UAE Universities Embark on Web-based ETD Service:
Vision and Inspiration

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ABSTRACT

The dissertation work is a knowledge-intensive process whose success heavily relies on the adequate retrieval, gathering, analysis and composition of relevant research information in producing intellectual work. The scholarly research and digital ICT have enjoyed a meaningful relationship since the advent of the Internet and new Web technologies in early 1990s. Doubtless, the Internet represents a digital contrivance whose functional capabilities has fascinatingly facilitated building, preservation, exchange, and delivering of a plethora of knowledge over the Web in different digital forms and formats. The United Arab Emirates (UAE) oil revenues triggered off a series of socioeconomic changes to promote the element of concern towards investing heavily in education and related knowledge technologies, believing it as a vital strategic component of the economic growth and future prosperity. To achieve this, UAE established the *Higher Education Authority* to strategically and financially support the scholarship programmes for students to pursue their graduate studies abroad, mainly in North American, Australian, and British universities. Furthermore, the UAE-based universities accelerated a dynamic growth and expansion in graduate education with a consequent demand for more skilled personnel and research cadre. Such graduate activities inspired the UAEU libraries to develop special collection of the theses and dissertations that done by the UAE students or on the UAE as a research theme. This essay aims at sketching a proposed pilot project for creating Web-based ETD portal to be a one-stop portal to serve the UAE research community within a distributed library environment. Acquisition processes and workflow are discussed. UAE-based Universities collaboration and ETD networked service model is proposed.

Keywords: ETD services, graduate education, scholarly research, UAE.

1. INTRODUCTION

The evolution of the knowledge-based society has been paralleled by advancements in the means of expression and sharing of knowledge. The recent developments in the digital information and communication technologies have sprung up to address the emergence of new e-based paradigms in business, academia and research domains, which in turn provided powerful stimuli for designing, creating, and producing a wide range of electronic materials and digital objects to answer the needs of the web-based society. Since the expansion of the Internet and related web-based applications; in particular, there have been dramatic changes in the whole enterprise of education and research (Fox, McMillan & Eaton 1999). Such enormous influence of ICT on academic and research communities has led to a wide public consensus about the necessity of publishing and exchange of scholarly documents by electronic means.

The web-aided library has emerged as a dominant paradigm for enabling academic enterprise-wide interoperability, and facilitating the distribution of such e-publishing products as e-journals, e -books, ETD and related e-print services. The critical factor to the overall utility of the Web in e-print services is largely attributed to its scalable, flexible and robust navigating and discovery mechanism. The easy universal access to e-documents cast over the Web has triggered off a series of serious concerns and debate over the question of copyright and ownership regarding the use of e-documents that retrieved from the Web (Ou 2003). These issues promoted the elements of concern towards international collaboration dedicated to protecting the copyright and preventing misuse of web materials. This fruitful international cooperation yielded such crucial digital library initiatives as *Networked Digital Library of Theses and Dissertations* (NDLTD), *Computer Science Teaching Centre* (CSTC), *Open Access Initiative* (OAI) and the like (Fox *et al*. 1999).

The UAE invests generously in maintaining the expansion of university education and higher studies as a key priority to warrant future prosperity in the forthcoming knowledge-based society whose hallmark is consciousness of the importance of education as a strategic asset. This paper aims at sketching a pilot project proposed for creating a Web-based ETD portal to be a one-stop clearinghouse to serve the UAE scholarly research community within a distributed library environment. The inspiration for the proposed project is NDLTD. Acquisition and inclusion process and workflow of TD is outlined, along with shedding light on the interlibrary cooperation in developing an accessible ETD collection and service. The cataloguing process (e.g. MARC format) and OPAC display are illustrated, which largely rely on NDLTD standards.

2. NDLTD INITIATIVE: *A POWERFUL STUMULUS*

The digital library infrastructure provides robust venues to mediate between the increasing availability of the electronic information and the end-users. As more research materials become more Web-based, the necessity for new initiative and approaches in digital knowledge organisation becomes paramount. Theses and dissertations diligently found their way to assume a foremost position in database business e.g. UMI *Dissertation Abstracts* and NDLTD aggregator (http://www.ndltd.org) at Virginia Tech.; both of them have sparked a powerful stimulus for creating a web-based ETD collection into one-stop access portal. NDLTD is global in its scope and serves a model of scalable and sustainable DL. It is open to all universities, research-oriented institutions, and international organisations as UNESCO (Fox 1998; Gonçalves *et al*. 2001; Edminster & Moxley, 2002).

2.1 A Brief History

Thanks to Edward Fox (http://fox.cs.vt.edu/foxinfo.html) for his pioneer effort in steering the elaborate work towards launching a worldwide networked digital library of theses and dissertation. In November 1987, UMI hosted a public meeting in Michigan focused on the potential use of electronic document processing in creating electronic version of theses and dissertations. A generous grant from the US Department of Education funded NDLTD project to see the light in 1996 (Fox 1998). The continuing advancements in word-processing software, Web markup language (e.g. SGML, XML), and portable document format (PDF) do effectively sustain the triumphant course of NDLTD project. Since then, NDLTD has been receiving a great deal of interest in circulating theses and dissertations electronically. To this concern, NDLTD has attracted many non-American institutions from the overseas, benefited from the increasing global consciousness of sharing scholarly research information.

2.2 Vision and Philosophy

The vision and philosophy of NDLTD has been geared by the following principal goals (McMillan 2003):

- To enhance graduate education with an equal e-access to current international scholarship.
- To support diffusion of e-literacy among graduate students purporting to effective scholarly use of the Web and digital library.
- To increase awareness and understanding of basic issues relating to intellectual property and copyrights.
- To present NDLTD to serve as a model digital library project demonstrating how universities can collaborate in sharing with their intellectual resources.
- To highlight how ICT is being used to streamline processes in digital repository and drive large-scale changes in access to distributed research information.

2. GRADUATE EDUCATION: *STUDYING ABROAD VS. AT HOME*

3.1 Background

A symbiotic relationship between education and socioeconomic growth has long been well established. Education is considered a crucial element in developing and preparing the necessary skilled manpower for piloting growth and modernisation in the UAE resulted in devoting 1.78% of its GDP to education; furthermore, the government expenditure on education has steadily increased from US$67.3 million in 1994 to US$1.465 billion in 2003 (UAE yearbook 2005). The UAE federal government offers free tertiary education exclusively to Emirati students who entitled to choose between study in the state universities or abroad through a generous educational scholarship system (Shihab 2003).

3.2 UAE Higher Education Expansion: *An Example of Globalism*

The UAE is emerging as a significant site of private and foreign higher education to result in escalating expansion in state and private universities of indigenous and overseas origin. Globalism is obviously manifested in the number of the international agencies consulted by the UAE government for setting up and running the higher education institutions. These agencies (e.g. UNDP, World Bank, etc.) involved in providing technical assistance, advice, streamline processes, and network communications since UAE created out of the previous *Trucial States* federation in 1971 (Findlow 2001) to help in establishing these state universities: UAE University (UAEU) established in 1976 with the aim of welding the new nation. At the same time, the evident need has increased for higher education-training provision, which answered by establishing the Higher Colleges of Technology (HCT) Group in 1988, and Zayed University (all-women) in 1998.

Later, over thirty private and semi-private institutions have been established throughout the UAE, enabling the rapid increasing in numbers of the university students to study near their homes. The most high profile of these institutions are: Ajman University of Science & Technology Network (1988); Etisalat College of Engineering (1989); American University of Dubai (1997); University of Sharjah (1997); American University of Sharjah (1998), Ittihad University (2002); Abu Dhabi University (2003); University of Southern Queensland in Dubai (2003); British University in Dubai (2004). Some overseas universities having

representative offices to offer online distance learning such as the American University of Hawaii in Dubai. (UAE Index 2004).

3.3 Graduate Colleges in UAE Universities: *Research Venues*

The UAE-based universities have placed great emphasis on graduate education and research activities in the areas of high demands by the job market and public development projects. In response to this concern, many UAE-based universities created graduate programmes largely modelled on the American system. The first graduate college in the UAE was established at UAE University in 1990; inaugurated its Master degree programmes in the areas of environmental studies, followed by business and engineering studies (Taha 2003). The graduate degree programmes are either by courses (business, humanities) or as a partial fulfilment by research (science and engineering). MBA degree programmes have been designed and increasingly geared to qualifying the students to work in a global economic environment; therefore, they are taking the lion-share of the awarded degrees i.e. 13 graduate programmes out of 27 currently being offered.

Table 1. Master degree programmes offered by UAE-based universities

University	Graduate programme	Degree
UAE University	1. Environmental studies	MSc
	2. Materials science & engineering	MESc[1]
	3. Petroleum science & engineering	MESc
	4. Water resources	MESc
	5. Business administration	MBA
	6. Remote sensing & GIS	MSc
Zayed University	1. Healthcare administration	EMHCA[2]
	2. Business administration	EMBA
	3. Education	EMEdu
HCT-Strathclyde University	1. Business administration	MBA
	2. Management/organisation science	MMSc
Etisalat College of Engineering	1. Computer science & engineering	MESc
	2. Information science & technology	MSc
	3. Telecommunication engineering	MESc
American University of Sharjah	1. TESOL	MA
	2. Translation and interpretation	MA
	3. Urban planning	MUP
	4. Business administration	MBA
	5. Engineering systems management	MESc (MSESM)
	6. Mechatronics engineering	MESc (MSME)
University of Wollongong Dubai Campus	1. Business administration	MBA
	2. International business	MBA
	3. Quality management	MMSc
University of Southern Queensland in Dubai	1. Business administration	MBA
	2. International business	MBA
	3. Management information technology	MMIT
British University in Dubai	1. Finance & banking	MBA
	2. Environmental design of building	MSc
	3. Information technology	MSc, PhD
	4. Project management	MSc, PhD
	5. Education	MEdu, PhD

[1]ME= *Master of engineering science*   [2]EM= *Executive master*

In a distinctly global step, many UAE-based universities have cemented their partnership particularly with many American, British and Australian graduate schools. In this context, Dubai developed *Knowledge Village* as a global locus of higher education investment and a centre of excellence for e-learning innovation. These graduate programmes are being considered as potential hatcheries of the theses and dissertations.

3.4 Studying Abroad

The scholarships that provided for the UAE students to study abroad are granted purposely to pursue their graduate studies at PhD-degree level since many UAE-based universities sufficiently answered the needs for Master-degree holders. The scholarship donors include Ministry of Education, Abu Dhabi Investment Authority, ADNOC, and Dubai Government (UAE yearbook 2005). The main destinations of studying abroad are USA, UK, Australia, and Canada, whereas South Africa, Singapore, and Japan recently gained an increasing interest. On the other hand, Egypt, Jordan, and Morocco are favourite destinations for Arabic and Islamic studies. Some other students are individually funding their own graduate studies favourably in India, Malaysia, Pakistan, and the Sudan where the tuition fees are more affordable.

4. EMBRACE DIGITAL SCHOLARSHIP

Realising the immense dynamic capabilities that offered by the present-day digital IT, and rapid development of networked information grid in UAE-based universities, the UAEU is seriously thinking of embarking on a web- based ETD services. This would be achieved by webbing, at one-stop portal, all the TDs generated from the active graduate programmes at the UAE-based universities, in addition to those TDs conducted abroad.

4.1 Networked ETD Services: *Raised Questions*

The graduate programmes in UAE-based universities have realised that they can no longer be self-sufficient in regard of their own scholarly information resources to meet the growing varying needs of their enrolled students. This challenge is confronted with the advent of networked information technologies. In response to the increasing number of theses and dissertations produced from these programmes and abroad, the need for a new resource-sharing paradigm is becoming a primary necessity.

Network technologies might be providing practical answers to materialise sharing ETD resource; however, some questions have to be raised:

- Is an ETD networked consortium feasible for UAE-based universities?
- What are the technical and managerial obstacles to effective implementation and access service of ETD network among shared UAE-based universities?
- Which suitable IT shall be used for ETD archiving and preservation?
- What will be the most cost-effective means of launching such ETD network?
- What would be the potential impacts of ETD access on the quality and rigour of graduate research?

4.1 SWOT Analysis

The paper takes the NDLTD advantages for restoring the project's strengths; averting its

weaknesses; escalating the opportunities, and overcoming the threats.

4.2.1 *Strengths*

- The UAE economic atmosphere promotes and facilitates secured investment in the graduate education.
- Increasing public consciousness towards graduate education as a vital component of professional career development in a world moving fast towards a global economy.
- The UAE government supports graduate and research studies abroad through the generous financial scholarship system.
- Theses and dissertations that conducted by the UAE students or on the UAE issues constitute an important body of scientific literatures and research wealth.

4.2.1 *Weaknesses*

- A weak marketing campaign to attract international students.
- Lack of systematic policy and mandatory procedures to acquire awarded TDs.
- Lack of bibliographic tools contributed in faint access to TD literature.
- Many students have no intention to publish scholarly works based on their theses or dissertations IE TD literature remains unutilised and represent a frozen asset.

4.2.2 *Threats*

™ Despite the graduate degree appears to be an academic obsession, the skyrocketed tuition fees might be reducing the expansion in new graduate programmes.
™ The "political" tensions in the region might be generating adverse effects on attracting more investments to maintain continuity of the graduate education.

Fig. 1: Evolving genre of UAE information grid and proposed ETD network

Taha *ETD2005- evolution through discovery_Sydney*
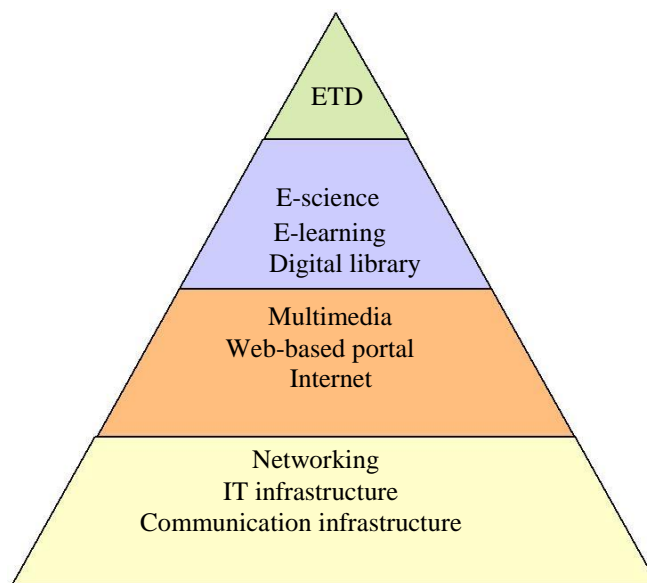
5. BUILDING UP AN ETD-NETWORK: *WHERE SHOULD WE START*?

5.1 Vision and Mission

The issue of sharing-resource among educational and research organisations is a long-standing and has become paramount in the networked learning environment. The robust information grids of the UAE- based universities represent a solid platform for creating an ETD network that would be a national pool of the digital scholarly research. University that slows down to embrace digital scholarship will lose the attractiveness of its graduate education to more supportive universities (Moxley 2001). Those universities interested in sharing with their TD resources within an ETD network, should agreed upon common visions as a basis to fulfil the network mission, among these are:

- Creating a one-stop portal behind a central server.
- Unifying the standards of MARC21 and record display in OPAC environment.
- Creating a bibliographic tool or database of dissertation abstracts.
- Enacting mandatory rules for ETD deposition and copyright
- Encouraging graduate students to publish their theses in digital format.
- Promoting sharing and access to ETDs within research communities.
- Joining the NDLTD to get the most of international scholarship.

5.1 Workflow Model

Currently, theses and dissertations are being catalogued by many UAE university libraries as books regardless their particular bibliographic information. These inappreciable differences resulted in tedious OPAC search for retrieving only TD. Therefore, a necessity has been crystallised to creating a web-based portal for search and access to ETD holdings. The theses and dissertations find their way to the central digital library repository through the following proposed steps as seen in Fig. 2:
- The involved universities submit the TD awarded by their respective graduate programmes or individual submissions.
- Submissions either as original digitised or hardcopy to be digitised.
- Acquisition theses and dissertations conducted abroad in digital format from UMI and the British Library.
- Copyright signature for e-publishing.
- Metadata extraction using MARC21 to be ready for OPAC access.

5. CONCLUSION AND SUGGESTIONS

With the advent of the digital network technologies in academia, the academic and research libraries are increasingly being called upon to provide satisfactory timeless information services. To answer the varying needs of a wide range of research community, they require availability and robust accessibility to a variety of e- resources. The digital writing technology effectively enhanced the evolving genre of the electronic theses and dissertations, which sparked strong interest in the establishment of a global digital library for international scholarship i.e. NDLTD, which inspired UAEU libraries to follow its course.

The proposed ETD network in the UAE is still having trouble such as:
- Absence of an agree-upon national strategic plan for an ETD network consortium.
- Lack of TD acquisition process and policy.
- Funding and budgetary issues.

- Technicalities that associated with archiving and preservation.
- Varying in hardware specifications of each university is a key obstacle to build functional network.
- Lack of experienced personnel

The study suggests the following:
- Adoption of suitable model of workflow.
- Creating an effective acquisition mechanism for obtaining completed TD.
- Providing training and skill development programme
- Providing digital literacy programme for support an effective use of ETD network.

Fig.2: Functional components of proposed ETD network (author own design)
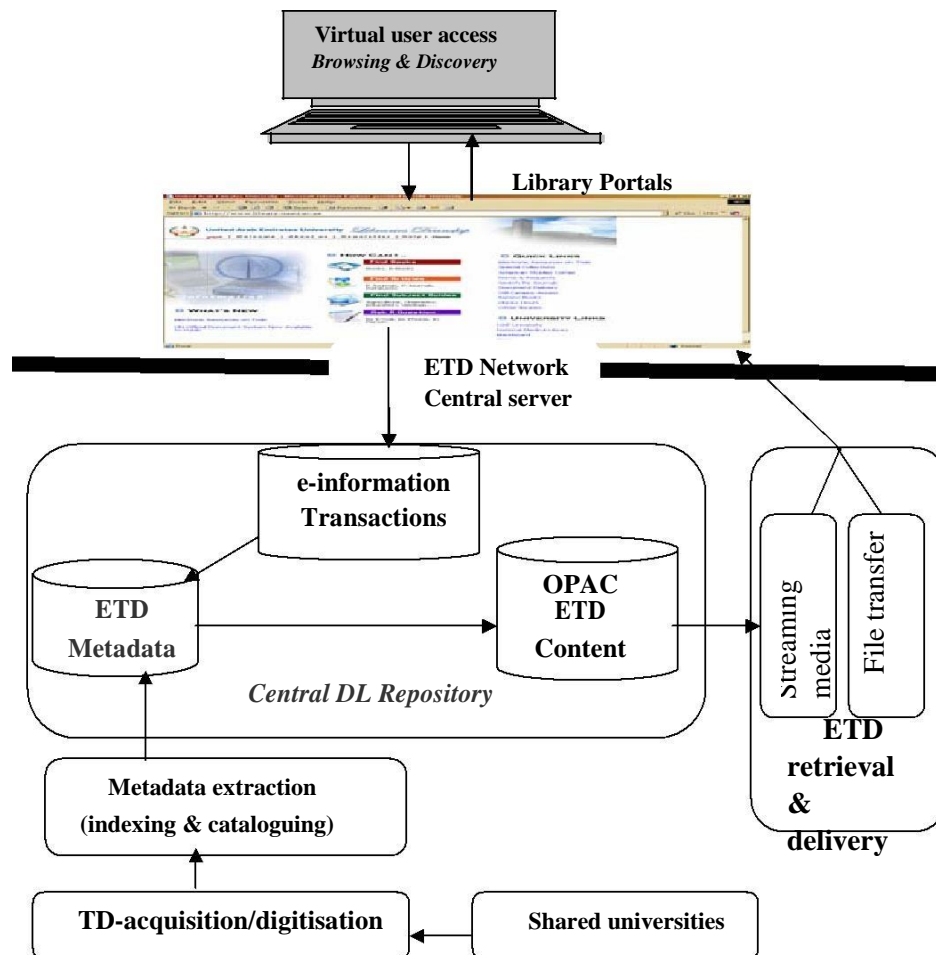
8. ACKNOWLEDGEMENT

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