

The UP iLib : An In-House Developed Integrated Library System

by
Salvacion M. Arlante

Abstract

Provides background information on the justification of the development of iLib, a computerized library system for the University of the Philippines System and traces efforts of all stakeholders: the university administration, computer programmers and engineers, and librarians of the university to develop an integrated/distributed library information system using open source tools and applications that would, in the final analysis, prove to be economically advantageous to the university. Describes the system's hardware requirements, distinctive features and the six web-based application modules, namely, circulation, cataloging, Web OPAC, serials management, acquisitions and administration. Also provides additional information on the University Library's other efforts at modernizing its resources, facilities and services accessible to the UP System.

Introduction

The library of today has undergone a major shift from traditional to sophisticated processes and services mainly through the application of new information and communications technologies. The Internet, the World Wide Web, the computer and other information and communication technologies. The University Library's mission is to provide library users the best possible access to information in support of instruction, research and extension; and the best possible information services through the use of new ICTs as applied to libraries. The University Library has developed its resources and designed its services based on this mission.

*Paper presented at the 1st REPS Research Colloquium at the UP NISMED Auditorium, University of the Philippines Diliman, Quezon City on 22 February 2008.

Arlante, S.M. (2008). The UP iLib : An In-House Developed Integrated Library System. *Journal of Philippine Librarianship*, 28, (1), 78-89.

The University of the Philippines Library System (UPLS)

The UPLS is a network of libraries located in seven campus universities, each of which has a Main Library and several college or unit libraries managed by a University Librarian and staffed by professional librarians.

The University of the Philippines Diliman Library

UP Diliman is the flagship campus. The University Library Network of UP Diliman has a Main Library and 33 College/Unit Libraries. As the University Library of the flagship campus, it coordinates the implementation of policies on collections development, services, and new information and communication technologies as applied to library processes.

Implementing ICTs in the UP Libraries

The University Library started automating its operations and services some 20 years ago with a lowly-stand alone computerized catalog using the **UNESCO software CDS/ISIS** that is given free to developing countries. In 1994-1995, the libraries of the College of Science and College of Engineering received a grant from the Department of Sciences and Technology-Engineering and Science Education Project (DOST-ESEP). As a component of the project, a new library system software called TINLIB was acquired with the end view of networking the library resources of seven (7) universities. Despite the struggle the libraries in the project encountered in running the system during the first two years the circulation module was successfully implemented in February 1997. Toward the end of the decade the system was upgraded incorporating the suggestions made by the participating libraries. The new version was renamed T-Series which enhanced the loan process and improved the other information management functions of the earlier edition. However, when it was established that the vendor of the system has closed shop and has merged with another company, the member libraries decided to scout for other systems that would suit their respective needs and requirements.

The UP iLib: an in-house developed integrated library system

There are other problems that confronted the users of the system. These are:

1. *Technical Development and Vendor Stability.* A major factor considered in the replacement of T-Series is the discontinuation of its development and the closure of the vendor's company. Its capabilities have become

The UP iLib : An In-House Developed Integrated Library System

limited to meet new demands of users. Likewise, the existing hardware and operating system to support the T-Series are no longer compatible. There is no available technical support in the University that could provide for updating or upgrading of the system.

2. *Networking*. Since T-Series is DOS-based, its access on the Internet via Telnet slows down the connection to online catalogs. Faculty and students demand a more accessible connection to any library's online system.
3. *Expansion of Databases*. Adding other databases to the online system including periodical indexes, full-text databases and locally produced-databases requires expanded hardware facilities and new or upgraded software. This is considered costly. And so, the T-Series had to go and the College of Engineering and the College of Science had to discontinue using the system and shifted to Maelisa, which was acquired in 1999 by the UP Diliman University Library. This software enabled the university library not only to expand automation of most if not all of its operations but also to network the many libraries under its wings.

The MAELISA Software

The library software that has been used until 2007 at the UPD Libraries is named **Maelisa**, a Korean developed software and refined by the University Library's Technical Team. It is an **integrated library system** that features 5 client-server application modules (acquisition, cataloging, circulation, serials management, OPAC) and a Web OPAC. It runs on Windows OS and uses Oracle as its Relational Database Management System (RDBMS) backend.

It has the following unique features: MARC compatibility, Z39.50 compliant, automatic shelf-list card generation, automatic overdue notification, online bulletin, Selective Dissemination of Information (SDI) services, Electronic Data Interchange (EDI) services, support for multimedia files, and links to online resources.

However, there are serious issues that plagued the Maelisa and the other vendor developed systems:

1. The centralized design becomes a liability when the central server goes offline because the rest of the libraries in the system will not be able to operate. Should the network equipment connecting the

-
- Main Library to other libraries go offline, the entire library operation ceases.
2. Maelisa and the other vendor developed systems may not be compatible with current systems such as Student Records Systems (SRS) and Faculty Information Systems (FIS) as well as Lightweight Directory Access Protocol (LDAP) server of UP, to name a few; and
 3. Maintaining Maelisa and the other vendor developed systems are deemed costly. The University incurs an annual costs paid to vendor, and licenses for Windows OS (for both in the Main Library terminals as well as the other libraries) to an estimated US\$ 10,400.00 a year).

These issues prompted the University Library to push for the design and development of a distributed library information system using Open Source tools and applications. This system, to be developed, should be able to address the issues concerning Maelisa and the other systems. The iLib Project became the offshoot of this concern. The University System and UP Diliman administration supported the University Library by creating committees to design the iLib and allocating funding thereof. Thus began cooperative efforts among UP administrators, computer programmers, computer engineers, and librarians to develop a library information system that caters to the specific needs and requirements of UP libraries and their varied clients.

The iLib Project

Pursuant to a memo from the Chancellor, the University Library, in cooperation with the UP Computer Center, Office of the Vice Chancellor for Academic Affairs, and the College of Engineering Library started the development of an integrated library system using open source tools and applications for UPD, known as **iLib**. Migrating to open source software will save UPD \$10,400.00 per year on licenses and annual maintenance costs. The UP Integrated Library System (**iLib**) is a web-based integrated library system using Open Source technologies to cater to the specific needs of all Diliman libraries, and eventually, all UP System libraries. As compared with previous library systems implemented in the different library units, this system integrates all library processes, is portable and configurable, accessible anytime and anywhere, more reliable and secure, more manageable, minimizes data redundancy, more user-friendly and can be remotely managed.

The UP iLib: an in-house developed integrated library system

To design and develop a distributed library information system using open source tools and applications for UP Diliman, two committees were created by then Chancellor Emerlinda R. Roman on 29 June 2004. The iLib project, has an Advisory Committee chaired by then VCAA Amelia P. Guevara, and a Technical Committee chaired by then UP Computer Center Director Rommel P. Feria.

Operating on a budget of Php791,000 for 2004, the Technical Committee started developing the iLib on 15 July 2004 and was piloted in June 2005. Pertinent needs and requirements of the UP Diliman offices were gathered through the iLib Development Project Survey. Some features expected of the iLib are the capacity to make inventory and periodical indexing, including newspapers.

The iLib has six web-based application modules, namely: circulation, cataloging, Web OPAC, serials management, acquisitions and administration. Its most distinctive features are: 1) it is portable, that is, it can run on any platform (Windows, Linux, Mac), 2) implemented using clustered database architecture providing redundancy and security of the data files and minimizing downtime that may be caused by hardware failures, etc., 3) fully MARC-compliant so that records can be interoperable with other library systems using MARC standard.

With a clustered structure, the whole system will not be down if one server is down. Transactions will also be synchronized between local cluster servers and the central server. Some innovations of the iLib are: capability to print receipts for library transactions; generate new acquisitions list and statistics of holdings in real time; online reservation of books; and customizable user groups and privileges.

The system is interfaced with other online services of the University, such as: Web Mail, Computerized Registration System (CRS), Faculty Information System (FIS). The system has been deployed at the Main Library as the central server and at other libraries in Diliman and system libraries. Later, the system can be deployed in clusters with one library as a site server for each cluster. These clusters are:

1. Business Administration (server site), Economics, Law, Asian Center, Institute of Islamic Studies;
2. Engineering (server site), Architecture, Statistics, NCTS, Human Kinetics, AIT;

3. Mass Communication (server site), Music, Center for Women Studies, Social Work and Community Development;
4. Public Administration (server site), Urban and Regional Planning, Institute of Small Scale Industries, Center for Integrative and Development Studies, Film Institute;
5. Science (server site), Marine Science, Geological Studies, Engineering Satellite, Technology Management, Mathematics;
6. Fine Arts (server site), NISMED, Population, Third World Studies, Archaeological Studies, Arts and Letters, International Studies, Vargas Museum, Architecture;
7. Main Library (server site), Education, Home Economics; UP Integrated School;
8. UP Extension Program in Pampanga.

Summary of Features Already Available/Implemented

General Features:

- A fully integrated library system with modular components using Open Source tools and methodology;
- Portable – runs on any platform (e.g. Windows, Linux, Mac OS);
- Web-based – requires only java-enabled web browsers;
- Interfaces with other University Services (e.g. CRS, FIS, Webmail);
- Catered to the specific needs and requirements of UP libraries.

Application Modules:

Acquisitions Module

- Facilitates processing and monitoring of new acquisitions (OOF/IPF);
- Facilitates management of budget;
- Allows addition and update supplier information;
- Incorporates a simple search facility;
- Provides facility for importing MARC records;
- Interfaces with Cataloging module for easy transfer of records upon arrival of items;
- Offers customizable reports ready for printing.

Cataloging Module

- Fully MARC 21 Compliant (US MARC - ISO 2709);
- Facilitates copy cataloging by simple “copy & paste” operations of MARC

records from other online catalogs (e.g. Library of Congress Online Catalog) or CD-ROM databases (e.g. OCLC Cat CD for Windows and ITS for Windows);

- Provides import and export facility for exchange of MARC records;
- Provides an easy way of cataloging any type of material (e.g. monographs, articles, multimedia);
- Caters for cataloging multiple copies of individual titles, which may be shelved in one or multiple locations;
- Interfaces with Acquisitions module;
- Provides customizable reports ready for printing (tabular and graphic reports).

Circulation Module

- Provides all major circulation services (e.g. check-out, check-in, and renewal);
- Facilitates easy transaction using barcodes and barcode scanning equipment;
- Completely customizable library privileges for users and user groups;
- Generates statistical reports of transactions (e.g. loaned items, overdue, usage);
- Facilitates the generation of delinquent borrower list at the end of each semester;
- Provide alerts and notification for overdue items thru email;
- Offers printing of electronic receipts for recent transactions upon user's requests;
- Offers automatic computation of overdue fines.

The UP iLib: an in-house developed integrated library system

Web Opac

- Offers a robust search engine using full-text indexes;
- Provides advanced search options, such as Boolean searching, field searching, search by material type, date range, etc.;
- Allows sorting of search results
- Allows book marking of records using virtual "book carts" where users can store marked records for saving, sending to an email, or printing at a later time;
- Allows on-line reservation of circulation materials;

- Interfaced with circulation module providing “real-time” status of materials (e.g. on loan, on shelf, in process, in reserve section);
- Allows users to post request for acquisition of new titles, referred to as “recommend a title”;
- Provides up-to-date list of the library’s new acquisitions, referred to as “featured list”;
- Allows user to view their status and latest transactions (e.g. loaned items, overdue, returned), referred to as “electronic library card”;
- Provides an up-to-date list of most borrowed items;
- Includes an interactive Tutorial;
- Provides feedback form for posting comments, suggestions, requests, etc.

Serials Management

- Provides easy management of serial titles and holdings;
- Incorporates a simple search facility;
- Facilitates monitoring of issues, losses, claims, etc.;
- Offers full article indexing for newspapers, magazines, journals, etc.;
- Interfaces with OPAC module;
- Provides customizable reports ready for printing.

Administration Module

- Provides administrative tools for system maintenance;
- Facilitates management of look-up tables, system configuration, scheduled services, etc.;
- Facilitates management of users and groups, privileges and security.

Other Features of a Modernized University Library

The Website

The UP Diliman University Library’s website can be accessed thru the URL <http://www.mainlib.upd.edu.ph>. It serves as a gateway to all the library’s online resources and services. Featured are: information about the library, a short historical background, rules and regulations, a list of its publications, online resources in all formats (online catalog, links to electronic resources), bibliographies, visitor’s area, bibliographic utilities and tools used for cataloging and classification purposes, including MARC 21 and links to the University of the Philippines college, school and institute libraries, including national,

The UP iLib : An In-House Developed Integrated Library System

regional, and international web pages and/or databases (Philippine e-Lib, LibraryLink, Filipiniana.net, UP Diliman Journals Online and a Librarian's Internet Index to various websites).

The **Web OPAC** serves as a portal providing access to the UP Diliman-wide (33 College/Unit libraries and the Main Library) bibliographic resources that can be searched by author, title, subject, series, call number, keywords, or a combination of these fields. Search can be further limited by format of material, as well as specific date range. The search result produces a short list of relevant materials with indication of formats such as book, thesis, microforms, optical discs, etc. Details of each record can be viewed in Full Record or MARC formatted display providing complete bibliographic information, as well as availability information, such as number of copies available, location, and circulation status in "real-time". Search results can either be printed or sent via e-mail. The Web OPAC is updated regularly.

The website also links on-site and off-site users to various electronic resources such as subscribed and open-access e-journals and e-books. The University Library also offers system-wide access to 21 electronic databases with customized WebFeat federated search engine and EBSCO's A-to-Z serial finding-tool. EBSCO's A-to-Z provides a single, comprehensive online list of titles to which the University has access to. With A-to-Z, users can quickly locate and link to journals of interest. Users can search for journals by keyword or browse an alphabetical list by title or subject.

WebFeat provides a simple, single search interface to all of the University Library's online resources including library catalogs, subscription databases as well as free resources. Library users can enter one or two keywords and search all, some or any of the electronic databases available at once. Previously, library users can search one electronic database at a time. Access to electronic databases is available within UP campus only. Search results can be displayed according to database, relevancy-rank, author, title and date. WebFeat, an easy and efficient federated search tool, offers option to save, print and email results or hits.

The visitor's area features a library forum wherein web users can express opinions, provides suggestions concerning library services. It can be used as a venue for discussions among librarians and web users.

The UP iLib: an in-house developed integrated library system

Other On-line Databases

The UP Library also maintains the following on-line databases. Links to these databases are provided at the library's Web page.

1. **National Geographic Search.** This is a searchable index of recent monthly features of the National Geographic Online covering the years 2000 – present.
2. **UP Filipino Language Resource Center.** This is a bibliographic database consisting of three major parts: materials on or about the Filipino/Tagalog/Pilipino language, materials on or about the 10 major Philippine languages, and materials on or about the different disciplines not traditionally taught in Filipino.
3. **An Annotated Bibliography on President Manuel A. Roxas.** This is a database on a former president of the Philippines consisting of: a) works by Manuel A. Roxas – his books, speeches, addresses, messages and statements, both published and unpublished; and b) works on or about him compiled from various sources in 9 local and 13 foreign libraries and institutions. A subject index with annotations comprises the bibliography in print. Scanned images of selected materials have been added to the bibliography in electronic format as a distinctive feature.
4. We have developed other online systems. First is the **Index to Philippine Newspapers (IPN).** The IPN is U.P. Main Library's index to ten (10) locally published newspapers. The index, which started in 1981, was originally a guide to the following newspapers: Manila Bulletin, Philippine Daily Express, Manila Chronicle, Philippine Daily Inquirer, Philippine Star, Malaya, Manila Times, and Times Journal. Data were originally written in 3x5 slips, arranged alphabetically by subject of popular local newspapers covering the years 1981 – present.
5. The second is the **Annotated Bibliography of Philippine Languages and Linguistics**, a cooperative project of the UP Library, the Komisyon sa Wikang Filipino and the National Commission for Culture and the Arts.
6. The third is the **Philippines Studies on Culture and Society**, a project of the UPCIDS, Department of Sociology (CSSP) and the University Library, is a database that compiles studies in Philippine Culture and Society. It contains more than 10,000 bibliographic records of books

and articles in books, periodicals or journals as well as theses and dissertations, microforms and other non-print materials. It is a database that may be consulted for sources on the personality, culture, psychology, history, world view, and national characteristics of the Filipino. It also contains materials on the sociological, anthropological, economic and political aspects of the Filipino personality.

The Philippine eLib

The UP Library helped initiate and implement the Philippine eLib Project, a national information resource-sharing consortium among five government institutions, namely the Department of Science and Technology (DOST), Commission on Higher Education (CHED), Department of Agriculture (DA), the National Library and UP Library System.

To attend to the University's commitment to the project, a UP Committee on eLib was constituted, chaired by Assistant Vice President for Development Jaime D. L. Caro with UPD University Librarian Salvación M. Arlante as Vice Chair. Dr. Caro is a member of the Steering Committee of the Philippine eLib; while Ms. Arlante is Team Leader of both the Business Team and Collection Development Team.

The project integrates in a single portal all the library and information collections of the participating agencies utilizing the existing infrastructures of the DOST, the PREGINET (Philippine Research, Education and Government Information Network) and the VSAT (Very Small Aperture Terminal) of the National Information Network (NIN) of the Department of Agriculture. It is envisioned that by integrating these collections, a critical mass of library and information resources would be made available to the Filipino people from all walks of life, thus leveraging access to these information resources for their lifelong learning, research purposes, and for various purposes. Researchers anywhere in the archipelago could access the vast literature on their subject of study in any Internet café or Phil eLib kiosk in their vicinity or even at the comforts of their homes, as long as they have Internet facilities. In other words, a student from a far flung area of the country would have access to the same information as his counterparts in Manila. Likewise, a farmer in the remotest barangay would have access to the same online resources which could otherwise be available only to the citizens in the city.

Conclusion

The University Library has succeeded in its modernization program due to tremendous support given by the University of the Philippines Central Administration whose thrust is towards modernizing the University's laboratories and learning facilities and nurturing science and technology as a discipline. Networking became a reality with the installation of **fiber optics** connecting all buildings, offices and libraries in the Diliman campus. It also helped that the University Library has deeply rooted linkages with national and regional library organizations, national government agencies, regional and international consortia. These have resulted into a service that provides information from within and beyond its walls, and not only to UP constituents, fellow countrymen but also to foreign users. Such services have widened through the extension of library services till midnight. The application of information and communications technology in the university has strengthened our capabilities to provide quality information services. This is exemplified by the successful design and implementation of iLib, an integrated library information system that is truly owned by the University.

have greatly influenced library and information management and services, especially in terms of the provision of more efficient and effective reference and other library services, including availability of resources on-line which have increasingly become networked, thus providing easy access even to distant users.