

**MALAYSIA THESES ONLINE (MYTO):
AN APPROACH FOR MANAGING UNIVERSITIES
ELECTRONIC THESES AND DISSERTATIONS**

By

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ABSTRACT

MyTO is an electronic theses dissertation (ETD) initiative to manage the collection of theses and dissertations of public universities in Malaysia. MyTO was established at the end of 2005 to be a central repository of Malaysian theses and to share the collection of theses between academic libraries in Malaysia electronically. MyTO uses the open source approach to develop a retrieval system. To realize the theses central repository, data conversion strategies were outlined and adapted the Dublin Core interoperable metadata standard in managing its resources for more flexibility in sharing the metadata across multiple systems. MyTO provides easy access and retrieval through search engines that retrieve accurate search results by simple search, combination of Boolean operators, full-text search and provide the browsing feature. MyTO also provides several format of theses access for the user such as abstract, 24 pages full-text and complete full-text.

INTRODUCTION

In the era of mid 90s, the rapid advancement of information technology had created an information access and retrieval innovations in supporting the phenomenon of information explosion worldwide. This transition has led to the drastic changes to the theses and dissertations management in the academic libraries in Malaysia where the hardcopy theses have been digitized into the electronic format and stored in a CD-ROM. The storage and management of theses using CD-ROM is an enduring and safe means to preserve the existence of theses collection for a long period of time.

The emergence of Internet technology had led to another obvious changes and progresses to the access of theses collection in the local academic libraries around 1995. With the availability of networks that connect the libraries to Internet, the access scope of theses collection becoming wider and opened.

Access and demand to the theses collection has extremely increasing among the academicians where they do not have to regularly visit the library to view the theses content in order to fulfill their information requirements. The accesses to the theses content are done through the remote terminals and computers anywhere, anytime and without any restrictions within the campuses.

With this progress, access to the theses collection has been expanded as well as encouraged the information resources sharing among the academicians and the

librarians. This scenario has indirectly established an idea of theses and dissertations information sharing between the local university libraries through online where previously for a long time it has been practiced manually using the ILL services between libraries. The access to the theses collection through online would increase the utilization of theses to support the research and development activities as well as to cultivate the culture of resource sharing.

ETD initiative by PERPUN (MyTO)

Persidangan Perpustakaan Universiti dan Perpustakaan Negara Malaysia (PERPUN) commenced the development of theses and dissertations management system in mid 2005. This project was participated by all of the local university libraries and three of the local private university libraries (MMU Library, UNITEN Library and UTP Library) under PERPUN. A committee was established to realize the development of theses management system which led by MMU Library.

The system was named as Malaysian Theses Online (MyTO). The objectives of developing this system are to manage, to store, to preserve and to share the local universities theses collection into a centralize repository to facilitate the item access by the university community.

The MyTO Project was formed into three main phases which were system development phase, metadata conversion phase and content management phase. The system development phase took six months of development and completed in early 2006.

The second phase started just as the completion of the first phase. It involved the processes of converting the theses metadata from the library management system database into the MyTO system. This process includes downloading the theses metadata from the library system database and uploading the metadata into the MyTO database.

The third phase which has been started by several libraries is to upload the full-text theses content into the MyTO system which implementing the concept of content management.

As of this writing, MyTO consists of 19325 titles of theses which were contributed by 21 university libraries in Malaysia. It was a tremendous achievement to MyTO where in the early stage there were only 300 titles submitted to MyTO in early 2006. MyTO was officially launched on 9th February 2007 with the launching of **MyUniNet** which has been a gateway to online information resources for the universities in Malaysia

Open Source Approach

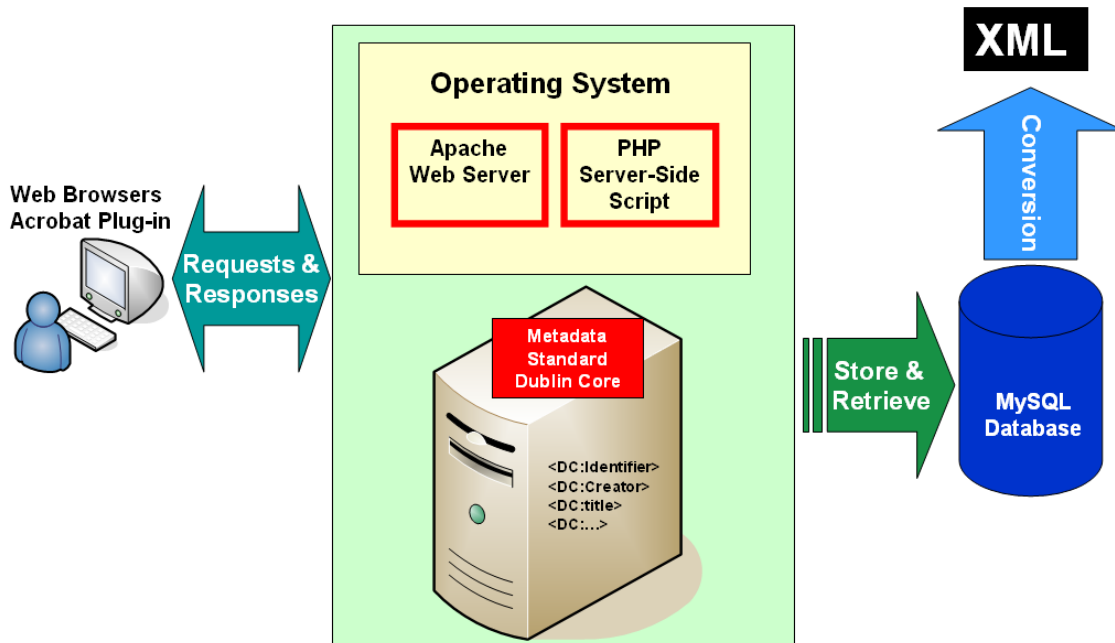


Figure 1: MyTO Architecture

MyTO was developed using the open source software (OSS). This approach has brought to the use of free software which includes the use of PHP programming language for system development and MySQL database management system to store the theses metadata. PHP is a reflective programming language originally designed for producing dynamic web pages and is used mainly in server-side scripting. MySQL is the world's most popular open source database because of its consistent fast performance, high reliability and ease of use. MyTO runs on the reliable Apache web server that has high security features, stability, fast and robust in providing access to the users worldwide. Apache has been the most popular web server on the Internet since April 1996.

Standard Metadata Adaptation

Metadata is data about data or commonly called information about information. Metadata is structured information that describes the resources in order to facilitate the access and retrieval effectively. Commonly most libraries use MARC 21 standard to keep the data of the information resources in the library management system.

To manage the theses information, MyTO has adapted metadata standards which allow interoperability between various systems. Interoperability is the ability of multiple systems with different hardware and software platforms, data structures and interfaces to exchange data with minimal loss of content and functionality.

Based on the 15 Dublin Core Element Set, the MyTO data structures were designed according to the standard and store in a database which is more practical to manage

textual and non-textual resources as well as to support easier maintenance and sharing of metadata. The metadata is separated from the resources and kept in a database that can be accessed through a web browser by parsing them into the XML format.

Extensible Markup Language (XML) is a general-purpose markup language. It is categorized as an extensible language because it allows its users to define their own tags. Its primary purpose is to facilitate the sharing of structured data across different information systems, particularly through the Internet.

Data Conversions and Metadata Maintenance

Interoperability is the most important factor that was considered in developing and structuring MyTO metadata schema. Metadata received from 21 university libraries were checked and filtered to suit with the metadata schema. Entry templates were designed to facilitate the process of data conversions.

At the initial stage, the data conversion for all university libraries was done by MMU Library. Each of the libraries submitted the metadata in comma delimited (*.csv), excel (*.xls) or in XML (*.xml) format. The complete metadata was uploaded into the database in batch.

To ensure the accuracy of metadata, each university libraries has to check the metadata content before and after the data has been transferred and uploaded into the MyTO database. Authenticated Librarians can always login into the system remotely and do corrections anywhere and anytime. This factor makes the MyTO administration system more flexible in terms of metadata entry and maintenance.

Back-up is another important factor to sustain the availability of metadata for a long period of time. Metadata back-up process is done everyday by the system administrator to ensure the existing of the metadata forever for future reference and heritage.

MyTO System Features

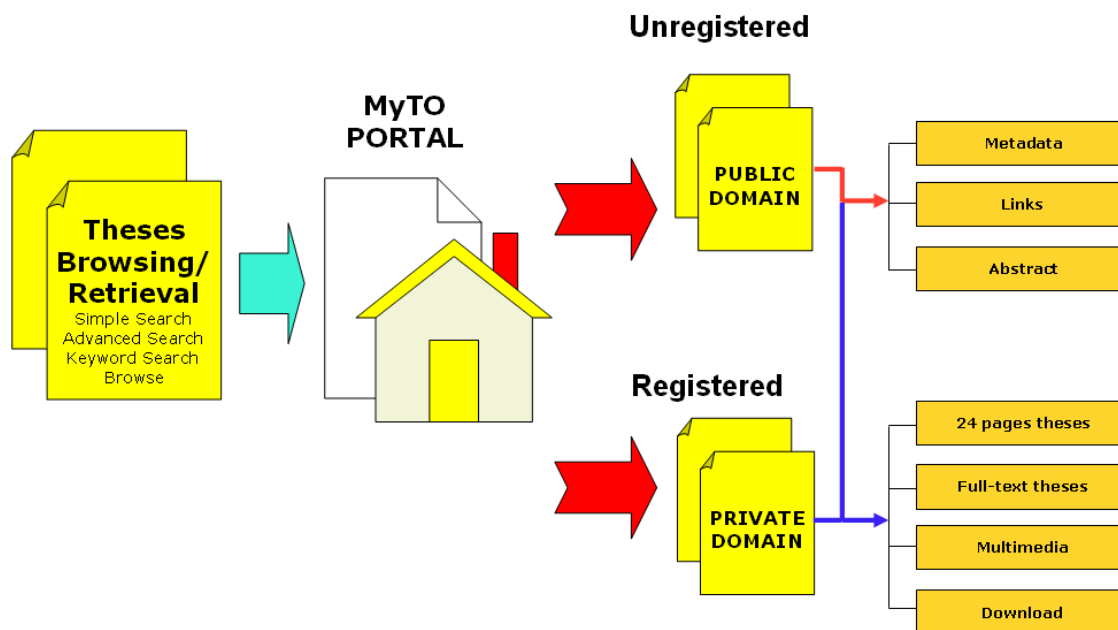


Figure 2: MyTO System Features

MyTO system has simple basic features to retrieve the information resources electronically. To facilitate the users searching for resources, MyTO has provided several of searching techniques such as simple search, advanced search, keyword search and browse items by location. The simple search query uses DC title and author/creator elements to retrieve the complete metadata resources. It is a basic technique to search for information in MyTO and reaching the actual resources.

The advanced search query uses a combination search criteria that has Boolean search capability to retrieve more precise searching results. It is a powerful and fast combination query done by the MyTO search engine. The search also can limit the query by specifying the range of publication years to get more specific results. MyTO also provides keyword search query

Users can view the complete metadata and abstract to get an overview of the resources. MyTO also provides the users with a 24 pages which enable the indexed keywords in DC elements are searchable to display more relevant resources.

To facilitate the users MyTO also provided a browsing feature which specifying the locations of the resources availability. It assists the users to identify the locations of the theses by listing the university name and its current total collection. theses access in PDF format before viewing the full-text (PDF) version of theses. Normally a 24 pages theses size is smaller and faster to download and view.

Since MyTO opened the access to the universities community, there has been a tremendous increasing of access to the MyTO page. There have been requests to view

the 24 pages and full-text document theses between the library members as well the publics including the corporate and government bodies. This scenario has made MyTO becoming as a centre of information resources to support the academic research for the universities in Malaysia as well as supporting the research and development for private sectors in leading towards innovations.

This significant impact has indicated to us the importance of having an online centralized repository of theses and dissertations that facilitates users' information seeking anytime and anywhere.

RECOMMENDATIONS

MyTO has established for almost two years and having excellent achievements in supporting the research activities for the universities. There have been many innovations over the existing information retrieval systems nowadays. Now it's time for PERPUN to enhance the MyTO system features in terms of hardware, software, concept, access modes, searching capability, interfaces, and integration with other systems.

The hardware should be upgraded to higher specifications for faster access, reliability, robust and stable. The software has to be upgraded to the latest version to prevent bugs, unauthorized access and external attacks as well as compatibility with current operating system software. The concept should be revised to accommodate the current information requirements and to adapt with the new concept of managing metadata. The access modes have to be variety including accessing via wireless broadband and mobile environment such as EDGE and 3G technologies.

Searching capability should be redesigned to include the taxonomy features to facilitate the access and browsing of resources comprehensively. System interfaces have to be redesigned to more user-friendly looks and navigations that speed-up the retrieval of information. Integration with other system software should be researched and deployed such as integration with e-commerce software, knowledge management system, and artificial intelligence

CONCLUSION

The ETD initiative by PERPUN to develop a system for managing theses and dissertations can be seen as a transition period for the local academic libraries in Malaysia in terms of resource sharing practice. We can imagine the impact of having a central repository that can serve the university communities in order to produce a quality research and to support teaching and learning as a whole. We also can discover the quality researches done by the scholars who brought significant impact to the nation growths and progresses. Lastly we can turn MyTO becoming a central repository to the world as a reference site for the Malaysian heritage.

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