Institutional Collaborations of OpenCourseware in the Cloud Era -- Experience of TOCWC

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Abstract

Taiwan OpenCourseWare Consortium (TOCWC) was established in 2008. By the end of 2011, there are more than 27 members. All of them are higher-education institutes. Also, we have more than 400 courses, and 75% of them have video courseware. During the past few years, we have 2 major institutional-collaborating projects running. One is the metadata engineering. Another is the analytics aggregator for understanding the usage of our OpenCourseWare (OCW).

Since 2009, we have built a metadata model for Taiwan OCW content by incorporating with member universities. Moreover, we have also built an indexing system based on this metadata model in order to search OCW content efficiently. The metadata model contains 8 categories and 47 fields. We plan to collect metadata from more than 135 courses in 2012. We wish this system could improve the discoverability of OCW content.

We have noticed that a huge proportion of visitors went deeply into institutional sites trough the Consortium site. We would like to gather more usage information by using cloud-based web-analytics tools. Instead of asking members to report monthly data, we have built a cloud reporting aggregator to collect and share measurable web-analytics data automatically. This project is launched in November, 2011. There are 9 member universities join this project now. We plan to do a statistical analysis after we get enough data. We think it might give us some hint on what strategy we could use to promote the movement of OCW.

Keywords

OpenCourseWare, collaboration, cloud computing, metadata, web analytics

Introduction

Taiwan has population of 23 million. For each year, there are about 200K infants born. However, there are nearly 180 universities or colleges in Taiwan. Higher education is common and not expensive here. It provides an excellent environment to develop open education resource, especially for Chinese content. National Chiao Tung University (NCTU) had foreseen the trend and established the first OCW site in Taiwan in 2007. In order to promote the OCW movement in Taiwan, TOCWC was established in Dec. 2008, where there was only 10 universities joined in. The TOCWC had 27 members joined in the year of 2011, majorly top national universities. Also in 2011, TOCWC became one of the sustaining members of OCWC. For the past few years, TOCWC members has contributed more than 400 OCW courses. Mostly significant is that more than a half of them have videos. For the purpose of increasing utilization of these content, begin in 2009, the TOCWC launched the project of building standardized metadata model for OCW. It is the first collaboration project in between TOCWC members. In 2011, TOCWC launched another new project to standardize the utilization reports of OCW content. One of the TOCWC members, Taipei Medical University (TMU), is appointed to build an automatic reporting aggregator based on cloud technology. This paper will demonstrate some details about these 2 projects.

Building Standardized Metadata Model for OCW

In 2009, we began to think how to let people find proper OCW content. The Taiwan e-Learning and Digital Archives Program (TELDAP), a national project, had a sub-project called "Development of Systems and Standards for Digital Archives." The core team who is responsible for the implementation of metadata is called "Metadata Architecture and Application Team (MAAT). Under the cooperation of MAAT and TOCWC, we had design a standardized metadata model for OCW, which is based on IEEE Learning Object Metadata (LOM) and SCORM 2004.

In the initial phase, we had signed agreements with member universities. We had called for participation for sample-filling metadata after the first draft of metadata model released in Jan. 2010. There were 8 members volunteered. The model had more than 70 fields. Participated members suggested a shorter model would be more feasible. In July 2010, the MAAT had released the final version of the metadata model for OCW. It has 47 fields in 8 categories, as shown in Fig. 1. Compare to the LOM, the TOCWC metadata model has less fields and less categories.

Fig. 1. LOM versus TWLOM and TOCWC metadata model.
Source: MAAT. (2010).

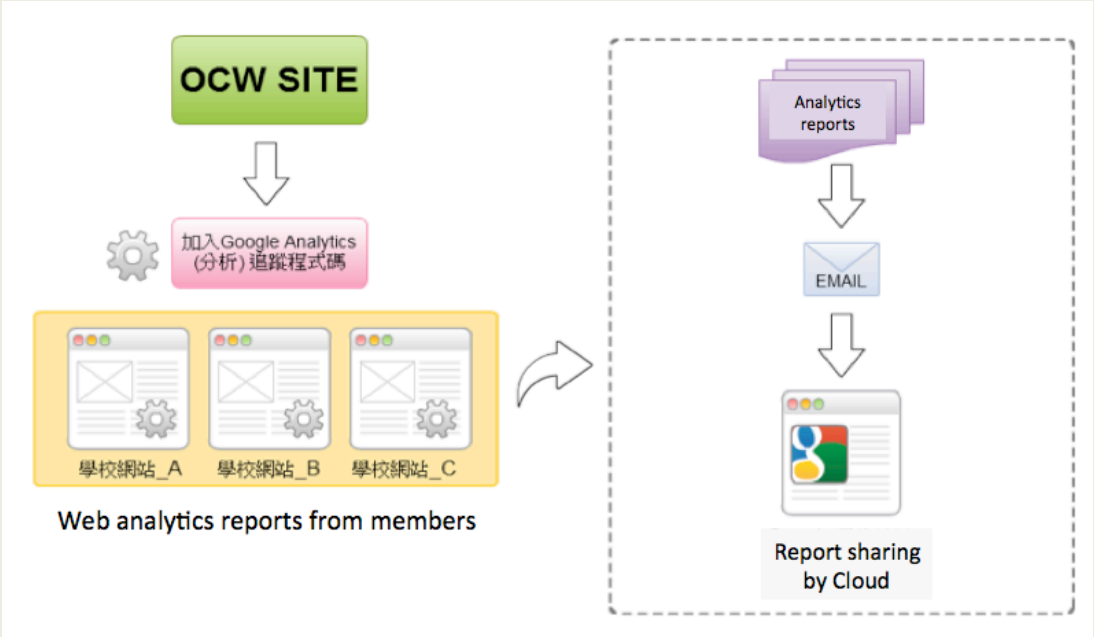
LOM 元素名稱			TWLOM			TOCWC		
1.General	1.1Identifier	1.1.1catalog	1. 一般	1.1 識別符	1.1.1 編目	1. 一般	1.1 識別符	1.1.1 編目
		1.1.2entry			1.1.2 項目			1.1.2 項目
	1.2Title			1.2 標題			1.2 標題	
	1.3Language			1.3 語言			1.3 語言	
	1.4Description			1.4 描述			1.4 描述	
	1.5Keyword			1.5 關鍵字			1.5 關鍵字	
	1.6Coverage			1.6 涵蓋範圍			1.6 涵蓋範圍	
	1.7Structure			1.7 結構			[redacted]	
	1.8Aggregation Level			1.8 聚集層次				
2. Life Cycle	2.1Version		2. 生命週期	2.1 版本		2. 生命週期	2.1 版本	
	2.2Status			2.2 狀態			2.2 狀態	
	2.3Contribute	2.3.1Role		2.3 貢獻	2.3.1 角色		2.3 貢獻	2.3.1 角色
		2.3.2Entity			2.3.2 個體			2.3.2 個體
		2.3.3Date			2.3.3 日期			2.3.3 日期
3. Meta-Metadata	3.1Identifier	3.1.1Catalog	3. 後設—後設資料	3.1 識別符	3.1.1 編目	3. 後設—後設資料	3.1 識別符	3.1.1 編目
		3.1.2Entry			3.1.2 項目			3.1.2 項目
	3.2Contribute	3.2.1Role		3.2 貢獻	3.2.1 角色		3.2 貢獻	3.2.1 角色
		3.2.2Entity			3.2.2 個體			3.2.2 個體
		3.2.3Date			3.2.3 日期			3.2.3 日期
	3.3Metadata Schema			3.3 後設資料綱要			3.3 後設資料綱要	
	3.4Language			3.4 語言			3.4 語言	
4. Technical	4.1Format		4. 技術	4.1 格式		4. 技術	4.1 格式	
	4.2Size			4.2 檔案大小			4.2 檔案大小	
	4.3Location			4.3 位置			4.3 位置	
	4.4Requirement			4.4 需求			4.4 需求	
	4.4.1 OrComposite	4.4.1.1Type		4.4.1 或組成	4.4.1.1 型式		4.4.1 或組成	4.4.1.1 型式
		4.4.1.2Name			4.4.1.2 名稱			4.4.1.2 名稱
		4.4.1.3 Minimum Version			4.4.1.3 最低版本			4.4.1.3 最低版本
		4.4.1.4 Maximum Version			4.4.1.4 最高版本			4.4.1.4 最高版本
	4.5 Installation Remarks			4.5 安裝說明			4.5 安裝說明	
	4.6Other Platform Requirements			4.6 其他平台			4.6 其他平台	
	4.7Duration			4.7 期間			[redacted]	
5. Educational	5.1Interactivity Type		5. 教育	5.1 互動型式		5. 教育	5.1 學習資源型式	
	5.2Learning Resource Type			5.2 學習資源型式			[redacted]	
	5.3Interactivity Level			5.3 互動程度				
	5.4Semantic Density			5.4 語意密度				
	5.5Intended End User Role			5.5 適用對象			5.6 情境	
	5.6Context			5.6 情境			[redacted]	
	5.7Typical Age Range			5.7 適用年齡範圍				
	5.8Difficulty			5.8 困難度			5.9 基本學習時數	
	5.9Typical Learning Time			5.9 基本學習時數			5.10 描述	
	5.10Description			5.10 描述			5.11 語言	
	5.11Language			5.11 語言				
6. Rights	6.1Cost		6. 權利	6.1 付費		6. 權利	6.1 付費	
	6.2Copyright and Other Restrictions			6.2 著作權及其他的限制			6.2 著作權及其他的限制	
	6.3Description			6.3 描述			6.3 描述	
7. Relation	7.1Kind		7. 關聯性	7.1 種類		7. 關聯性	7.1 種類	
	7.2Resource	7.2.1Identifier		7.2 資源	7.2.1 識別符		7.2 資源	7.2.1 識別符
		7.2.1.1 Catalog			7.2.1.1 編目			7.2.1.1 編目
		7.2.1.2 Entry			7.2.1.2 項目			7.2.1.2 項目
	7.2.2Description			7.2.2 描述			7.2.2 描述	
8. Annotation	8.1Entity		8.註解	8.1 個體			[redacted]	
	8.2Date			8.2 日期				
	8.3Description			8.3 描述				
9. Classification	9.1Purpose		9. 分類	9.1 目的		9. 分類	9.1 目的	
	9.2 Taxon Path	9.2.1 Source		9.2 類路徑	9.2.1 來源		9.2 類路徑	9.2.1 來源
		9.2.2 Taxon 9.2.2.1 Id			9.2.2 類 9.2.2.1 類別碼			9.2.2 類 9.2.2.1 類別碼
		9.2.2.2 Entry			9.2.2.2 項目			9.2.2.2 項目
	9.3Description			9.3 描述			9.3 描述	
	9.4Keyword			9.4 關鍵字			9.4 關鍵字	

After the release of standardized model, TOCWC began to implement the indexing system (Fig. 2) for storing OCW metadata. Learners can search content by just typing the keywords in any field. There are 62 courses listed in the system (TOCWC, 2011). We plan to collect 135 courses by the end of 2012.

Fig. 2. Screenshot of OCW Indexing System built by TOCWC.
Source: TOCWC. (2011).

Building Cloud Reporting Aggregator for OCW

Fig. 3. The Concept Map of TMU's Automatic Analytics Aggregator.
Source: Wan. (2011.11).



Google Analytics (GA) launched in 2005, which provide an excellent solution for analyzing the usage of a web. It can collect web analytics data, such as visitors, location, time to stay, pages each visit, real-time and easy. In 2010, TMU had shown the usage report of its OCW site by using Google Analytics. The most interesting observation was that more than one-third of visitors came from TOCWC (Wan, 2010.11). TMU, also became a board member in August 2011, has worked with TOCWC to assist members integrating GA into their OCW sites since 2011 (Wan, 2011.5).

The second step is to collect standardized web analytics reports from members' OCW sites. The Office of Biomedical Informatics, in TMU had designed an automatic analytics aggregator (Fig.

3) by using common cloud tools, which has got support from TOCWC (Wan, 2011.11). We've combined the Google Group with the auto-email function of GA. TOCWC had organized 3 online workshops for implementing GA report in each member's OCW site. There are one third of the TOCWC members had joined. Monthly data have been collected from 9 members automatically. In the next step, we will build a mass data analytics in order to know the visitor behavior better.

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