

Libraries for Life: A Case Study of National Library Board, Singapore*

Schubert Foo**
Chris Tang***
Judy Ng***

Contents

1. Introduction	3.5 The SM Network
2. Background of National Library Board	3.6 The SM Proliferation Programme
3. The Singapore Memory (SM) project	3.7 The SM Virtual Discovery and Engagement
3.1 The SM Structure and Framework	4. Content Exposure for Discovery and Use: Singapore Infopedia and NewspaperSG
3.2 The SM Output	5. Conclusions
3.3 Major Areas of SM Development	
3.4 The SM Value Chain	

ABSTRACT

Library 2.0 advocates a socially rich, multimedia enabled, user originated and communally innovative environment that poses significant opportunities for the libraries to evolve and make themselves even more relevant and significant for her users. This paper presents a case study of the National Library Board of Singapore, in playing a vital role to facilitate the realisation of a long-term key national program, The Singapore Memory (SM) Project. SM embraces the attributes of the Library 2.0 environment to enable the nation's memory to be collected, organised, preserved, discovered, researched, augmented and created. The output of is an evolving collection of knowledge assets on Singapore along a Singapore Memory Content Continuum of existing content that is steadily augmented with new content. The content will be collected across all formats, in any language, from Singaporeans and non-Singaporeans, from any institution and agency, from Singapore and abroad, and from official and unofficial sources. The utopian scenario of SM Project is that any person, community, group or institution who has ever experienced Singapore in any way or has any material on Singapore will engage actively in the contribution, discovery and creation of content for the project, and thus become advocates to further encourage and catalyse more contribution, discovery and creation. The paper outlines the key approaches, concepts and ideas for the project. An important element is the proliferation, exposure and accessibility of the rich contents envisaged in the project. The SM proliferation plan along with examples of how two existing resources, namely, the Singapore Infopedia, a database of articles on Singapore's history, culture, people and events and NewspaperSG, an online resource of current and historic Singapore and Malayan newspapers, have been designed are presented to demonstrate how content can be exposed, searched and discovered.

Keywords: Singapore Memory, National Library Board, Singapore, Library 2.0

* The paper was originally presented at the International Conference commemorating the 40th Anniversary of the Korean Society for Library and Information Science held in Seoul, Korea on October 8, 2010.

** Wee Kim Wee School of Communication and Information, Nanyang Technological University, Singapore (sfoo@pmail.ntu.edu.sg)

*** National Library Board, Singapore

논문접수일자: 2010년 8월 30일 최초심사일자: 2010년 9월 16일 게재확정일자: 2010년 10월 6일
한국문헌정보학회지, 44(4): 33-59, 2010. [DOI:10.4275/KSLIS.2010.44.4.033]

1. Introduction

The advent of Library 2.0 has seen a number of fundamental shifts in the way the libraries have repositioned themselves to embrace the socially rich, multimedia enabled, user originated and communally innovative environment that it offers. Xu, Ouyang & Chu (2009) in their paper on the applications and implications of the academic library in a Web 2.0 world traces a number of distinct changes: the library's reference service has evolved to embrace the use of blogs, instant messaging, RSS, tagging, wikis; traditional cataloging is complemented with tagging in OPAC; online communities engaged via mailing lists is now superceded with online communities via social networks; text-based tutorials have transformed into media rich pod-cast and vidcast. The users in Library 2.0 are more interactive, participative and collaborative. This has lead to nonlinear, timely and N-way information flow. Indeed the Web 2.0 has provided many opportunities for innovation and new expectations from users. In such a rapidly changing technologically driven environment, libraries have generally done well to keep up with these trends and remain in the forefront of relevance through embracing and advancing these technologies and applications.

This paper outlines a national project in progress that is conceptualised and facilitated by the National Library Board of Singapore. The Singapore Memory (SM) project is a national multi-agency project to collect, preserve and access Singapore's knowledge assets to tell the Singapore story. It is envisioned to be a sustained long-term national programme to enable the cultural and intellectual memory of the nation to be collected, organised, preserved, discovered, researched, augmented and created. A national digital collection of knowledge assets about Singapore will be gradually built and grown over time through this project. Positioned in a Library 2.0 environment (with early signs of a Library 3.0 semantic-linked environment looming in the future), this paper aims to highlight the key approaches, concepts and ideas behind the project and in so doing, help identify various learning points for success.

2. Background of National Library Board

Unlike most library structures around the world, NLB is tasked with the responsibility to oversee both the National Library and Public Libraries of Singapore, with each kind of library having their distinct and well-differentiated roles. Its mission is to provide a trusted, accessible

and globally-connected library and information service through the National Library and a comprehensive network of Public Libraries. Additionally, it also manages one community children's library, and 17 libraries of government agencies, schools and institutions. Among the features of this set up is a common IT infrastructure, library management software to support federated searches across all the libraries' resources, economies of scale being generated through having one acquisition and cataloguing function, and so on. Nonetheless, challenges also prevail due to the nature of their roles and the different user groups that it serves. An example would be the differing detail and depth of cataloguing required for researchers and the general borrowers and users.

As in other traditional national libraries around the world, the National Library Singapore (NLS) is the nation's knowledge institution with a statutory role to manage the legal deposit, provide national bibliographic services, maintain the national union catalogue; a heritage role to preserve its cultural and literary heritage, a service role to provide a national collection and reference services, scholarship, research, a library of last resort; and a network and advocacy role to facilitate and support of other libraries, inter-library loans, document delivery and so on.

In contrast, the Public Libraries Singapore (PLS) provides the key public library service to her people and visitors in their pursuit of lifelong learning and discovery. In 2010, there are a total of 22 public libraries that include 3 large regional libraries and a central library located at four distributed locations of Singapore. Public libraries play the important roles to support the public's information needs by providing materials to support learning, discovery, entertainment and leisure purposes; advocate and cultivate the love of reading and engagement with the community and users through a host of community service programmes.

3. The Singapore Memory (SM) project

The SM project is a national project to collect, preserve and access Singapore's knowledge assets to tell the Singapore Story. The project is envisioned to be a sustained long-term national programme to enable the cultural and intellectual memory of the nation to be collected, organised, preserved, discovered, researched, augmented and created. Through the project, a national digital collection of knowledge assets about Singapore will be increasingly built and augmented over time. The onus of the project stems from the need to tap on the wealth of materials on Singapore that reside in research and academic institutions, public agencies and

non-government organisations collectively in order to tell the evolving story of Singapore from its pre-founding days to current developments in all sectors of life in Singapore. This in turn arises from the larger strategic and increasing emphasis placed by the Government on creating a sense of identity and nationhood¹⁾ among Singaporeans, Permanent Residents and to some extent, foreigners in Singapore (Hoe, 2010; Chia, 2009). Singapore's maturity as a city-state in the global context has also given rise to a critical need and urgency in ensuring that the Singapore story is collected and discovered to prevent the permanent loss of the nation's heritage, national roots and nation development (Chia, 2010).

With this in mind, SM will be launched in 2011 with a national call for contributions and the showcase of **SingaporeMemory.SG** - a national web portal that will grow with the contribution of memories by partners as well as the general public.

3.1 The SM Structure and Framework

SM was endorsed by RADM (NS) Lui Tuck Yew, Acting Minister for Information, Communication and the Arts (MICA) on 31 July 2009. The National Library Board (NLB) was chosen to play a facilitative role under MICA's direction as a whole-of-nation collaborative initiative in strong partnership with other institutions that include libraries, heritage agencies, research institutions, and involving the people, private and public sectors. The Project is directed by a Steering Committee, and managed by a Singapore Memory Secretariat.

The Steering Committee was subsequently formed in October 2009 and comprised top management executives from:

- Government agencies: MICA Deputy Secretary as the Chairman, People's Association, NEXUS/Ministry of Defence, Media Development Authority, National Arts Council, NLB.
- Key heritage agencies: National Heritage Board.
- Academic, research and library institutions: Institute of Southeast Asian Studies (ISEAS), National University of Singapore (NUS) and Nanyang Technological University.
- Media companies: Singapore Press Holdings (SPH) and MediaCorp.

1) Despite achieving harmony amongst all races in Singapore, Minister Mentor Lee Kuan Yew said that the country is still a work-in-progress when it comes to nationhood. Valerie Tan. (2009, July 18). MM Lee says Singapore needs to do more to achieve nationhood. Channel NewsAsia. Retrieved July 15, 2010, from Factiva database.

About 40 institutions and agencies will participate in SM to provide content and synergistic activities. Most of these agencies are already represented in the Steering Committee. These include:

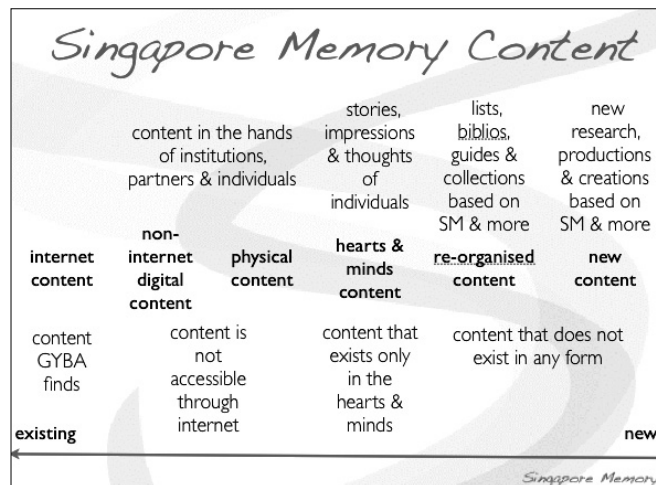
- Key heritage agencies: National Archives of Singapore, The Arts House, Asian Film Archives.
- The Council of Chief Librarians - that represents the 11 major libraries in Singapore and includes libraries from institutions such as Institute of South East Asian Studies (ISEAS), National University of Singapore (NUS), Singapore Press Holdings (SPH) and other institutes of higher learning.
- Government libraries: Libraries of the Supreme Court, Singapore Tourism Board, Ministry of Trade and Industry, etc.
- Government agencies: Urban Redevelopment Authority, Housing Development Board, Public Utilities Board, and NEXUS (which spearheads National Education in Singapore), etc.
- Private agencies and societies: Professional Photographers' Association of Singapore, Singapore Heritage Society, SPH, MediaCorp.

SM was subsequently presented at the Committee of Supply (CoS) debate in Parliament on 12 March 2010 by MICA where it was positioned as a major national project (Chang, 2010). This bottom-up whole-of-nation collaborative partnership is an important lesson and learning point in this project. It took a process of more than one and a half years of interest-generation, value-proposition, dialogue, discussions, support and commitment among the many stakeholders before the project was finally presented to MICA for endorsement and approval. The buy-ins and commitment of these stakeholders form an important impetus for success of this project. They collectively share in the common important super-ordinate vision and goal to develop the nation's memory in a sustainable way.

3.2 The SM Output

The output of SM is expected to be evolving collection of knowledge assets on Singapore along a 6-point SM Content Continuum (Figure 1) from existing content to content that would not have existed without SM. The content will be collected across all formats, in any language,

from Singaporeans and non-Singaporeans, from any institution and agency, from Singapore and abroad, and from official and unofficial sources. It will reflect the nation's cultural and intellectual heritage and knowledge that will be preserved for posterity. The utopian scenario of SM is that any person, community, group or institution who has ever experienced Singapore in any way or has any material on Singapore will engage actively in the contribution, discovery and creation of content for SM and become advocates of SM to encourage and catalyse more contribution, discovery and creation.



<Figure 1> The Singapore Memory Content Continuum

The first intangible outcome of SM, and a national one, is that a sense of the Singaporean identity though not singular and definitely not simplistic but definitely multifaceted, interesting and even personalised will emerge collectively and which will in turn become a rallying point for the integration of the many things and communities that make Singapore a kaleidoscope of individuals, people, places and cultures. The second intangible outcome of SM, and an international one, is that Singapore will be viewed in a more pluralistic manner by both Singaporeans and all interested in Singapore and in a different light as a complex and fascinating entity to be discovered and engaged with.

On a more tangible front, the project will result in ease of access to Singapore content resulting in increased research and discovery of Singapore related areas; an increased knowledge of key historical, social and cultural aspects of Singapore amongst students, man-in-the-street, expatriates, new immigrants, and others; and the establishment of a long

term plan and process to sustain the building of the SM collection and its associated components at a national level.

3.3 Major Areas of SM Development

Three major areas of development for the SM are planned. These include (1) the building of national knowledge assets; (2) enabling discovery of existing and creation of new knowledge assets, and (3) seeding education opportunities and knowledge communities to grow and sustain these assets.

Building National Knowledge Assets

Four focus areas are envisaged in order to build the knowledge assets in SM:

- i. Singapore Stories Central to SM is the building of a national digital collection of knowledge assets on all aspects of Singapore that reside in research and academic institutions, public agencies, people organisations and with individuals, and which collectively tell stories about Singapore.
- ii. Beyond Print and Published Materials SM will be a comprehensive collection that will include assets beyond the print and published materials that libraries traditionally collect and other formats that can be digitised including multimedia items and rendering of artifacts.
- iii. Beyond Content in Singapore The coverage of the assets will go beyond what is published in Singapore and into items that are developed outside Singapore but which speaks about Singapore. The coverage would be more expansive and take into consideration the wider context of Singapore in Southeast Asia and Asia.
- iv. Beyond Official Content Besides official documents and printed materials, the project will also cover personal narratives and accounts by Singaporeans about their memories and experiences.

Enabling Discovery and Creation of Knowledge Assets on Singapore

When ready, SM will enable these digitised national knowledge assets to be disseminated

in a borderless manner through the channels of the private, public and people sector agencies to contribute to the project and in the social media field. Through these dissemination mechanisms, the knowledge assets can be accessed, discovered and researched at all levels from researchers, students, institutions or the average individual interested in Singapore. The eventual objective is that the SM content can breed more content through enabling research and creation of even more knowledge assets that can then be ploughed back into SM.

Seeding Education Opportunities and Knowledge Communities

Finally, SM should help to build an understanding of all things Singaporean for Singaporeans - new, young, senior and overseas Singaporeans, and Singaporeans at large. Non-Singaporeans such as expatriates who are interested in Singapore will also be targeted to use and contribute SM resources. Knowledge communities, web media and other shared platforms can be engaged to collaborate, build and further communicate the content about Singapore.

3.4 The SM Value Chain

SM will encompass the entire value chain of creating a collective story of Singapore through a number of inter-related activities:

Sourcing of Knowledge Assets about Singapore from libraries and research institutions, private donors, government agencies and non-government organizations;

Preservation, Organisation and Conservation of the physical collections sourced previously including treatment and microfilming of rare and heritage materials in order to build a SM collection for the research and discovery of current and especially future generations.

Digitisation involving

- The creation of a digital repository of all items on Singapore, including those from the collections of partners of SM.
- The development of applications and services to safeguard and make accessible these collections.
- Digital preservation and digital rights, fees and other management.

Access and Discovery through

- The development of a SM portal (SingaporeMemory.SG) that will include a search facility to any information on Singapore residing within and outside the SM Collection and with all its members and partners. The portal will also be optimised for web search engine discovery so as to further enlarge the coverage and reach of the project.
- Tools such as auto-indexing as well as social tagging by the community will also be explored in order to engage the community and minimise associated manpower costs.

Knowledge Assets Creation through

- Development of further content through research and use of the SM content including online image collections, an online Singapore encyclopedia, etc.
- Physical publications or its equivalent in web publications from research conducted on the SM content.

Project Management of the entire programme by overseeing and managing the project policies, development and partnerships. In this respect, key deliverables include:

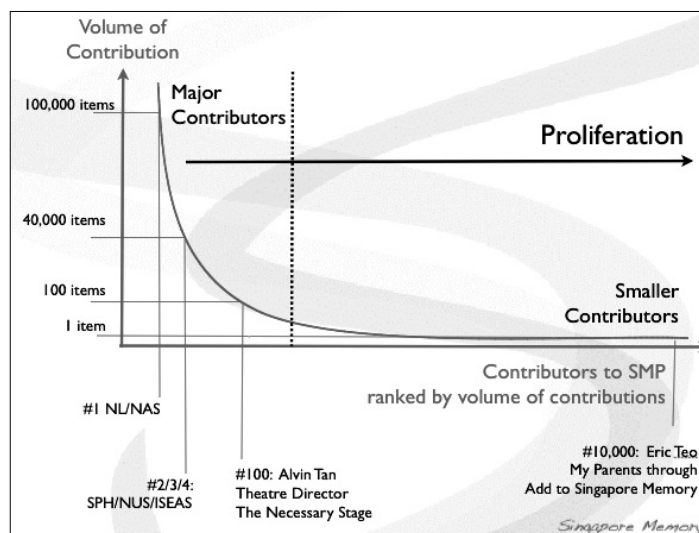
- Co-ordination and establishment of the partnerships and networks and the related areas of access, ownership, copyright and related agreements, capacity and systems.
- Putting in place nationally appropriate standards, tools and acquisition policy and protocols between institutions in handling resources for SM.
- Establishment of collection and archival responsibility of the partner organisations.
- Building of competencies required to sustain SM in the long term.

Audience Development & Knowledge Communities in the building of an audience for the National Memory project through:

- National education programmes in collaboration with schools, government agencies and people organisations to tell the Singapore Story.
- Programmes and exhibitions organised to promote key Singapore story threads that can be derived from the SM collections. This could include public participation programmes that will encourage Singaporeans to contribute their personal items and narratives.
- Knowledge communities, Web 2.0 and social media collaboration with deliverables such as websites, groups and forums for greater proliferation of SM.

3.5 The SM Network

SM is envisioned to be a facilitator to catalyse, enable and scale up complementary activities of the SM Network comprising communities, agencies and organisations. Each of these entities of the SM Network will in turn become multipliers for even more complementary activities. They will also be nodes in a long tail fashion as shown in (Figure 2).



〈Figure 2〉 The Long Tail of the Singapore Memory Network

The long tail expresses the distributed and proliferative manner in which SM will be augmented by efforts of its nodes so that the outcomes will be exponentially greater than if SM were to do this on its own. Hence even though hypothetically only the 20% top-ranked contributors will each contribute a substantial amount to SM, the 80% of the lower-ranked contributors - micro contributors of maybe less than ten items each - collectively will contribute a large amount of content to SM. As of June 2010, more than 300,000 items have already been pledged to SM by its network partners. These assets include:

- Photographs - from SPH's news-photograph archives, Professional Photographers' Association of Singapore, Ministry of Education Heritage Centre's Schools as well as NAS.
- Private papers - of pioneers such as David Marshall, S Rajaratnam and Alex Josey, from ISEAS Library.

- Oral history recordings - from NAS and ISEAS Library on areas such as Singapore's personalities, ethnic associations, the Japanese Occupation, vanishing trades, Singapore's economic and political development, and Singapore's changing landscape.
- Multimedia - National Day songs from the National Arts Council, television snippets from MediaCorp and films on heritage and Singapore from the Asian Film Archive and private donors.
- Contemporary memories - joint development of stories between children and their grandparents with the Council for the 3rd Age (C3A); and a family memory collection campaign with the Ministry of Community, Youth and Sports (MCYS) in conjunction with Singapore's National Family Month.

In addition to these, the Singapore Press Holdings and MediaCorp Publishing have contributed over 70 newspaper titles from the 1800s up to the present.

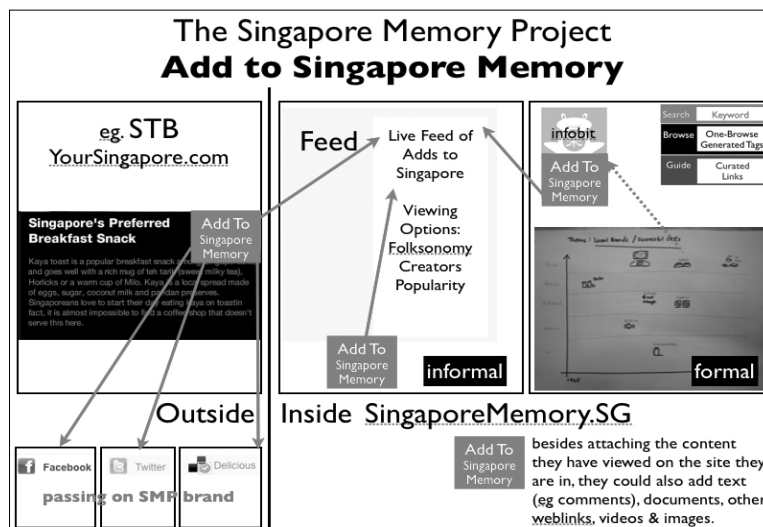
3.6 The SM Proliferation Programme

This is an important aspect of the program to engage a broad range of stakeholders to ensure that the nation's memories are being captured in stories, productions and national showcases in both virtual and tangible forms. The aim to create a memory as seen through the eyes of different sectors of Singapore - government, private, key figures and the general public - effectively resulting in a people's memory of Singapore with key dates, milestones and events. These will include memories of major nation-building milestones as well as prominent and unsung heroes of the nation. SM also aims to identify, through the perspectives of the general population, the ideas and icons that are distinctively Singaporean. The sources for these ideas and icons will encompass the gamut of the arts, business or even daily Singaporean life. Three key platforms have been envisaged for the proliferation programme:

Platform 1 : Add to Singapore Memory

This is a participatory platform that will encourage the researchers, students, families and the public at large to contribute perspectives, stories and memories in the form of videos, photos, writings, web links and even documents. Themes would be developed for Add to Singapore and will run from the founding of Singapore to the present day and age. The topics will revolve around people, places, food, culture and events that make Singapore distinctive.

Add to Singapore Memory App. This application can take the form of a virtual deposit platform with a home site as well as applications to be developed in other social media sites such as Flickr, YouTube, Facebook and Twitter (see Figure 3). The Add application is placed not only in the SM web portal, *SingaporeMemory.sg* but also in other sites by MICA agencies such as the National Heritage Board's *story.sg* or *yesterday.sg* sites and its partners, such as the Singapore Tourism Board's *YourSingapore.com* site. The approach to use multiple points of awareness and access to support contribution is intended to provide a comprehensive and convenient means to permeate the project's reach and coverage.



〈Figure 3〉 Conceptual mockup of the *Add to Singapore Memory App*

Roadshows. In its physical form, roadshows much like Britain's well known Antiques Roadshow could be created to receive contributions from the public that are less tech-savvy. In the place of antiques, historians and story-builders will interface with the general public keen to share and document their stories and experiences about Singapore.

Thematic Contributions. Besides the general *Add to Singapore* platform, there could be *Add to Singapore* competitions or campaigns built around various themes. For example, "Who am I?" can seek to ask Singaporeans who they are to encourage documentation of their responses and possibly create a family tree as part of the documentation. In another example, "This Is My Home" photograph submissions would encourage Singaporeans to take and submit their photographs with their families at their homes through *Add to Singapore Memory*. The

underlying aim would be to get Singaporeans to resonate with the idea of Singapore as home.

Platform II: Mad about Singapore (Audience & Community Engagement)

This will be an audience engagement programme that will catalyse a movement for people and communities that are passionate about different aspects of Singapore, to share their passions and infect other Singaporeans or even visitors to Singapore with their “madness.” This series has been prototyped by NLB in 2010 with community groups such as the Bus-Chasers, and Temple-Crawlers. Other communities to be engaged also include those who are passionate about the neighbourhoods, for example, Queenstown and Toa Payoh²⁾; or about other aspects of Singapore such as streets, buildings, and literature, etc. In this way, SM Proliferation will not just be a top-down government-driven initiative but one that is owned and contributed to actively by the community.

Platform III: Made in Singapore (National & Personal Storyboards)

One key tenet of SM is for content to breed more content. It is envisaged that with the extensive engagement efforts above, the content collected can result in curated national and personal stories. These can be in the form of online productions which can run the gamut from a simple YouTube video or a Flickr photo story to 3D online experience of Singapore. The stories could also be in the form of physical and participatory exhibitions created to showcase the contributions made to SM Proliferation.

SM is proposing to have at least one major story showcased in one such marquee virtual and physical exhibition every year from 2011 to 2015. These could be along the lines of the Pioneers of Singapore - both celebrated and unsung. Currently, *Unsung Heroes* is the proposed theme for 2011 to mark the less known pioneers of the different social and cultural fields in Singapore’s development. This would be followed by *Raffles in Singapore* which will focus on some 20-25 hitherto unpublished letters of Raffles³⁾ as triggers to the new generation and to researchers on the stories of Singapore’s founding. The proposed overall theme of these stories - Made in Singapore - expresses the notion that what is showcased is distinctively made in Singapore.

Memory Operatives. Drawing from volunteers from NLB’s volunteers’ network, school

2) Queenstown and Toa Payoh are public housing estates in Singapore.

3) Sir Stamford Raffles (1781-1826). Founder of colonial Singapore in 1819. Tommy Koh et al. (Eds.), *Singapore: The encyclopedia* (Singapore: Editions Didier Millet; National Heritage Board, 2006), 439-440.

teachers through NEXUS and the elderly through seniors' organisations, SM will be experimenting with collection of stories from the average Singapore by memory operatives. The operatives will be trained in collecting and document stories on a virtual platform that can also act as a community builder for SM. Training workshops have already started since June 2010 to nurture "story writers of history, based on real-life stories and adventures" of Singapore (Tejokusumo, 2010).

Major Proliferation Events and Milestones

In leading up to official launch of the SM project in 2011, a number of starter events are planned in 2010. This includes the "What's Your Singapore Memory?" viral projects and movement, and a global summit "When Nations Remember."

"What's Your Singapore Memory?" is the theme for a series of viral projects to ask for entries to answer this specific question of their own memory. These memories could take the form of products, events, places, people and even behaviours along the themes of Singapore Life, Singapore Fun and Singapore Brands. The movement will include the following three initiatives:

- (1) Singapore Memory Very. Virtual. Viral. The objective of this initiative is to create a virtual and viral movement to build memories about Singapore from anyone. Three professional designers will be commissioned to build their virtual interpretation of SM. In addition, a competition will also be held to select 7 non-professional designers to build their virtual version of the SM website. The 10 virtual representatives which could be websites, applications or games will be linked to the main SM campaign site.
- (2) Singapore Memory Book. A memory starter kit will be given to 1,000 potential contributors for them to record their memories. Selected kits will be showcased during the launch.
- (3) Singapore Memory Small Book. This is a scaled down version of the SM Book project above for the public and visitors to Singapore. These will be distributed at selected partners' premises for the public to pick up. The Small Book, while serving as a means to collect stories from the public, also serves as a branding device for SM.

A two day global summit, *When Nations Remember*, to be held from 11 to 12 October 2010, will focus on leaders of memory initiatives around the world. The objective is to share best

practices/insights from national and global efforts. The summit will have two components:

- (1) Conference. The conference will feature speakers from around the world who have worked on memory projects in the fields of libraries, heritage sectors, commercial sectors and government sectors. Confirmed speakers include the heads of the National Library of New Zealand and the National Library of Netherlands, as well as distinguished speakers from the Library of Congress, UNESCO, and the National Library of China.
- (2) Experience Memory. This is an external choreographed experience to showcase how memories are relived and captured by Singaporean societies and organisations, as well as how memory and identity are played out within the specific context of Singapore.

For the official launch of SM in 2011, a *Singapore Memory Starters* event is planned. Inspired by the idea of a matchbox, *Singapore Memory Starters* follows the metaphor of striking a match and starting a fire. This connotes the viral and infectious nature of SM Proliferation. *Add to Singapore Memory*, the channel for contributions by members of the public will also be launched then together with an official call for the public to contribute memories to SM.

From these initiatives and proposals, it can be seen that a significant emphasis has been placed for the virtual environment through the main *SingaporeMemory.SG* web portal and the *Add to Singapore Memory* platform (as above). For this virtual component to be successful, the following factors and considerations are deemed important and crucial:

(1) Discovery and Engagement

- To provide access that is as ubiquitous as possible to SM content as permissible by rights of the content. Ubiquitous access means access through the internet either via *SingaporeMemory.SG*, through search engines or through related sites.
- To provide discovery services upon access so that more content can be discovered after the first point of access.
- To engage the users at each point of their discovery process so that they feel invested to discover more or to participate in augmentation and creation of content.

(2) Augmentation and Creation

- To provide avenues for users to add to the SM content either upon encountering SM content or from anywhere else on the Internet.

- To provide avenues for users to create content either through repackaging SM content or through being inspired by SM content.
- To provide avenues for users to contribute both types of content above to *Singapore Memory.SG*.
- This expresses the SM mantra of “content breeds content” - every item of content in SM is a trigger for more content to be added or created.

(3) Assets Collection

To provide a content management system to continually build and preserve content on Singapore from the above sources and from all other content pipelines.

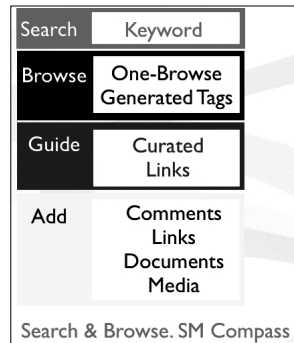
3.7 The SM Virtual Discovery and Engagement

In order to actively support virtual discovery and engagement by the users and stakeholders, a number of services and ideas have been conceptualised for the SM project.

The Singapore Memory Compass

The SM Compass will be a ubiquitous service that will appear with the presentation of every content item in order for the user to be able to go further in the discovery process and to provide him or her with an option to add content (Figure 4). The SM Compass has four features:

- Search. To be able to enter search terms to launch another search.
- Browse. To browse search results that can be generated dynamically based on pre-selected search terms that are relevant to the content item being viewed.
- Guide. To browse content that has been curated by librarians and other appointed content curators and which is relevant to the content being viewed.
- Add. To be able to add comments, weblinks, documents and other media related to the content item being viewed through the *Add to Singapore Memory* service platform.



〈Figure 4〉 Conceptual mockup of the SM Compass

Besides the usual search and browse functions supported by the SM Compass, three other ways in which SM Content can be shown in a manner that will engage the user to discover more and be inspired to add or create content for SM have been proposed. These include:

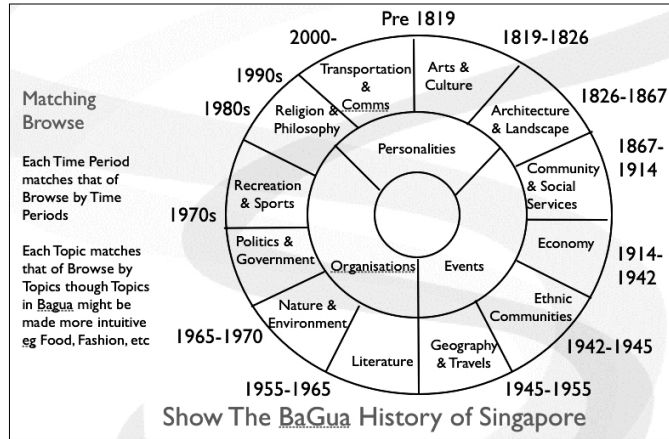
1. The BaGua History of Singapore
2. The Singapore Memory Matrix
3. The Singapore History Experience

The first two models use time and topics (BaGua) and, time and perspectives to show SM Content in an engaging manner that stimulates further discovery. The third model (Experience) harnesses time and space to show SM Content in an experiential manner.

BaGua History of Singapore

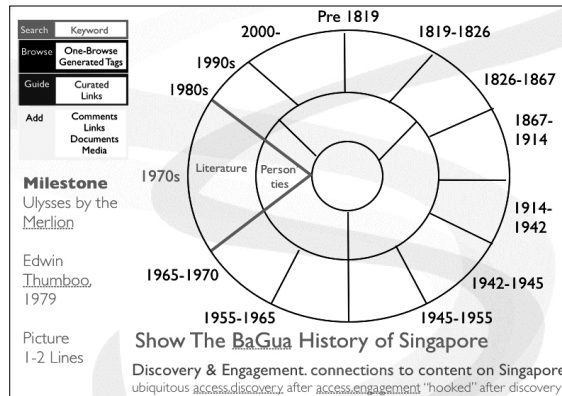
The BaGua⁴⁾ Model shows the history of Singapore through matching the time periods (that is similar to the Browse by Time Periods in the Browse Categories to two levels of the Browse by Topics - the first level being Personalities, Events and Organisations that cut across all browse topics and the second level being the rest of the topics (see Figure 5).

4) BaGua (Chinese: 八卦; literally "eight trigrams"). This refers to the eight trigrams of the I Ching (or Book of Changes), a classic Chinese book of wisdom based on a system of 64 hexagrams and their oracular associations. Jack M. Balkin, *The laws of change: I Ching and the philosophy of life* (New York: Schocken Books, 2002), 44.



<Figure 5> Conceptual Mockup of the BaGua History of Singapore

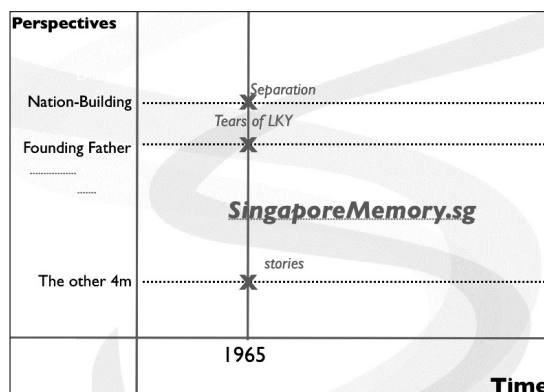
By matching the first level browse topics with the second and a specific time period, the user will be able to view a description of a moment in history. For instance, by matching Personalities (from the first level) to Literature (from the second level) to 1970s (from the time periods), the user would view a description of a major milestone in literature in the 1970s by a notable personality (Figure 6), in this instance, poet Edwin Thumboo's work *Ulysses by the Merlion*. The user would be able to view a milestone on this - a 1 to 2-line write up accompanied by a relevant icon which in this case could be the cover of the volume of poems or a picture of the Merlion. At this point, the user can also use the SM Compass to search for more items, browse content that can be generated with pre-generated tags relevant to the content, find items curated by librarian, for example, a copy of the poem or a biography of Edwin Thumboo, or add comments and other media related to Edwin Thumboo, the poem or literature in the 1970s.



<Figure 6> Matching of the 3 levels of the BaGua’s concentric circles in the derivation of a Singapore milestone

The Singapore Memory Matrix

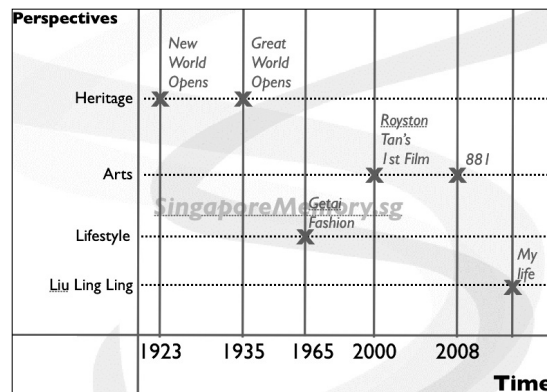
The Matrix Model presents memories as a function of perspectives and time. For any event in time, there could be multiple perspectives from different experiences. For instance in (Figure 7), the *separation* of Singapore from Malaysia could be viewed from the history books as a milestone in *Nation-Building*, the perspective of *Minister Mentor Lee Kuan Yew* (*Tears of LKY* - as expressed in the telecast of him tearing up on television when announcing the separation) or from the perspectives of the other members of Singapore’s population (here expressed as *the other 4 million* inhabitants).



<Figure 7> Conceptual mockup of the Singapore Memory Matrix showing the separation of Singapore from Malaysia in 1965 as seen through different perspectives

The key to exploring SM content through the matrix is that from any one entry point selected on the matrix, a constellation of other possible content emerges framed by time and/or perspective.

For instance, if a user is keen on exploring “881”, the 2008 local film inspired by getai⁵⁾ (stage shows during the 7th month Hungry Ghost Festival⁶⁾), he could see other possibilities emerge in the Matrix (Figure 8) - along the heritage perspectives (in terms of other possible amusement venues in history); the artistic perspective (in terms of more content on the director Royston Tan including his first film in 2000); Lifestyle perspective (in terms of e.g. the evolution of getai fashion from the 1960s to today) and even from a personal perspective (in terms of the life story of one of getai’s most notable hosts and performers - Miss Liu Ling Ling who was also a star of 881).



〈Figure 8〉 Singapore Memory Matrix showing a constellation of possible memories and content framed by time and multiple perspectives

A series of matrix will be developed with each matrix bearing some form of theme, for example, local brands or art. Each theme would then have an accompanying essay of between 700-1000 words. Each item on the Matrix will be accompanied with an info-bit of between

5) Getai (Chinese: 歌台: literally “song stage”). These are the song performances and operas staged, along with auction of goods and neighbourhood celebration dinners all held as part of the 7th month
 6) The Hungry Ghost Festival or the Feast for the Wandering Souls is held on the 7th month of the lunar calendar. On the 15th day of the 7th month, families pay respect to their deceased relatives and visit their graves often with much feasting as if their dead relations were still with them. Tan Bonny (1999). *Hungry ghost festival (zhong yuan jie)*. Retrieved July 15, 2010, from <http://infopedia.nl.sg/articles/SIP_758_2004-12-16.html>.

150-200 words. All essays and info-bits would be curated by the SM content team to be hyperlinked to digital content items (like a photograph, an e-book, a newspaper article or a video clip) both within and beyond the SM Virtual. In this way, users are guided along in their Singapore discovery process along a multitude of time, events and perspectives, while feeding back into the knowledge assets collected by SM.

The History Experience

This model utilizes the concept of Google Streetview as a basis of the history experience service. For example, on a spatial landscape such as the Padang⁷⁾, the user can choose a few ways to view the information that has been geo-tagged onto key location markers:

- By Time, the user can view the space according to the different time periods e.g. 1960 or 2010.
- By Type, the user can view the space according to the types of markers. For instance if he chooses a Monument Guide, he will see the markers tagged to major monuments. If he chooses a Historical Events Guide, he will see the markers tagged to major historical events that occurred in the Padang.

Each marker could be tagged with tourist information, historical information, or information related media such as stories, videos, poems, events, people, trails, photos, and so on.

(Figure 9) shows an example of the Padang been tagged with an event - a PAP⁸⁾ (People's Action Party) Rally in the year 1960 - and Mr Toh Chin Chye, former deputy prime minister has been tagged in the picture of the rally. The user can choose to click on Mr Toh and find more information related to him or he can use the SM Compass to continue his discovery process.

7) The Padang ('flat field', in Malay) is an open space in the heart of the civic district. The frequent use of the Padang in the past as a venue for National Day celebrations underlines its civic importance. Then Prime Minister Lee Kuan Yew declared Singapore's independence from the same location on 9 August 1965. Tommy Koh et al. (Eds.), *Singapore: The encyclopedia* (Singapore: Editions Didier Millet; National Heritage Board, 2006), 401.

8) The PAP or People's Action Party is a local political party formed in 1954. By 1961, the PAP had emerged as Singapore's dominant political party. Tommy Koh et al. (Eds.), *Singapore: The encyclopedia* (Singapore: Editions Didier Millet; National Heritage Board, 2006), 408-409.



〈Figure 9〉 Conceptual mockup of the SM Virtual History Experience

It should be pointed out that these approaches are preliminary concepts that are subject to further evaluation and assessment. Other areas of consideration in the SM proliferation are to consider how to maximize the impact of exposing the newly content to generate users interest and engagement. In this respect, the next section provides two examples of how NLB have in the past explored means to ensure its online resources are widely available for discovery and use by the users digitally.

4. Content Exposure for Discovery and Use: Singapore Infopedia and NewspaperSG

One of the strategies that NLB has adopted is to expose the content via popular search engines so that users are able to get direct access to the rich content within the social space that customers are most accustomed to. This was first adopted using an encyclopedic database of articles on Singapore's history, culture, people and events known as the Singapore Infopedia (Figure 10).

Singapore Infopedia comprises some 1,500 articles which includes a list of recommended resources for further reading. Search engine optimization techniques (Spencer, 2008) and a re-design of the website architecture were utilized to enhance discovery of these electronic content via search engines (Ng, Yit & Lee, 2010). The indexed content became accessible directly through these search engines 24 by 7. This resulted in a turnaround of an original low

page hit averaging between 300 to 400 page views a month to the current 150,000 to 180,000 page views a month, a 450-fold increase since the change was implemented.



<Figure 10> Screenshot of an article from Singapore Infopedia (<http://infopedia.nl.sg/>)

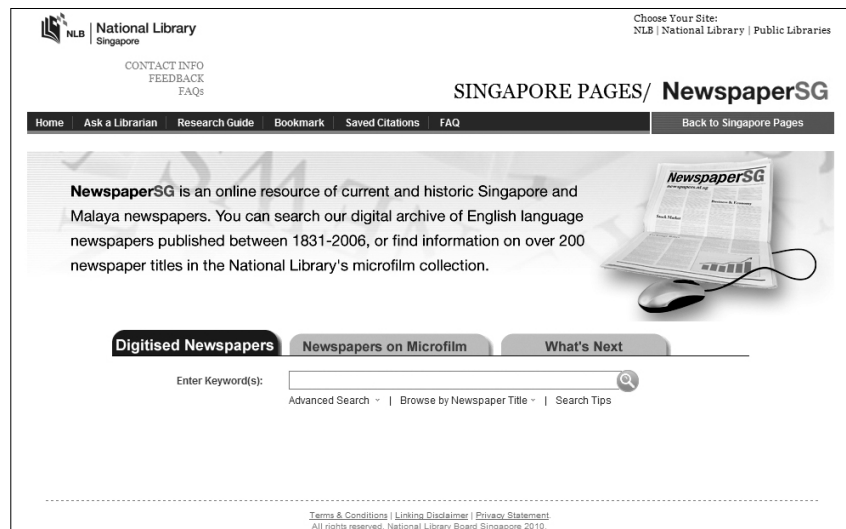
Subsequently, an interactive Infopedia map (<http://infopedia.nlb.gov.sg>) was also created to provide users an alternative way to navigate through NLB's collection on Architecture and Landscape comprising about 400 articles using a visual map (Ng & Lee, 2008). The location of the Infopedia map can also be searched from Google Map (<http://www.google.com/maps>) or Google Earth, thus providing another means for online users to discover NLS's collections (Figure 11).



<Figure 11> Infopedia map showing categories of information, location of "story" on map

The Singapore Infopedia is also presented as a blog known as InfopediaTalk. The blog allows users to comment on the articles, add information, stories and interesting anecdotes about the topic, and encourage conversation and discussion amongst readers interested in the topic itself. To encourage sharing of the content, users are also allowed to link NLB's content from Singapore Infopedia to social media tools such as Facebook, LinkedIn, Digg, Delicious. Such expanded features have led to further exposure and increased usage of content.

Learning from success of Singapore Infopedia, the same strategy was applied to another commonly used resource and newly launched service, NewspaperSG - an online resource of current and historic Singapore and Malayan newspapers (Figure 12).



〈Figure 12〉 NewspaperSG website (<http://newspapers.nl.sg/>)

In NewspaperSG, the content owner, Singapore Press Holding, granted permission to NLB to digitise and provide access to one of Singapore's national newspapers, the Straits Times, for all past issues from 1845 up to 2006. Born digital copies beyond 2006 are deposited directly in NewspaperSG. NLB is one of the select few in the world to have secured the rights to digitise or obtain and provide digital access to all the past issues of its major newspapers in a country from its first issue to almost the current day (Ng, 2010). Users can search any issue of past newspapers by keyword, and find the exact article and view it, onsite or offsite, depending on the year of publication. The retrieved newspaper display (not shown) provides options for article view or full view, a table of contents, and linking to social media sites. This

table of contents of each newspaper issue, consisting of article headlines, dates of publication, page numbers and 50-word extracts is generated and submitted to search engines for crawling (Figure 13) to enable search and access of the site through the search engines.

The Straits Times, 3 March 1978
 Article also available on microfilm reel NL9593 [Lee Kong Chian Reference Library - On shelf]
 Search Articles - < Previous Day | Next Day >

Table of Contents

Note: Selected articles may only be viewed from the multimedia stations at NLB Libraries. For more information, please visit the FAQ page. The searchable newspaper text that appears in the article extract has been automatically generated using an Optical Character Recognition software and may contain mistakes.

<ul style="list-style-type: none"> ■ Page 1 ■ Page 2 ■ Page 3 ■ Page 4 ■ Page 5 ■ Page 6 ■ Page 7 ■ Page 8 ■ Page 9 ■ Page 10 ■ Page 11 ■ Page 12 ■ Page 13 ■ Page 14 ■ Page 15 ■ Page 16 ■ Page 17 ■ Page 18 ■ Page 19 	<p>Masthead [TITLE_SECTION] Page 1 The Straits Times Estd. 1845 FRIDAY, MARCH 3, 1978 25 CENTS M.C.(P) No. 214/1/78 (14 words) Page View Save to myLibrary Add to Citation</p> <p>\$ DROP MAY HELP CARTER [Articles] Page 1, REUTER, AP, UPI DROP MAY HELP CARTER Govt to force Congress on energy WASHINGTON, Thursday UNITED States Government officials today sought to use the dramatic plunge of the dollar on world money markets as a lever to force Congressional action on President Carter's stalled energy programme. Foreign currency experts blamed the dollar's slide... (550 words) Page View Save to myLibrary Add to Citation</p> <p>Mid-air blast foils hijack [Articles] Page 1, AFP Mid-air blast foils hijack ISLAMABAD, Thursday GRENADE went off in the hands of a hijacker today when three passengers on board a commandeered Pakistani Boeing 747 jumbo jet rushed him in mid-air. The plane, on a regular flight from Islamabad to Karachi, was able, however, to return for an emergency... (247 words) Page View Save to myLibrary Add to Citation</p>
--	---

<Figure 13> Each newspaper issue yields a “Table of Contents” that is submitted to search engines for crawling

NewspaperSG garners significant usage, with around 300,000 page views per month and 40,000 visits to the site. These examples illustrates the importance of content management, design for maximize exposure, and engagement with the users to support their search, access, use and contribution. They also serve as important learning points for the SM project.

5. Conclusions

The paper has presented a case study of NLB in Singapore in its involvement in a national Singapore Memory project which is envisaged and developed in a Library 2.0 environment. It outlines a number of key development areas, its proliferation strategy, and means to support resource discovery and engagement of her users. The project’s success hinges on its ability to be socially engaging, supported by varied content from different perspectives to capture memories of the nation, harnessing multimedia to provide realism and richness, and developed on a physical and virtual platform that is communally innovative such as the use of the BaGua which is a familiar cultural icon in the Singapore identity. Beyond being multilingual, the project

adopts tested strategies to enhance discovery, access and contribution from within and beyond. The scale and scope of such a project led mainly by library professionals also attests to the demanding and changing roles, as well as the potential of librarianship for the future.

References

- [1] Balkin, J. M. 2002. *The laws of change: I Ching and the philosophy of life*. New York: Schocken Books.
- [2] Chang, R. 2010. "Wanted: 5m memorable moments from past." *The Straits Times*.
- [3] Chia, S. 2009, September 17. "Moves to forge bonds unveiled." *The Straits Times*.
- [4] Chia, S. 2010, March 11. "Know the past to tackle the future." *The Straits Times*.
- [5] Hoe, Y. N. 2010, June 2. "Keeping S'pore recognisable, as it transforms: PM hopes immigrants here become 'more Singaporean' in outlook." *Today*.
- [6] Koh, T., Auger, T., Yap, J., & Ng, W. C. Eds. 2006. "The encyclopedia." Didier Millet (in association with the National Heritage Board), Ed. *Singapore budget 2010: Ministry of Information, Communications and the Arts (MICA)*. The Treasury, Singapore: Singapore Ministry of Finance. [online]. [cited 2010. 7. 15].
<http://www.mof.gov.sg/budget_2010/expenditure_overview/mica.html>.
- [7] Ng, J. 2010. "Digital Access to Singapore Newspapers through Newspaper SG." [online]. [cited 2010. 7. 15].
<http://www.ifla.org/files/national-libraries/Newsletters/June_2010.pdf>.
- [8] Ng, J., & Lee, I. 2008. "Repositioning our information Services in the digital age: a study of the National Library Singapore Strategy." *Proceedings of the Fourth Shanghai International Library Forum*, 27-35. Shanghai: Shanghai Kexue Jishu Wenxian Chubanshe.
- [9] Ng, J., Yit. C. C., & Lee, I. 2010. "You Virtually Can't Miss Us: Harnessing Virtual Tools to Enhance the Quality of our Reference Services." Radford, M. L., & Lankes, R. D., Eds. *Reference Renaissance: Current and Future Trends*. New York: Neal-Schuman Publishers.
- [10] Spencer, S. 2008. "*Best-kept Secrets for Search Marketing Success: the Art and the Science.*" *Web 2.0 Expo NYC 2008*. [online]. [cited 2010. 7. 5].
<<http://www.web2expo.com/webexny2008/public/schedule/proceedings>>.
- [11] Tan, B. 1999. "Hungry ghost festival (zhong yuan jie)." [online]. [cited 2010. 7. 5].

- 〈http://infopedia.nl.sg/articles/SIP_758_2004-12-16.html〉.
- [12] Tan, V. 2009, July 18. "MM Lee says Singapore needs to do more to achieve nationhood." *Channel NewsAsia*. [online]. [cited 2010. 7. 5]. 〈<http://iworks.factiva.com/>〉.
- [13] Tejokusumo, A. 2010, June 27. "Rediscovering Singapore in the library." *The Jakarta Post*. [online]. [cited 2010. 7. 5]. 〈<http://iworks.factiva.com/>〉.
- [14] Xu, C., Ouyang, F., & Chu, H. 2009. "The academic library meets Web 2.0: Applications and implications." *The Journal of Academic Librarianship*, 35(4): 324-331.

