

Adopting Dublin Core with Modifications: Challenges and Requirements to Develop a Standard Metadata for UM Memory

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ABSTRACT

UM Memory was initiated by the University of Malaya Library to build up digital photo collection. It was officially launched by Royal Professor Ungku A. Aziz on 22 September 2011 and his historical photo in the University was the first online exhibition displayed in UM Memory. The purpose of this initiative is to make the Library photo collection accessible to the public through complete metadata. Metadata of the item must be informative in order to capture the digital user's interest. Several challenges have been faced by the librarians because no standard has been recorded as a guideline since this project was the pioneer project for historical images repository in the University of Malaya. This paper presents the steps taken by the librarians to produce a proper metadata standard to be used in UM Memory. It compares few established metadata from several institutions worldwide and also discusses the significance of excellence pledge for metadata. Several considerations need to be highlighted to confirm the metadata can represent the images in the portal effectively.

Keyword: University of Malaya; UM Memory; University of Malaya Library; Metadata; Repository

1. Introduction

University of Malaya Library (UML) has initiated 3 digital repositories and each repository has its own dedicated functions. These 3 repositories are University of Malaya Research Repository (UMRR), University of Malaya Students Repository (UMSR) and UM Memory. Both UMRR and UMSR are handling data in text format and its contents are very useful for teaching, learning and research. UM Memory on the other hand, keeps data in image format and its content is very precious in terms of its historical and heritage values for the University of Malaya.

TABLE 1
University of Malaya Library Repositories

ATTRIBUTES	UMRR	UMSR	UM Memory
Content	Published and unpublished research work produced by the UM researchers	The written work of University of Malaya students such as academic exercises, dissertations and theses	Historical photo collection of the University of Malaya
Format	Text	Text	Image

As the oldest University in the country, the history of its establishment and its successful paths should be able to be tracked back in whatever type of record. UM Memory is able to perform this role by supplying those historical records in images format. In performing its role, the quality of information offered in UM Memory should be at certain level to reflect its reliability and credibility. Therefore, a standard metadata should be adopted as a guideline to ensure that UM Memory conforms to common criteria used in evaluating the metadata quality.

This paper focuses on efforts made by librarians in adopting Dublin Core (DC) metadata with the concern of completeness, accuracy and consistency metadata displayed in UM Memory repository. This paper also discusses on criteria used as guidelines for evaluating metadata quality in general. In addition, it selects few institutions to compare their practices with UM Memory practice.

2. Definition of Metadata and Dublin Core

Metadata is “structured data about data” (Dublin Core Metadata Initiative, 2011). According to National Information Standards Organization (2004), metadata is structured information that describes, explains, locates, or otherwise makes it easier to retrieve, use, or manage an information resource.

Dublin Core (DC) is a metadata schema that arose from an invitational workshop in 1995. DC is made up of 15 metadata elements that offer expanded cataloging information and improved document indexing for search engine programs (Kurtz, 2010). The basic DC elements are:

1. Title - the name given the resource
2. Creator - the person or organization responsible for the content
3. Subject - the topic of the content of the resource
4. Description - a textual outline of the content
5. Publisher - those responsible for making the resource available
6. Contributor - those who added to the content
7. Date - when the resource was made available
8. Type - a category for the content
9. Format - how the resource is presented
10. Identifier - numerical identifier for the content such as a URL
11. Source - where the content originally derived from
12. Language - in what language the content is written
13. Relation - how the content relates to other resources
14. Coverage - where the resource is physically located
15. Rights - a link to a copyright notice.

All DC basic elements are optional and repeatable.

3. Background of the UM Memory Project

The University of Malaya is the oldest university in Malaysia that was established in 1949 by merging of the King Edward VII College of Medicine and Raffles College as

recommended by the Carr-Saunders Commission on University Education in Malaya to serve the needs of Singapore and the Federation of Malaya.

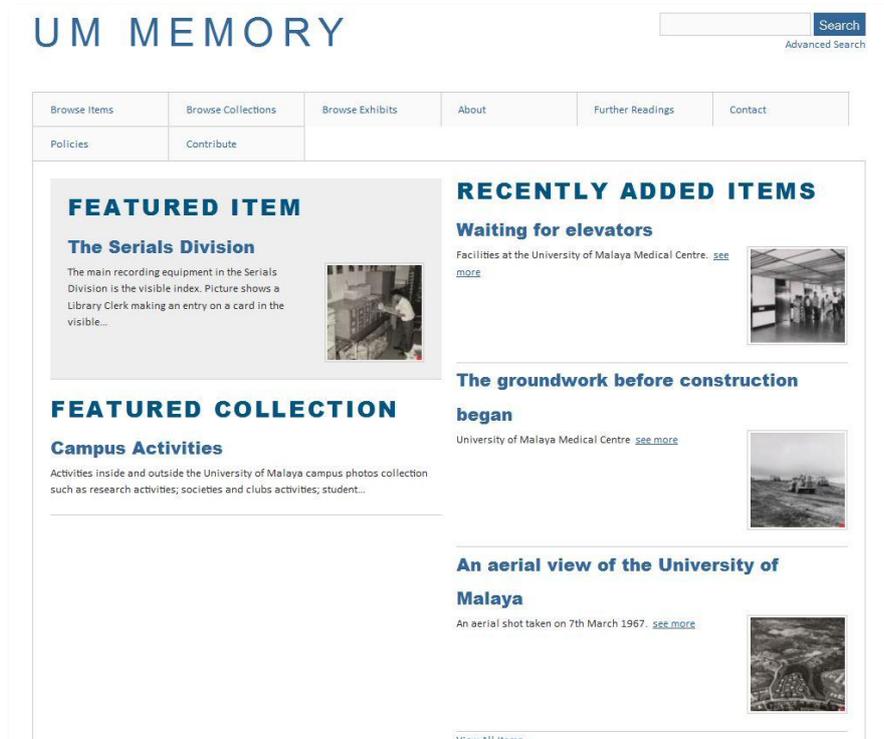
As the oldest University, there is a lot of University valuable treasures buried and need to be exposed. Among these valuable treasures owned by the University are in form of photos. UML takes responsible to preserve this treasure by beginning to collect and include those photos as part of its collection. UML's main objective is to keep all photos which reflect the history of the University since its beginnings in the King Edward VII College of Medicine in 1905 until recent days.

At the beginning, only physical materials are kept in the Archives collection. Nowadays, with the rapid growth in technology, the digital version is now taking over the print version. UML realized that all information about the University should be disseminated and made known to University community and public as well. As the result, UM Memory project began in 2005 led by Information System Division.

3.1 UM Memory Repository

The word UM Memory is stand for University of Malaya Memory. The memory on the past, current and future of the University will be made available in UM Memory repository. Using free and open source, OMEKA as a platform and Dublin Core metadata to describe the resource, UM Memory function is to develop photo collection for teaching, learning and research purposes; to provide access to the collection; to keep historical photos on the University; to preserve and conserve the photos.

IMAGE 1
Current UM Memory Interface



3.2 The Launching Ceremony of UM Memory

UML Management has decided to make UM Memory known to the public. The reason is to disseminate a new source of information that may benefit others. The launching ceremony was scheduled on 22 September 2011 and on this date UM Memory was officially launched by Royal Professor Ungku A. Aziz.

IMAGE 2
Royal Professor Ungku A. Aziz Launched UM Memory Repository



Royal Professor Ungku A. Aziz was a prominent figure in the University of Malaya. He was the first Malaysian Vice Chancellor of the University of Malaya and the longest serving person to hold the post. He served the University from October 1968 until February 1988. He is also known as Renaissance man.

IMAGE 3
Online Exhibition in UM Memory

As recognition to his devotion and contribution to the University and the nation, UML has decided to choose “The Renaissance Man” as theme for the exhibition. His glorious timelines including his photos was exhibited in UML exhibition hall and displayed online in UM Memory.

3.3 The Hands Over

At the beginning, UM Memory contents and system maintenance was under the supervision of Information System Division. A librarian was responsible to maintain its content and system.

In July 2014, UML Management decided to establish a special unit known as University of Malaya Archives Unit to maintain institutional repositories and archives collection of the University. Now, the University of Malaya Archives Unit is responsible for UM Memory contents while Information System Division is only responsible for system maintenance.

4. Requirements in Developing A Standard Metadata

UML has identified certain requirement needs to be considered before working on standard metadata and it is related to the quality of metadata. UML has to study on how to ensure the metadata displayed in UM Memory are high in quality.

As stated by Guy, Powell & Day (2004) that a definition that can be used in the context of metadata is high quality metadata supports the functional requirements of the system it is designed to support, which can be summarized as quality is about fitness for purpose.

UML has decided that a quality should be measured by certain criteria and matrices. Among the criteria and matrices; accuracy, completeness, and consistency are the most commonly used criteria in measuring metadata quality (Park, 2009). These three criteria are briefly discussed in UM Memory context by comparing the previous and the current practice.

4.1 Accuracy

Accuracy (also known as correctness) concerns the accurate description and representation of data and resource content. It also concerns accurate data input (Park, 2009). Librarians found several weaknesses in previous practice. Firstly, the same data value was repeated in two elements (e.g. Title element, for unknown resource, library barcode number was used as Title and it was used also at Identifier element). Second, inaccurate data entry traced because there were various individuals entered the data and there was a lack of quality control in checking back the data entered in the repository.

4.2 Completeness

According to Bruce and Hillman (2004), completeness does not mean that all the metadata elements in a given metadata scheme are used. The completeness of metadata description can be measured by full access capacity to individual local objects and connection to the parent local collection(s). This reflects the functional purpose of metadata in resource discovery and use. In UM Memory, the metadata elements are not

fully utilized to give as many information as possible about the resource (eg. only Title, Date, Format, Type, Identifier, Coverage elements was frequently used).

4.3 Consistency

Consistency (also known as comparability or coherence) can be measured by looking at data value on the conceptual level and data format on the structural level (Park, 2009). In other words, the consistency means the same data values or elements are used for delivering the similar concepts in the description of a resource. It also concerns on the same structure of format is used for presenting similar data attributes and elements of a resource. It was traced that the inconsistency in certain elements (e.g. Date, some data used format DD-MM-YYYY and others used format MM-DD-YYYY; Coverage, some data used Year, Place and others used Place, Year)

To sum up this point, librarian concluded that a standard metadata should be prepared to minimize the inaccurate, incomplete and inconsistent metadata description.

5. Adoption of Dublin Core in UM Memory

UML is using Omeka platform for UM Memory repository. Since Omeka comes with Dublin Core (DC), the Library has to adopt it with minor modifications. The discussion will only focus on photo collection.

5.1 Identification Process

The librarians try to adopt all 15 metadata elements from Dublin Core Metadata Element Set. In previous practice these elements are minimally utilized. Table 2 compares the previous and current practice on utilizing Dublin Core element set in UM Memory.

TABLE 2
Comparison between Previous and Current Practice in Utilizing DC Elements

No.	Name	Previous Practice	Current Practice
1	Title	/	/
2	Subject	X	/
3	Description	/	/
4	Creator	X	/
5	Source	/	/
6	Publisher	X	/
7	Date	/	/
8	Contributor	X	/
9	Rights	X	/
10	Format	/	/
11	Language	X	/
12	Type	/	/
13	Identifier	/	/
14	Coverage	/	/
15	Relation	X	/

(/ indicates used; X indicates not used)

5.2 Implementation Process

The librarians have to consider the criteria of metadata quality in preparing a standard metadata. After considering the criteria mentioned above, they have come out with a metadata standard prepared for UM Memory as shown in Table 3.

TABLE 3
Library Definition on DC Elements

Name	Library Definition	Comment
Title	<ul style="list-style-type: none"> Identified resource: the name of the resource Unidentified resource: University of Collection #item number 	Make use of “tags” in Omeka, by using “UM Collection” tag for unidentified resource. In case resource information can be traced in the future.
Subject	Standard local subjects using for newspaper cutting	List of standard local subjects used for newspaper cutting in the library website
Description	Further description on the resource	Further explanation on the resource
Creator	<ul style="list-style-type: none"> Identified creator: Name of person or institutional contributes to the existing of the resource Unidentified creator: University of Malaya Archive 	University of Malaya Archive is used for unidentified creator. The reason is because photo collection belongs to the University and University of Malaya Archives functioned as caretaker
Source	Only applied if the photo taken from a publication	Includes information on publication such as title, author and page
Publisher	Only applied if the photo taken from a publication	Includes publisher information such as place of publication, publisher and year
Date	<ul style="list-style-type: none"> Identified photo date. Format (DD-MM-YYYY) Unidentified date: unknown 	Add the actual date if the date can be traced and unknown for untraceable date.
Contributor	<ul style="list-style-type: none"> Identified contributor: Name of person or institutional contributes to the existing of the resource Unidentified contributor: University of Malaya Collection 	Add contributor name for identified contributor and University of Malaya Collection for unidentified contributor since the collection belongs to the University
Rights	This material is protected under Malaysia Copyright Act which governs the making of photocopies or reproductions of copyrighted materials. You may use the digitized material for private study, scholarship, or research with proper	UM Memory rights

Name	Library Definition	Comment
	acknowledgement to the University of Malaya Library.	
Format	Photo format	TIFF
Language	Based on title and description language	It depends on the language of original caption (usually in Malay or English)
Type	Still Image	Applicable for photo collection
Identifier	Unique barcode	Automated generates by system
Coverage	Location and date of the resource. Format (Place, Year)	Includes information on location the photo is taken and year the photo is taken. If the location or date untraceable leaves it blank.
Relation	Resource relationship with other resource	Only applicable in essential situation

5.3 Improvements

The librarians try to introduce some improvements to avoid inaccuracy, incompleteness and inconsistency of data in UM Memory especially for incomplete information of resource.

There are few examples of improvement that have been made in UM Memory. First improvement is due to unidentified suitable title for resource due to lack of information. They fill up the TITLE element with “University of Malaya Collection #item number” and use tag “UM Collection”.

IMAGE 4
Sample of Unidentified Resource

The image shows a web-based form for Dublin Core metadata. On the left is a sidebar with navigation options: Dublin Core, Item Type Metadata, Contribution Form, Collection, Files, and Tags. The main content area is titled 'Dublin Core' and includes a description of the metadata set. The 'Title' field is highlighted with a green 'Add Input' button and contains the text 'University of Malaya Collection #2255'. Below the title field is a checkbox for 'Use HTML' and a descriptive note: 'A name given to the resource. Typically, a Title will be a name by which the resource is formally known.'

In case, the information on the resource will be identified from other resources in the future. So, they just have to click on “UM Collection”, find the record and then fill up the missing part of information.

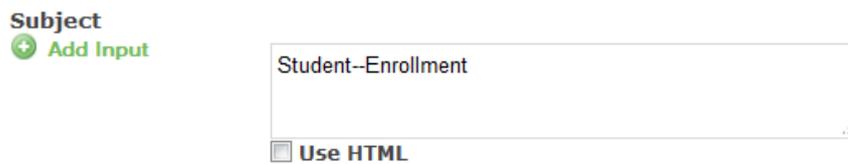
IMAGE 5
Tags Functioned as Mark for Unidentified Resource



The elements that need to be enhanced will continue to be improved in accordance with future needs.

Second improvement is on the use of subject heading in UM Memory. Former practice, the subject is left blank. Now, it has been decided that the subject headings will be standardized with the subject on the newspaper clipping which is displayed on UML website.

IMAGE 6
Subjects in UM Memory



This locally developed subject headings are used because they suit well to describe subjects related to the University of Malaya. These subjects will be enhanced from time to time based on necessity.

IMAGE 7
Subjects in Newspaper Clipping

- Top Subjects
- [Academia--Opinion \(1111\)](#)
 - [Students--Activities \(1031\)](#)
 - [UMMC--University of Malaya Medical Centre--Medical cases \(918\)](#)
 - [Commentaries \(659\)](#)
 - [UM--Research \(544\)](#)
 - [UM--Alumni \(526\)](#)
 - [Academic programme \(369\)](#)
 - [Students--Activities--Sports \(278\)](#)
 - [Conference \(260\)](#)
 - [Ranking \(259\)](#)
 - [UM--Activities \(252\)](#)
 - [Letters to the editor \(234\)](#)
 - [UM--Alumni--Activities \(234\)](#)
 - [UM--General \(215\)](#)
 - [Academia--Activities \(186\)](#)
 - [Student--Elections \(175\)](#)
 - [Academia--Awards \(175\)](#)
 - [UM--Vice Chancellor \(166\)](#)
 - [Student--Awards \(133\)](#)
 - [UM--Convocation \(126\)](#)
 - [UMMC--University of Malaya Medical Centre--Activities \(123\)](#)
 - [Legal issues--Malaysia \(109\)](#)
 - [UMMC--University of Malaya Medical Centre--Services \(96\)](#)
 - [Academia \(94\)](#)
 - [Students--Opinion \(77\)](#)
 - [UMMC--University of Malaya Medical Centre \(65\)](#)
 - [UM--Lecturers \(59\)](#)
 - [UM--Alumni--Appointments \(57\)](#)
 - [UM--Staff \(52\)](#)
 - [UM--History \(50\)](#)
 - [UM--Students \(48\)](#)
 - [UM--Alumni--Bereavement \(48\)](#)
 - [MoU \(47\)](#)
 - [UM--Events \(47\)](#)
 - [Education, Higher--Malaysia \(46\)](#)
 - [Crime--Malaysia \(45\)](#)
 - [UMMC--University of Malaya Medical Centre--General \(44\)](#)
 - [UM--History and Development \(40\)](#)
 - [Academia--Publications \(37\)](#)
 - [UM--Awards \(35\)](#)
 - [UM--Staff--Activities--Sports \(32\)](#)
 - [UM--Indian Studies Department \(32\)](#)
 - [UM--Commentaries \(32\)](#)
 - [Scholarships--Malaysia \(32\)](#)
 - [Job hunting--Malaysia \(30\)](#)
 - [UM--Chancellor \(30\)](#)
 - [Times Higher Education-QS \(30\)](#)
 - [Ministry of Higher Education \(28\)](#)
 - [E-voting \(28\)](#)
 - [UM--Pro Chancellor \(24\)](#)
 - [Education--Awards--Malaysia \(22\)](#)
 - [Universities and Colleges--Malaysia \(21\)](#)
 - [Student--Enrollment \(21\)](#)
 - [Disability, handicap, and life chances \(20\)](#)
 - [UM--Policies \(20\)](#)
 - [Bereavement \(19\)](#)
 - [Malays \(Asian people\)--Social life and customs \(18\)](#)
 - [Programme \(18\)](#)
 - [Education--Malaysia \(18\)](#)
 - [UM--Pro Chancellor--speech \(17\)](#)
 - [Students--Discipline \(17\)](#)
 - [UM--Royal Profesor--Ungku Abdul Aziz \(16\)](#)
 - [UM--Publication \(16\)](#)
 - [UM--Alumni--Publication \(16\)](#)
 - [Academia--Appointment \(15\)](#)
 - [Rating \(14\)](#)
 - [Conduct of court proceedings--Malaysia \(14\)](#)
 - [Malay language--Outlines, syllabi, etc \(14\)](#)
 - [UM--Staff--Bereavement \(13\)](#)
 - [UM--Staffs \(13\)](#)
 - [Home accidents--Malaysia \(13\)](#)
 - [UM--Akademi Pengajian Melayu \(13\)](#)
 - [UM--Programme \(12\)](#)
 - [UM--Student--Bereavement \(12\)](#)
 - [Speaker's Corner \(12\)](#)

An example of full record based on current practice is as shown in image 8, 9 and 10 at appendix.

6. Challenges

Efforts to preserve digital information especially heritage photo have always been challenged by librarians worldwide. There is a lot of study conducted to explore the main challenge in developing digital initiative. There are several challenges and limitations that librarians have to deal with in developing digital archive especially for photo collections. Below are some of the challenges highlighted based from UML experience.

6.1 Policies and Guidelines

There is no written policy and guideline recorded since this project was the pioneer project for historical images repository in the University of Malaya. Policies and guidelines are important to allow librarian to clearly comprehend roles and responsibilities within predefined limits. Policies recognize the crucial actions, activities and deliver a general approach to decision-makers on how to deal and handle issues arise. Librarians in UML need to set up clear vision and identify how to deliver effective metadata in UM Memory. Even though UM Memory are using Dublin Core as primary metadata, they need to study the effective element that the users need instead of delivering unnecessary metadata in the portal.

The definitive goal of every ‘guidelines’ is to deliver the staff with a clear and straightforwardly strategy of action compulsory to carry out or implement a policy. It is important to have well-written procedure because it helps to abolish mutual misinterpretations by categorizing job responsibilities and establishing boundaries for the jobholders. It is challenges to the librarian to set up proper guidelines in order to make sure the workflow of UM Memory are smooth.

6.2 Lack of Information Technology Expertise

Nowadays information technology (IT) plays a big role and become a vital and fundamental part of every business plan especially in developing systems and open access platform. The rapid growths of technology change the roles of librarians to be more flexible and techno literate. Basic HTML skill is needed to run UM Memory, but that skills are not enough. Since this project was the pioneer project for historical images repository in the University of Malaya, the librarians need to explore “backend” of UM Memory.

Digital repository can impact organization resources in terms of assets, time, technology and support. The lacks of IT skills are the major challenges face by the librarians. Even though UM Memory is using Omeka as a platform, the librarians need to study the technical part of UM Memory. Few things need to be highlighted such as maintaining the system, storage capacity, server, and the security of the system. UML current practice was the “backend” and maintaining part is operating by other division which is Information System Division. It is because of the limitation of skills in IT.

6.3 Division and Staffing

Currently UM Memory is operating from University of Malaya Archives Unit. There are 4 main businesses in this Unit which is archive collection development and 3 digital repositories as listed below:

- a) University of Malaya Research Repository
- b) University of Malaya Students Repository
- c) UM Memory

There is no specific dedicated librarian in charge of UM Memory. All of the librarians in University of Malaya Archives Unit are multitasking. This is a challenge for them to handle several repositories while at the same time to maintain the quality of metadata/content in UM Memory. Besides, policies and guidelines human resource is also one of the important elements to determine the success of any digital repository.

7. Observation-Based Comparison with Other Institutions

Benchmarking is a convenient instrument for evaluating and calculating current performance in certain organization. Benchmarking is also a tool to find new solutions in any organization. Benchmarking can be done to find a new procedure or enhancements to an existing procedure and system. The term metadata simply means data about data. It is the term most often used in the Internet community for what has been known in the library community as cataloging data or resource description. Comparison of metadata can help UM Memory to provide better information needs by users. To set a standard metadata in UM Memory, a comparison between several institutions was conducted to give clear view the current practice adopted by UML. Table 4 shows the comparison of metadata from several institutions.

TABLE 4
Comparison of metadata from several institutions

LIBRARY / NO	PRINTS AND PHOTOGRAPHS ONLINE CATALOG (PPOC), LIBRARY OF CONGRESS	NORTHWESTERN UNIVERSITY LIBRARY	VISUAL INFORMATION ACCESS, HARVARD	UM MEMORY UNIVERSITY OF MALAYA LIBRARY
1.	Title	Creator(s)	Title	Title
2.	Creator(s)	Title	Work Type	Subject
3.	Date Created/Published	Cultural Content	Date	Description
4.	Medium	Date	Topics	Creator
5.	Summary	Subjects	Nationality /Cultural	Date
6.	Reproduction Number	Location	Location	Contributor
7.	Rights Advisory	Source	Work Type	Rights

LIBRARY / NO	PRINTS AND PHOTOGRAPHS ONLINE CATALOG (POC), LIBRARY OF CONGRESS	NORTHWESTERN UNIVERSITY LIBRARY	VISUAL INFORMATION ACCESS, HARVARD	UM MEMORY UNIVERSITY OF MALAYA LIBRARY	
8.	Call Number	Technique	Note	Format	
9.	Repository	Materials	Repository	Language	
10.	Notes	Measurements		Type	
11.	Subjects	Style period		Identifier	
12.	Format	Inscription		Contribution Form	
13.	Collections	Description		Online Submission	
14.		Work Type		Physical Dimensions	
15.		Identifier		Color	
16.					Location
17.				Status	
18.				Box Number	
19.				Note	
20.				Files	
21.				Collection	
22.				Tags	
23.				Citation	

There are numerous similarities of metadata between UM Memory with other institutions. Table 5 below shows the similarities of each institution. UML decided to remain all similarities in creating UM Memory metadata. There are title, creator, date, rights, subject, location, and format. However, some of the institutions are using different keywords to display the metadata. For example, “Notes”, some of the institutions use “Description”.

UM Memory is using Dublin Core as a metadata. The Dublin Core is a 15-element metadata element set intended to facilitate discovery of electronic resources (Weibel, 2005). The characteristics of the Dublin Core that distinguish it as a prominent candidate for description of electronic resources fall into several categories. Some of the institutions are using DSpace and others photo storage software where might carry different metadata scheme and keywords. Expert shares that we need to use proper metadata because metadata organizes, arranges and tracks the entire digital lifecycle of vital information, including the developments, procedures and users that affect it, providing a accurate audit trail that can demonstrate invaluable or mandatory, in highly-regulated industries to organization at any point in time.

TABLE 5
Similarities of metadata

LIBRARY/ NO	PRINTS AND PHOTOGRAPHS ONLINE CATALOG (PPOC), LIBRARY OF CONGRESS	NORTHWESTERN UNIVERSITY LIBRARY	VISUAL INFORMATION ACCESS, HARVARD	UMMEMORY UNIVERSITY OF MALAYA LIBRARY
1.	Title	Title	Title	Title
2.	Creator	Creator	-	Creator
3.	Date Created/Published	Date	Date	Date
4.	Rights Advisory	-	-	Rights
5.	Subjects	Subjects	-	Subject
6.	-	Location:	Location	Location
7.	Format	-	-	Format

8. Conclusion

In conclusion, the quality of a digital repository represents by the quality of its metadata. It is important to have a standard metadata to ensure the accuracy, completeness and consistency of information presented to the public. UML tries to figure out the best way and the best practice to fulfill those criteria to confirm that the information delivered and understood well by public. Yet, the continuous improvement efforts in identified the lack of implementation will still on going.

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APPENDIX

IMAGE 8

An Example of Record Displayed on User Interface (1)

EMPEROR AKIHITO AND EMPRESS MICHIKO OF JAPAN DURING THEIR VISIT TO THE UNIVERSITY OF MALAYA

All Titles

Emperor Akihito and Empress Michiko of Japan during their visit to the University of Malaya



Dublin Core

Title

Emperor Akihito and Empress Michiko of Japan during their visit to the University of Malaya

Subject

University of Malaya--Visitors

University of Malaya--Events

IMAGE 9

An Example of Record Displayed on User Interface (2)

Description

This photo was taken on Wednesday, 2 October 1991.

Creator

University of Malaya Archive

Date

2 October 1991

Contributor

University of Malaya Collection

Rights

This material is protected under Malaysia Copyright Act which governs the making of photocopies or reproductions of copyrighted materials. You may use the digitized material for private study, scholarship, or research with proper acknowledgement to the University of Malaya Library.

Format

TIFF

Language

English

Type

Still Image

Identifier

A511982402

Coverage

Kuala Lumpur, 1991

Contribution Form

Online Submission

No

Still Image Item Type Metadata

Original Format

Photo

Physical Dimensions

(26 x 20 cm)

Color

B/W

IMAGE 10

An Example of Record Displayed on User Interface (3)

Location

University of Malaya Archive, Za'ba Memorial Library

Status

Digital copy is available

Box Number

B1

Note

From folder A513096652 (lini)|edited by JAR-3/7/2015

Files



Collection

[Special Events in Campus](#)

Tags

[Royal visits, VIP Visitors](#)

Citation

University of Malaya Archive, "Emperor Akihito and Empress Michiko of Japan during their visit to the University of Malaya," in UM Memory, Item #1401, <http://ummemory.um.edu.my/ummemory/index.php/items/show/1401> (accessed July 13, 2015).

[Previous Item](#)

[Next Item](#)

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{{cite web |url=http://ummemory.um.edu.my/ummemory/index.php/items/show/1401 |title=Emperor Akihito and Empress Michiko of Japan during their visit to the University of Malaya |work=UM Memory |accessdate=13 July 2015}}
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