kohadocs.org) the problems faced were resolved. AeU library's eagerness and enthusiasm in adopting the system, made it as an important factor for the successful implementation of the system.



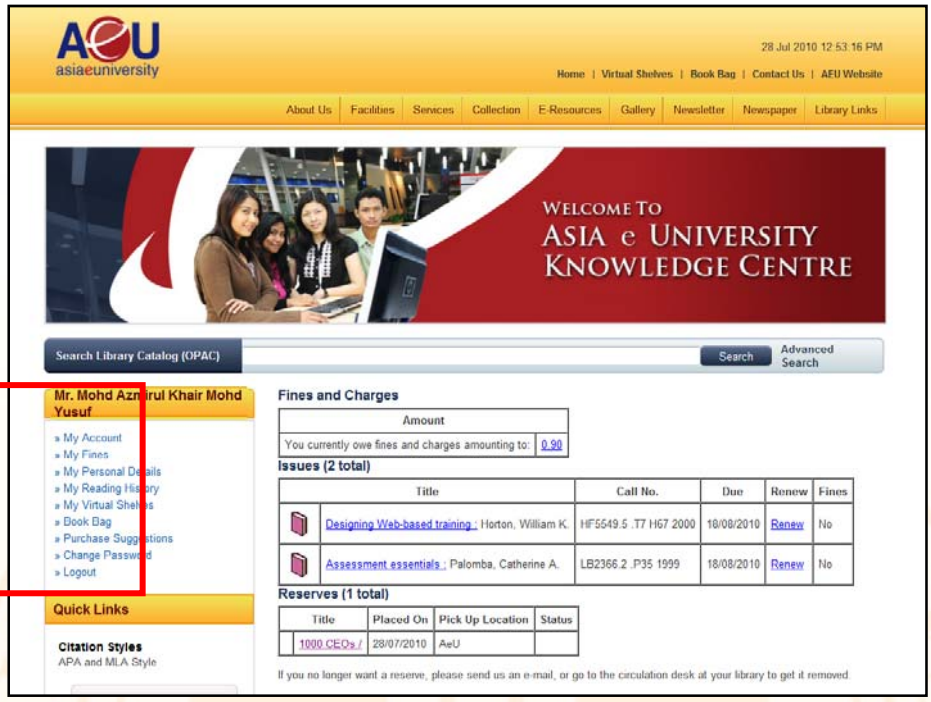
-Koha:' New order' details imported from an existing bibliographic record-

Stage 4 – Enhancement

AeU library had engaged a web developer to customize its OPAC interface. Together with the help of the consultant, the web developers were able to customize AeU library OPAC interface. AeU also has decided to use RFID in enhancing their library services. At that time, Koha version 2.2.9 did not have SIP2 module. It was decided to integrate RFID functions directly to Koha. Four applications were developed as follows:

a) Self charging machine – Check-in and Check-Out of items.
b) Registration Station – Register barcode and security status into RFID tags.
c) Book Drop – with software showing status and details of returned items. The book drop also reactivates the security status of the item.
d) Security gates – with capability of operation independently from ILMS.

RFID implementation took a longer time because we needed time to study the RFID technology and tried different ways to achieve optimum operational efficiency. The RFID project started in January 2009, it was running by March 2009 and the sign off was in May 2009.

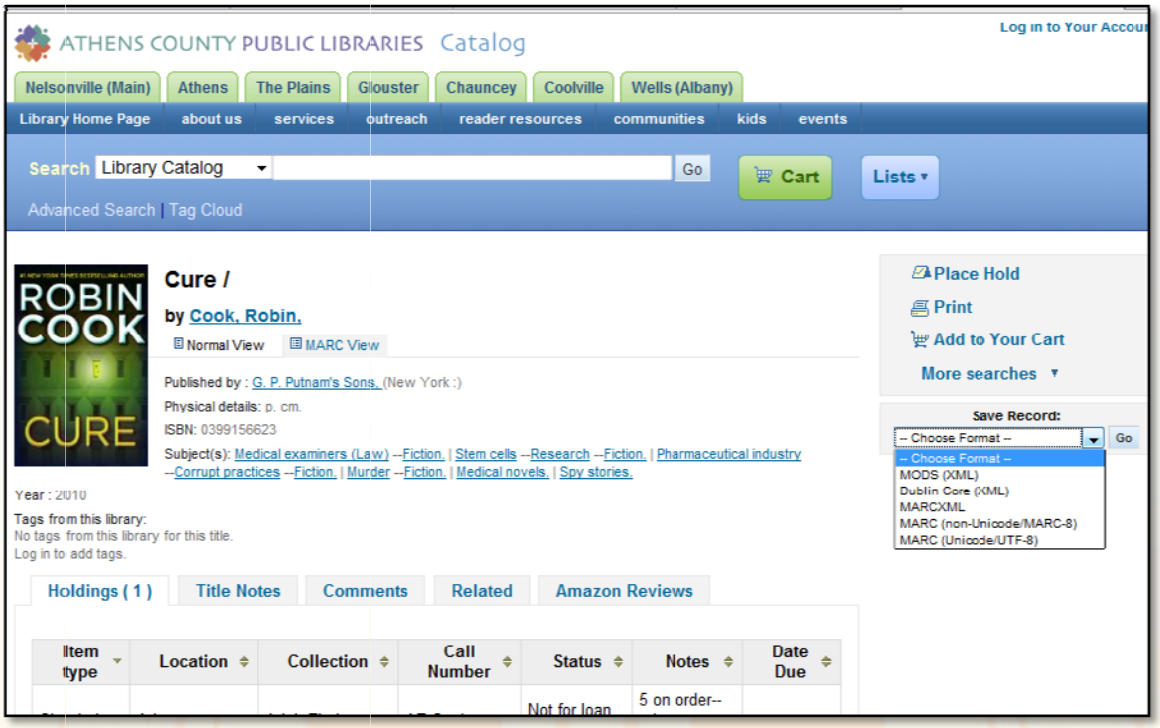


-Customised OPAC of AeU where patron is able to view his personal account-

Stage 5 – Upgrades

In mid 2010, Koha had released its stable version 3.0.6. The testing phase has been completed and some of the libraries in Malaysia had started using the Koha version 3.0.6. AeU Library is in the migration process from version 2.2.9 to version 3.0.6. Since these two are totally different koha versions with a number of major improvements in the new version, it involves a number of customisations, and tests need to be done especially in the integration with RFID and the AeU customized OPAC. It is anticipated that by the end of this year, AeU would have fully migrated to the Koha version 3.60.

The screen shot of OPAC in Koha version 3.06 shows several extra features e.g. book jacket displays; records downloadable in MODS, Dublin Core, MARCXML, MARC-8 and MARC-UTF-8.



-Screen of Koha Version 3 Interface
Source: http://acpl.kohalibrary.com/cgi-bin/koha/opac-detail.pl?bib=222814-

KOHA WORKSHOP

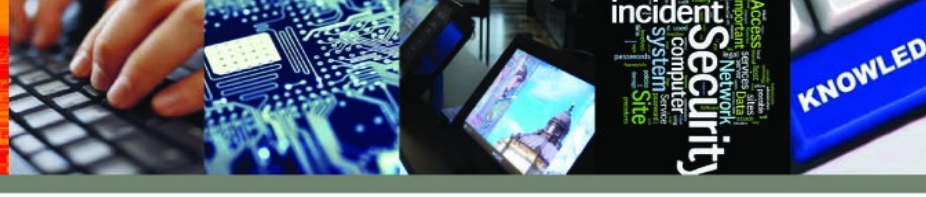
As with any open source software system, to apply and use the system effectively it takes more than just downloading and pressing a button. Open source software requires just as much commitment as commercial software. It involves installing changing and adapting to provide solutions – and it depends a great deal on sharing of knowledge and experience among users and interest group.

It is working towards providing the platform to create awareness, strengthen the sharing of knowledge and experience on the application of KOHA. Together with the AeU Library and the School of Information and Communication Technology of Asia e University, we jointly organised a Workshop entitled "KOHA: An Integrated Library Management System" on the 23rd and 24th of June 2008.

Among the objectives of the Workshop were:

- To create an awareness on the benefits of using Open Source Software.
- To introduce KOHA as an Integrated Library management System.
- To exchange information, knowledge and experience in using KOHA for Library management.
- To initiate the establishment of a Malaysian KOHA User Group.

The workshop was attended by 32 participants who were mainly librarians, IT personnel, researchers and administrators. The analysis of the participants' feedback indicated that the workshop has generated a great deal of interest and confidence in the use of KOHA. Several universities, public and private organisations have expressed interest in adopting and implementing KOHA.



Among the challenges faced by these organizations was the lack of awareness of KOHA, its advantages, expertise and trained staff to use it. It was suggested that the formation of a Malaysian KOHA User Group would address some of these issues and minimise the impact of other related problems. As a start, a website to cater to the user group forum has since been set up. This initiative has since then needs further input from the Koha community in Malaysia.

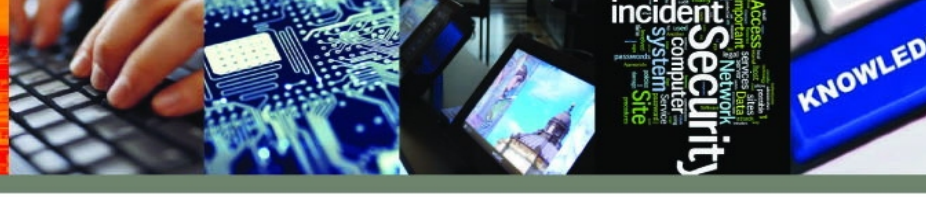
Following the success of the workshop (June 2009) and the increasing awareness that Koha the Open Source ILMS is available and working successfully, the AeU Library has attracted the attention of several libraries. Visitors came to have a view of Koha working successfully with all the modules in place. They included librarians and IT personal from the UNESCAPE Bangkok Office, Kelantan Public Library, International Islamic University (IIUM) Kulliyah of ICT, the Universiti Teknologi Mara (UITM) Library School and the International Institute of Advance Islamic Studies (IAIS). Since then at least two (3) of these libraries have already selected Koha as their ILMS and are in the process or have completed the installation of the Koha ILMS.

CONCLUSION

AeU as an e-University and a regional university involving 31 different countries will eventually have a network of learning centres and students spread out across these 31 different countries. The Library will need to provide a pan - Asia access and manage simultaneous 'log-ins' of members from throughout the region. The AeU library management system, has to be maintained by a quality ILMS which is scalable and futuristic. At the same time being new, AeU will need high initial capital to build up its infrastructure and this initial capital had to be spent wisely and prudently. As AeU is a champion of Open Source Technology, selecting KOHA as its ILMS fitted in very well with the other support systems used. Choosing KOHA with its open source ILMS will help the AeU to build on the 'technology of tomorrow' and will equip AeU to meet the present and future demands and challenges. In July 2010 the new report on *Open source adoption* by the Government of Malaysia has shown a 97% adoption rate for open source software.

When we first decided to adopt Koha at AeU we were unsure of its success, however the choice of the open source system for our library, has proven to be a rewarding experience. In 2002, Marshal Breeding, the recognised expert on library automation software for the last 10 years pointed out that based on his study, the adoption of Open Source library Systems was 'a small blip on the radar' At the same time he noted that there were indications that the ILMS open source systems with their new features were gaining recognition. In 2008 he reported that the scene has drastically changed. The success of early adopters of open source ILMS has served as catalyst for others. Percentage of contracts for Koha services is gaining. He observed that open source ILMS will increasingly displace traditional commercial licensing models and the growth of open source ILMS if sustained will change the trend in the industry with each subsequent year. At AeU Library we hope libraries that are contemplating adopting open source library system will benefit from our experience with Koha. We look forward to more commitments to open source ILMS to make it more viable for future support and development.

* Asia e_University Libray is also known as Asia e-University Knowledge Centre



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APPENDIX: COMPARISON OF INTEGRATED LIBRARY MANAGEMENT SYSTEMS (ILMS)

FEATURES	A	B	C	D	E	KOHA
1. System Functionalities						
➢ Acquisition						
• Handles all types of materials including: All formats including						
☐ print and electronic	√	√	√	√	√	√
☐ Standing orders	√	√	√	√	√	√
☐ Blanket Orders	√	√	√	√	√	√
☐ Depository items	√			√	√	√
☐ Memberships	√	√	√	√	√	√
☐ Gifts and exchanges	√		√	√	√	√
☐ Prepaid items	√			√	√	√
• Full financial accounting, including:						
☐ Comprehensive fund management	√	√	√		√	√
☐ Integrated invoicing	√	√	√	√	√	√
☐ Detailed audit trials	√	√	√	√		√
☐ Financial statistics	√	√	√	√	√	√
☐ Complete payment history, including serials	√	√	√		√	√
☐ Interface to outside accounting system	√	√			√	√
☐ Currency conversion	√	√			√	√
☐ Multi-copy fund ordering	√					
• Full integration, including:						
☐ Single record storage	√	√	√		√	√
☐ On-order and In Processing statuses displayed in WebOPAC	√		√	√	√	√
☐ Circulation-holds integration	√		√	√	√	√
☐ Creation of circulation records at point of receipt	√		√		√	√
☐ Automatic duplicate checking	√		X			

	A	B	C	D	E	KOHA
• Electronic Data Interchange:						
☐ Z39.50 pre-order searching and record input using external interface;	√	√	√	√	√	√
☐ Electronic orders, electronic invoices, approval plans, firm orders;	√			√	√	√
☐ Accounting system interface	√			√	√	√

➢ Cataloging						
• Full-screen editor for updating records	√	√	√	√		
• A wide range of special characters, diacritics, and non-Roman languages are supported, including:						
☐ ANSEL (ALA/MARC, including Spanish, French, Portuguese, Galician, Catalan/Valenciano, Swedish and Welsh)	√	√		√	√	√
☐ Extended Latin Alphabet Coded Character Set (Z39.47)	√	√		√	√	√
☐ EACC-encoded CJK	√	√		√	√	√
☐ CCCII, BIG5, and GB (Chinese)	√	√	√	√	√	√
☐ SJIS (Japanese)	√	√	√	√	√	√
☐ TIS 620 (Thai)	√	√			√	√
☐ VISCII (Vietnamese)	√	√			√	√
☐ ISO 6937/2 (Including Estonian, Polish, Turkish)	√	√			√	√
☐ Windows code pages: 1250 (Central European), 1251 (Cyrillic), 1252 (Latin 1), 1254 (Turkish), 1255 (Hebrew), 1256 (Arabic), and 1257 (Baltic)	√	√	√		√	√

	A	B	C	D	E	KOHA
• Reference Databases (access)						
☐ Commercial Citation Databases (Wilson Index to Legal Periodicals [WILP], Legal Resources Index [LRI], Expanded Academic Index [EAI], and EBSCO Masterfile)	√		√		√	√
☐ Community/Campus Information Databases (information about community organizations, local events, and course catalog information)	√				√	X
• Global updating	√		√		√	
• Online interfaces to all major bibliographic utilities	√					
• Integrated authority control	√	√	√	√	√	
• Real-time indexing	√	√	√		√	
• Online help	√					

➢ Circulation						
☐ Check out	√	√	√	√	√	√
☐ Check in	√	√	√	√	√	√
☐ Renewals	√	√	√	√	√	√
☐ Patron blocks	√	√	√		√	√
☐ Holds	√	√	√	√	√	√
☐ Recalls	√	√	√		√	√
☐ Lost and claimed-returned processing	√	√	√		√	√
☐ Fines	√	√	√	√	√	√
☐ Overdue notices and bills	√	√	√	√	√	√
☐ Flexible loan parameters	√	√	√		√	√

	A	B	C	D	E	KOHA
▪ Full integration with the OPAC						
☐ Display of current circulation status updated in real-time	√	√	√	√	√	√
☐ Ability to update own patron record	√		√	√	√	√
☐ Ability to view own checked-out items, holds, fines, bookings, and ILL and INN-Reach items ready for pickup	√	√	√	√	√	√
☐ Ability to renew own checked-out items	√	√	√	√	√	√
☐ Ability to place and cancel holds and bookings	√		√	√	√	√
☐ Telephone Renewal (conduct renewal transactions from a touch-tone phone outside the library)	√	√				X
☐ Offline Circulation (record transaction later, due to lost of connectivity or technical problems)	√	√	X		√	√
☐ Electronic Course Reserves (library patrons can access the creation of a digital reserve collection via a Web browser)	√		√		√	√
☐ Materials Booking	√	√	√	√	√	√
☐ Inventory Control	√	√	√	√	√	√
☐ Interlibrary Loan	√	√	√	√	√	√

➢ Serials						
▪ Check-in records contain data on:						
☐ Past and future issues	√	√	√	√	√	√
☐ Arrival dates	√	√	√	√	√	√
☐ Number of copies received	√	√	√	√	√	√
☐ Bound, claimed, and late issues	√	√	√	√	√	√
☐ System-formatted US MARC holdings statement	√	√			√	√
☐ SICI barcode check-in of issues	√		√		√	√
☐ Check-in support for issue-level electronic journal URLs	√				√	√
☐ Claims for overdue issues sent electronically to vendors	√				√	√

	A	B	C	D	E	KOHA
▪ Binding control (Number to bind; Type of binding; Copies to bind; Material; Date sent to bindery; Color; Binding title)		√	√			
☐ Scans the database to identify bindable issues	√		√		√	√
☐ Prints bindery forms	√				√	√
☐ Enables bindery check-in with integrated circulation record creation	√	√	√		√	√
▪ Electronic Journals						
☐ use patron validation and giving the library control over which patrons have access to this information	√	√	√	√	√	√

➢ Web OPAC						
☐ Single Sign-on	√	√	√	√	√	√
☐ Advanced Keyword Searching	√	√	√	√	√	√
☐ Cascading Style Sheets (CSS)	√	√	√	√	√	√
☐ Color, content, display, and icon flexibility	√	√	√	√	√	√
☐ Customization with typical Web editors	√	√	√	√	√	√
☐ Inbound RSS feeds	√		√			√
☐ Lightweight Directory Access Protocol (LDAP)	√			√	√	√
☐ MARC and MARC 21	√	√	√	√	√	√
☐ MARC-to-XHTML and RSS-to-XHTML conversion	√		√		√	√
☐ Patron Ratings	√				√	√
☐ Real-time updating	√				√	√
☐ Related Searches	√		√		√	√
☐ Unicode support	√	√	√	√	√	√
☐ XHTML XML and XSL Z39.50 broadcast searching	√				√	√

	A	B	C	D	E	KOHA
➢ Report statistic generation						
☐ loan activities	√	√	√	√	√	√
☐ patron activities	√	√	√	√	√	√
☐ fines	√	√	√	√	√	√
☐ collections (amount; damage; missing, etc)	√	√	√	√	√	√
☐ financial	√	√	√	√	√	√
☐ acquisition (ordering; invoices, etc)	√	√	√	√	√	√
☐ comprehensive and flexible report-writing function that supports library-staff generation of reports	√	√	√	√	√	√

2. Technical Information						
▪ Operating System						
☐ MAC	√		X			√
☐ UNIX	√	√	X	√	√	√
☐ LINUX		√	√	√	√	√
☐ WINDOWS	√	√	√		√	√
▪ Programming Languages						
☐ XML	√	√	√	√	√	√
☐ XHTML	√	√	√		√	X
☐ JAVA	√	√	√		X	X
☐ Database Options (does it needs 3rd party database or else)	X		√	√	√	√

	A	B	C	D	E	KOHA
▪ Industry Standards						
☐ NISO/ISO,	√	√	√	√	√	√
☐ Z39.50	√	√	√	√	√	√
☐ EDI	√	√			√	X
☐ NCIP	√	√			√	X
▪ Hardware						
☐ Servers	√	√	X	X	√	√
☐ Kiosk			X	X		√
☐ Self check machine	√		X	X	√	√
☐ RFID gateway	√		X	√	√	√

3. Interface(Community)						
☐ User friendly or not	√	√	√	√	√	√
☐ Comprehensive links	√	√	√	√	√	√

4. Miscellaneous						
☐ Barcode Labeling	√	√	√	√	√	√
☐ Spine Labeling	√	√	√	√	√	√
☐ RFID interface	√	√	√	√	√	√

*PRICING CRITERIA ARE ONLY BASED ON QUOTATION AVAILABLE	A	B	C	D	E	KOHA
5. Pricing						
☐ Basic modules of the library management system	N/A	N/A	√	√	X	X
☐ Training charges	N/A	N/A		√	√	√
☐ License statement	N/A	N/A	√	√	√	X
☐ Additional modules (optional)	N/A	N/A	√	√	X	X
☐ Data migration	N/A	N/A	√	√	√	√
☐ Installation and maintenance charge	N/A	N/A	√	√	√	√
☐ Other hardware/software, if requested (i.e. web server, client workstation, barcode scanner, operating system and etc.)	N/A	N/A	√	√	√	√
• Maintenance charges						
☐ Labor charges for installation, on-site visit.	N/A	N/A		√	√	√
☐ Cost of parts replacement	N/A	N/A	x			√
☐ Cost of system upgrade	N/A	N/A	√	√	√	X
☐ Cost of phone/email services	N/A	N/A				X
☐ Free operation manual(s)	N/A	N/A	√			X
☐ Upgrading time frames	N/A	N/A	√			X
☐ Technical support	N/A	N/A	√	√	√	√

6. Performance						
☐ Maximum records can be efficiently process						1
☐ System response time						2
☐ Storage capacity						3

7. Interface						
☐ User friendly or not	√	√	√	√	√	√
☐ Comprehensive links	√	√	√	√	√	√

8. Security						
☐ Virus protection.						√
☐ Firewall solution.						√
☐ Intrusion detection.						X
☐ Software security updates procedures						√

9. Miscellaneous						
☐ Barcode Labelling			√	√	√	√
☐ Spine Labelling			√	√	√	√
☐ RFID interface			√		√	√

LEGEND
1 = 10 MILLION RECORDS
2 = OPAC 2 SEC, ADMIN 2.25 SEC
3 = 10 MILLION RECORDS

07/07/2010 (Wednesday)