Lexicon Sextant: Modeling a Mnemonic System for Customizable Browser Information Organization and Management

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This paper presents an ongoing study of the development of a customizable web browser information organization and management system, which the author has named Lexicon Sextant (LS). LS is a user friendly, graphical web based add-on to the latest generation of web browsers, such as Google Chrome, making it easier and more intuitive to store and retrieve favorites (bookmarks) since it only uses two levels (six main headings & 12 sub-headings). A total of 98 participants completed the task of categorizing 18 thumbnails from specific websites, together with 18 thumbnails from random websites, under six main LS headings, i.e. Work, Lifestyle, Travel, Health, Education, and Money. This was followed by a recall exercise of 12 randomly generated websites. The results showed that the participants had a better correction rate in Money and Lifestyle, but a worse correction rate in Work and Education among the overall correction rate, appointed correction rate, and self-chosen correction rate, in terms of each category task performance.

Keywords: bookmark management, lexicon sextant, user interface, web browser

INTRODUCTION

Bookmark management systems, in all their many forms, have become part of our personal information management lifestyle. As dissemination of information using personal computers, smart mobile devices and web browsers becomes ever more pervasive, the surfeit of digital information that we accumulate every day has brought the problem of information overload into sharp focus.

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This paper examines the capabilities of the Lexicon Sextant (LS) prototype, which is based on published formative research (Personal information management : the professional and organizational dimensions : Unicom seminar : Selected papers, 1995; S.-T. Shen & Prior, 2013a, 2013b; S. Shen & Prior, 2012). Through a series of user task performance studies, together with user satisfaction feedback, the LS interface is undergoing validation trials leading to the potential of a full-scale online product.

LITERATURE REVIEW

Browser bookmark management systems

The current generation of browser bookmark management systems was designed with the average internet user in mind. However, for many people, bookmarks are now a part of our daily working lives. Things start getting unmanageable and slow when our bookmarks start numbering in the thousands and for some heavy users, even several thousands.

Based on (and extended from) the PC desktop metaphor, browser bookmark systems provide a hierarchical tree structure for online users to organize their personal data such as digital files, images, videos and internet bookmarks (favorites). Originally, the introduction of files and folder structures (directories) on the first personal computers was supposed to help the user in categorization, information retrieval and browsing. This was initially successful due to the relatively small number of files and folders in use. More recently, however, the usability of filing systems has been questioned by several researchers as being outmoded and unable to cope with the vast data flows of today's 24/7 society (Barreau & Nardi, 1995; Dourish et al., 2000; Sullivan, 1996) (see Figure 1). Bloehdorn and Volkel (2006) pointed out that it is problematic (with their single location ascribe) to browse to maximum specificity (retrieval needs the exact directory), miss-orthogonality (all orthogonal dimensions being forced into one access path), path order dependence (contrast to the directories seen as independent attributes), no query refinement (no list of relevant directories to search), and no navigational aid (no indication of the content of subfolders) (Bloehdorn & Völkel, 2006). It is now common for users to own more than one personal computer, laptop, smartphone and tablet. With the advent of the popularity of different sizes of smartphones and tablets, browser bookmark management has become significantly crucial and challenging to users. Users are required not only to sort out and synchronize bookmark data across different platforms from their gadgets and devices, but also to search and retrieve their wanted bookmarks.

### Related work in browser-based system of folders

Bellotti, Dalal, Good, Flynn, Bobrow, and Ducheneaut (2004) studied how users conduct their tasks in emails and found that if users intend to make efforts, they could complete to-do task lists such as folders and calendars based on pre-arranged

State of the literature

- The search for a better web browser interface has been ongoing since the beginnings of the WWW in the early 1990's.
- We have now reached a stage whereby the overwhelming amount of daily data is starting to have a detrimental effect on users' web browser capabilities.
- Several novel web browser interfaces have been reported in the literature, however, none have found widespread acceptance amongst the user community due to over-complications and poor user interface design.

Contribution of this paper to the literature

- The novel Lexicon Sextant web browser interface proposed in this paper consists of a two-level architecture, therefore providing a relatively easy to use mnemonic system.
- The six main headings and the 12 sub-headings have been extensively developed over a period of in-depth consultation with users, and with reference to other categorization methodologies and system taxonomies.
- The proposed solution can be integrated into the most widely used web browsers, such as Google Chrome and Windows Internet Explorer via an Add-On extension.
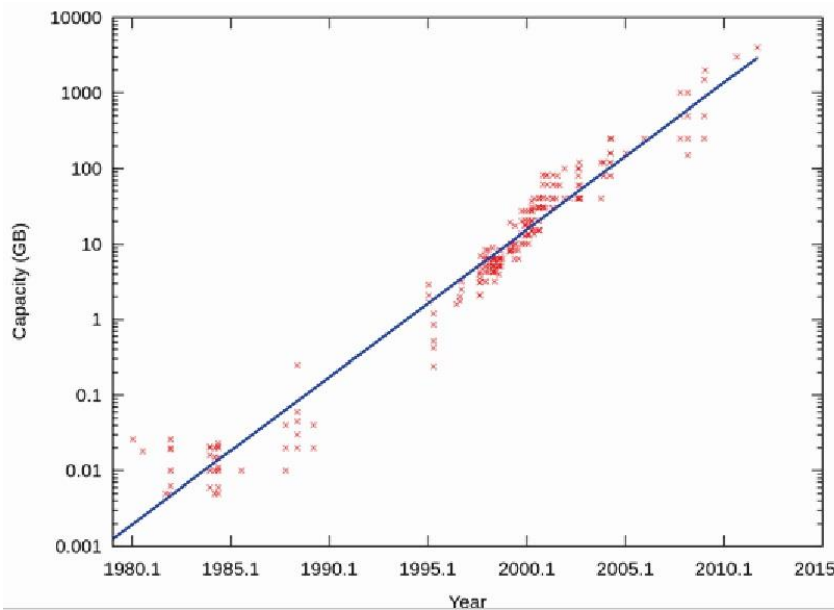
Figure 1. Exponential Increase in Hard Drive Capacity Over Time (Wikipedia, 2014)

information. Their results show that users have their own way to handle specific task management. The prototype of TaskVista as a personal task list manager component aims to help grab abstract properties and contents in practice (Bellotti, Dalal, Good, Flynn, & Bobrow, 2004). Whittaker, Bellotti, and Gwizdka (2006) also investigated email's major functionality including task management, personal archiving, and contact management, regarding to the organization tasks of the inbox, folders and search in personal information management. The approaches of centralization (i.e. collecting accessible data) and data extraction (e.g. in contact manager and to-do lists) are used to store and retrieve personal information (Whittaker, Bellotti, & Gwizdka, 2006).

Email (either via web browsers or smartphone/tablet app platforms) plays an important part of all our daily lives, in order to communicate with others for business and social activities. However, its combination with search-oriented functions such as Gmail, and instant messaging i.e. Line has made the development of task-based management more diverse. For example, users may find it more efficient to talk and chat through instant messages (such as FaceTime and Skype) and blogs for sharing news and photo albums (such as Twitter and iCloud), rather than by sending emails.

Dai, Lutters, and Bower (2005) pointed out that mobile task-based applications have a strict structure for data collection (such as contact and to-do lists), but are inappropriate for data retrieval. Based on their field study, they further suggested designing an integrated system where it has a persistent organization and could connect and access to data across all personal information management tools (Dai, Lutters, & Bower, 2005).

'Stuff I've Seen' (SIS) developed by Dumais, Cutrell, Cadiz, Jancke, Sarin, and Robbins (2003) has a unified index of information that the user has seen, including emails and other various metadata properties. It provides rich contextual cues including time and thumbnails in that the user who has previewed data before (Dumais et al., 2003). Similarly, 'Phlat' suggested by Cutrell, Robbins, Dumais, and Sarin (2006) claims to maximize search and browsing by associative and contextual cues such as keywords and attributes. It has a unified tagging (labeling) system which allows users to manage their metadata from different systems and easy to retrieve (Cutrell, Robbins, Dumais, & Sarin, 2006).
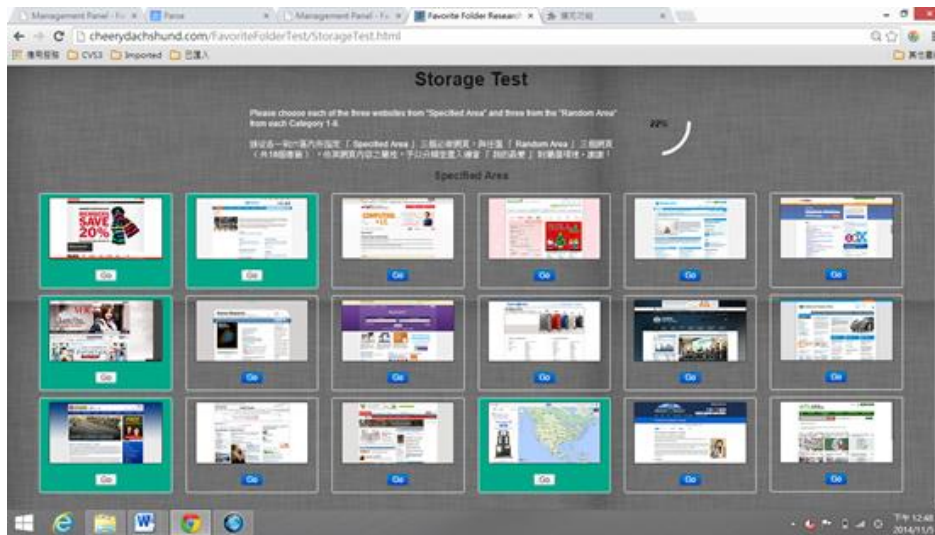
Figure 2. Tabular layout page

All of the above attempts to improve the organization and management of bookmark information failed due to poor UI design, complexity and the mental overload caused by the overwhelming amounts of information.

2D interfaces have not radically evolved since the introduction of Graphical User Interfaces (GUIs) in the 1980s. The linear, hierarchical structure has been the standard and has been applied extensively to both filing systems and bookmark management systems. The exploration of alternative 2.5D information visualization still needs more empirical research to support further development.

The gaming industry is driving forward technological developments in 3D UI and has overcome many of the barriers to adoption in terms of speed of processors and graphical display resolution. Developers can learn a lot from this experience.

USER STUDY TRIALS

Test conditions

Each participant (mean age 24.3 yrs, sd =6.8) was rewarded with 2,000 NT$ (approx. 65 US$) for their time. All the participants had previously qualified with intermediate certificate of General English Proficiency Test (GEPT) issued by the Language Training and Testing Center (LTTC) in Taiwan. The computer used during the tests was running Windows 8.1 with CPU Intel Pentium 4 (3.20 GHz) 4 GB Ram, using the Google Chrome browser.

User study in prototype

The study involved a total of 118 participants (63 males and 55 females) and was undertaken during 16 June-15 July 2014. After a brief introduction and demonstration of the LS interface, the participants were asked to do a series of tasks including installing an extension, entering the given distinctive User ID and Password, clicking the given main index page, and categorizing 18 Specified websites and 18 Random websites.

They were each given 72 (English) websites with which to bookmark into six specific headline categories i.e. Work, Lifestyle, Travel, Health, Education, and Money based on an earlier Lexicon Sextant protocol (see Appendix A). Under each category, each participant had to complete three appointed website links, and three self-chosen ones. The interface which contained 72 thumbnails was designed in a simple tabular format in order not to visually distract the participant's attention during the test. There was also a progress ring to remind the participant about the
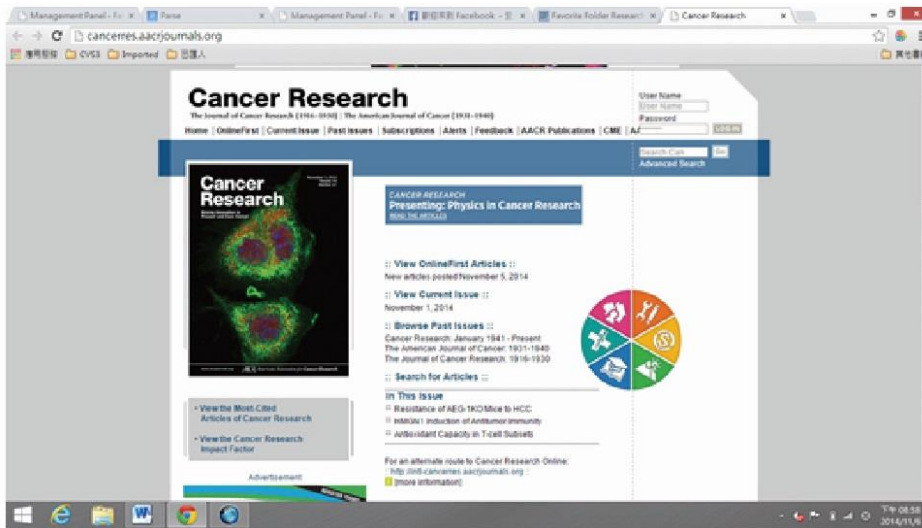
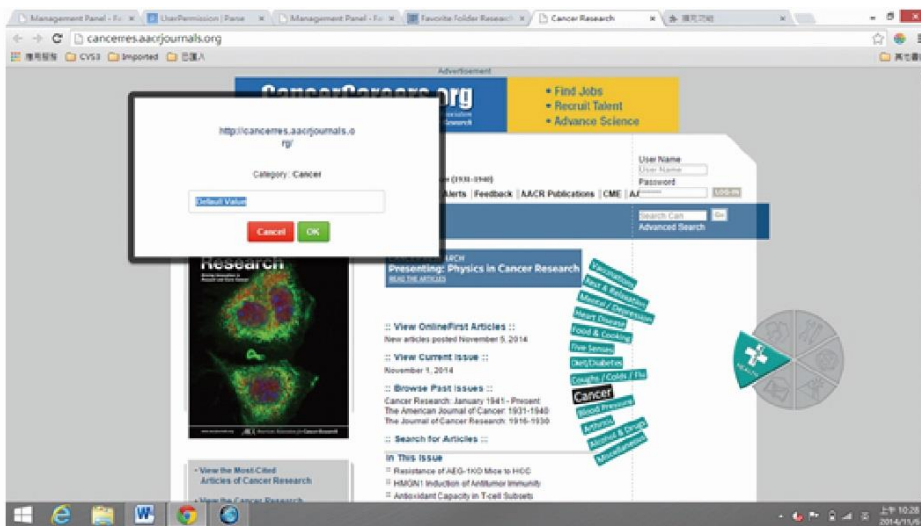**Figure 3.** Lexicon Sextant with a sample web page

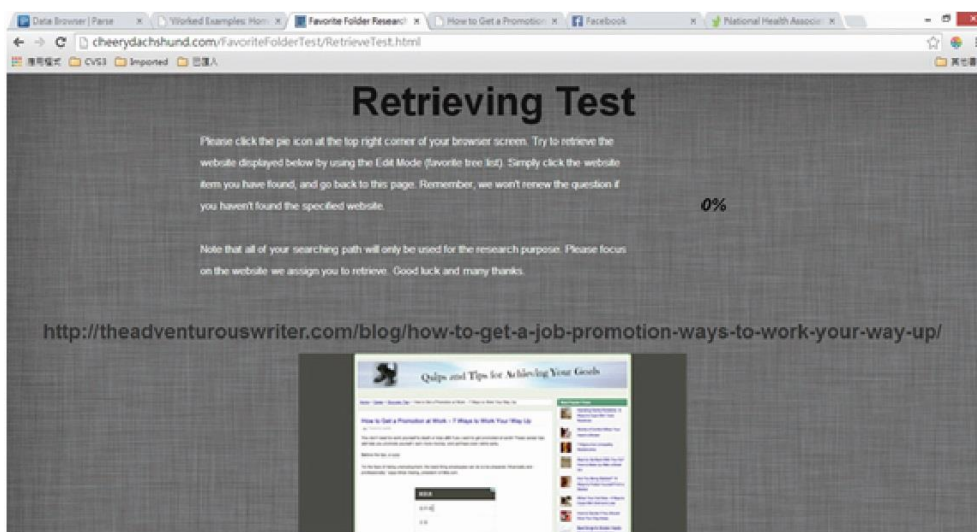**Figure 4.** Lexicon Sextant categorization

Figure 5. Test interface

percentage of the completion status. Once the participant managed to categorize the web link successfully, that thumbnail would turn into a turquoise green color, and

the participant was prevented from changing the result (see Figures 2-4). Once each category was completed, the participant was prevented from further browsing and bookmark actions in that category.

Once the categorization was complete, the progress ring would show 100%, and the participant was congratulated and asked to continue to the next Retrieval task (see Figure 5). During the test, the participant was asked to find 12 particular random chosen websites that had been bookmarked successfully into the system. Firstly, the screen would show the appointed web link and its thumbnail, the participant could click the link or thumbnail to browse the page. Secondly, the participant had to remember where they categorized it from the History record, where it could be found by a clickable six-color pie icon right next to Chrome's Omnibox for easy access. Clicking the icon would open a popup window which is the History menu where it has six main categories and their sub categories (see Figure 6). The participants had to make a decision and click the bookmarked page to see if it matched the assigned one. If both of the pages matched each other, a pop dialogue

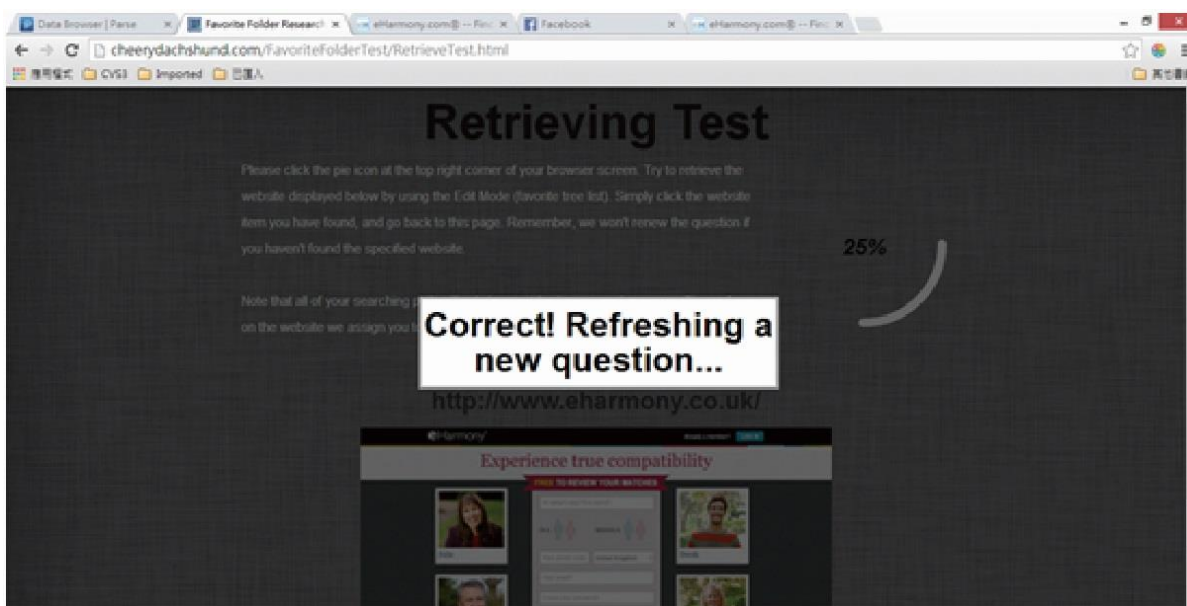**Figure 6**. Lexicon Sextant history sidebar menu

Figure 7. A dialogue box showing the participant feedback

box would inform the participants (see Figure 7). If not, the system would continue generating the next question till the participants completed the 12 appointed pages.

The time taken for each user's performance was measured and graded on how well they accomplished the tasks. This was followed by a five-point Likert scale satisfaction questionnaire where the participants were asked to provide their feedback on what they thought of the Lexicon Sextant prototype.

RESULTS

Pre-survey

The user study group consisted of a high proportion of Taiwanese students (74.6%), the majority being UG students (62%), and Master students (30%). It is accepted that young people make up the bulk of 'new tech adopters' and this group was also a readily accessible source for this study.

The bulk of the participants (81%) described their computer skills as intermediate or higher. In general, the average time spent on the Internet was 7.5 hours a day. Almost all the participants (99%) of the participants were aware of the favorites (bookmark) function, and 94% of them regularly saved web pages using favorites (bookmark). Nevertheless, there were 30% of the participants who found it difficult to manage their favorites (bookmark) folders, even though most of the participants (92%) had knowledge of how to organize this. The study found that (71%) kept under 50 bookmarks in their favorites (bookmark) folder, and 70% of the participants used only two or three levels for this. Unsurprisingly, 84% of the participants often experienced problems when revisiting a web page. It was found that 40% of the participants used their favorites (bookmark) folder to retrieve known URL's, whereas 35% of them used the History function. 18% of the participants used one or more methods via favorites, History, and Google Search.

Task performance

A total of 36 thumbnails (within the six main headings) had to be categorized; including 18 required ones (three for each main heading) and 18 self-chosen ones (three for each main heading). There were 98 users who completed the website storage task (Male 55% and Female 45%). The percentage of all the participants who answered the 36 questions correctly across the six main headings was: Money (70%), Life (70%), Health (70%), Travel (67%), Work (48%), and Education (40%). The percentage of the assigned questions that the participants answered correctly under each category was: Travel (78%), Money (77%), Life (76%), Health (76%), Work (50%), and Education (41%). The percentage of the self-chosen questions that the participants answered correctly was: Life (67%), Health (66%), Money (65%), Travel (57%), Work (56%), and Education (47%).

Table 1 and Figure 8 indicate that the female participants appear to improve their performance times with increasing levels of experience. Data for the male participants is slightly less conclusive.

The overall average total retrieval time was 985 s (16.4 m). The overall average time for retrieving each correct website was 61.4 s. The average time of retrieving each correct website for the male participants was 64.7 s (sd = 80.2 s), whilst the time for females was 58.1 s (sd = 55.4 s). Note the large standard deviations from the mean for both groups.

Post-survey

Of the survey sample, 93 out of 118 participants completed the post satisfaction questionnaire. Nearly two thirds of the participants (62%) agreed that the concept of Lexicon Sextant is familiar and its information display is in a natural and logical
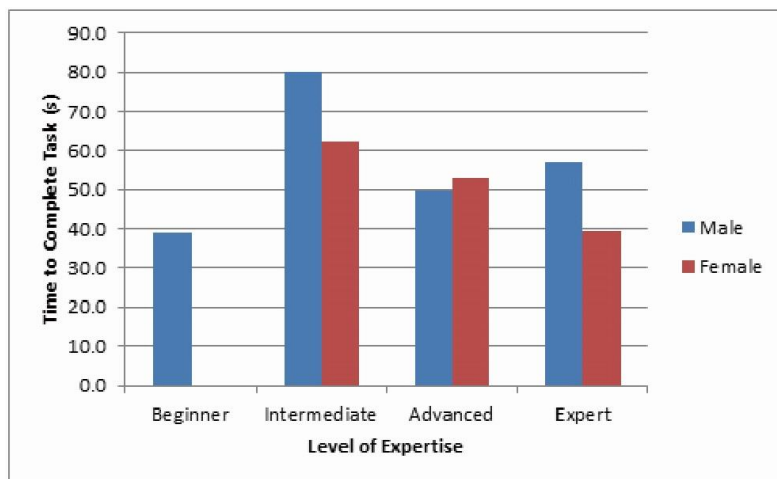
Figure 8. Participants' retrieval time (s) in terms of level of expertise

Table 1: Influence of level of expertise on task completion times

Gender	Level of Expertise	Average Time (s)	% of Participants
Male	Beginner	39.1	16
	Intermediate	80.1	52
	Advanced	49.9	20
	Expert	57.0	12
Female	Beginner	0.0	0
	Intermediate	62.5	59
	Advanced	53.0	38
	Expert	39.4	3

order. Similarly, 62% of the participants considered that Lexicon Sextant's visual icons and layout fit appropriately to the context and allow users to adapt frequent actions and speed up the interaction. There were 70% of the participants who regarded its visual icons and layout containing relevant information and the overall design is visually appealing. 63% of the participants agreed that the six slices and sub-headings are logical representational equivalents to folders and files. More than half of the participants (57%) found it is easy to create or delete a new bookmark.

Furthermore, 70% of the participants found that it was easy to name a bookmark, and 72% of them agreed that it was easy to tell the color of the slices. More than half of the participants (56%) considered the use of the History function makes it easy to view their history records. There were 63% of the participants who thought that this method of finding a website would be faster than using traditional methods in IE, Safari, Chrome, Firefox, etc. There were 68% of users who estimated that it would be faster. User feedback included the enhancement of showing the title of the web sites, rather than showing the web links when bookmarking, and it takes too long to call for the six-color Lexicon Sextant to bookmark. This needs to be speeded up in future releases.

DISCUSSIONS

In general, the Lexicon Sextant (LS) prototype had a high satisfaction rate amongst the user survey group. In terms of functionality, there were 19 participants who reflected that it was not easy to launch the LS pie by double clicking the right

mouse operation, in that a context menu often appeared upon user interaction by a single right click mouse button. Further, the participants also found the speed of the web page loading was slow. The reason could be explained in that a content script that is a JavaScript file runs in the context of web pages will fire, only after the static HTML page is fully loaded. Therefore, the participants have to wait for the complete loading event, and then the Lexicon Sextant pie will be shown up by double clicking the right mouse button. Under the researcher's observation, some participants had a lack of patience to wait for the page to load, and kept on clicking the right mouse button, but ended up with frustration because the Lexicon Sextant pie did not show up. Moreover, the natural limitation of Chrome Extension itself is that Google allows the UI developers to build an extension and add functionality to Chrome without diving deeply into native code. It is a very common phenomenon across different platform extensions such as IE and Safari.

In terms of each category task performance, the participants had a better correction rate in Money and Lifestyle, but a worse correction rate in Work and Education among the overall correction rate, appointed correction rate, and self-chosen correction rate. The reason might be the ambiguity of the choices of sub-categories between Work and Education. For example, "Job Search" was placed under the Education main category. Some participants might argue it was related to the Work main category. "Report" was placed under the Work main category that may be associated with the Education main category. The result showed the need to re-modify the Work and Education sub-categories under more suitable main headings.

Most of the participants liked the concept of Lexicon Sextant with its six-color pie shape, with each color representing a specific category which is consistent in the system, and easy to distinguish. Very few participants disliked the rotation of Lexicon Sextant pie, because they thought it ran fast, and expressed dizziness and confusion. Some participants regarded this idea is much better than the other existing ones. They would consider using the Lexicon Sextant extension if it was made available. The Lexicon Sextant extension shall include a certain level of customization to allow the users to create and name a new category and its sub-categories.

Further suggestions related mostly to technical issues, which included an improvement to trigger the mouse event handlers of the Lexicon Sextant, changing the shape of round pie into a rectangle chart, and adding a layer of shadow under the Lexicon Sextant that makes it easier to view or read the contents. Other suggestions involved the adjustment of the Lexicon Sextant with pull-up or pull-down menus, rather than radial menus, and refinement of jQuery hover method that specifies two functions to run when the mouse pointer hovers over the selected elements, and jQuery bind method that attaches one or more event handlers for selected elements, and specifies a function to run when the event occurs.

CONCLUSION

The purpose of this study was to assess the participants' capability for adaptation to another alternative bookmarking system, and to exam how they operate these novel UI elements with their a-priori knowledge, that is to say, a sufficient experiential characterization of cognition. Many of the participants can be described as 'new tech adopters', due to their age and their proximity to high-tech consumer products.

Results of the study showed that both the Money and Lifestyle categories had the same highest correction rate of 71% on average among the overall correction rate, appointed correction rate, and self-chosen correction rate, while Work (51%) and

Education (43%) category had the lowest correction rate. This might be explained by the ambiguity of the choices of these two main headings and their sub headings in that the boundary between Work and Education is not easy to clearly define. There was no significant task performance difference between male participants (64.7 s) and female ones (58.1 s) in terms of their average time taken to correctly tag the prescribed websites.

Nevertheless, it is interesting to note that the overall correction rate of female participants (74%) in the Lifestyle category was higher than the male participants (67%), so as appointed correction rate and self-chosen correction rate. In contrast, the overall correction rate of male participants (72%) in Health category was higher than female participants (67%), so as appointed correction rate and self-chosen correction rate. This suggests that the female participants were more interested in lifestyle information such as fashion, and dining activity, while the male participants paid more attention to health information such as alcohol and disease issues.

The Lexicon Sextant prototype is a mnemonic system for customizable Web information organization and management, with its novel six-color pie to help users arrange the bookmarks, and systemize their bookmark collection. The post satisfaction feedback showed that amongst this group of users the Lexicon Sextant has a great potential and advantages to enhance human browser interaction.

This study was built upon the researcher's previous work and has shown the positive opportunity of the Lexicon Sextant for future launch on the Chrome Web Store where users can download small free programs that add new features to their browser and customize their browsing experience.

Further work will include a comparison of performance times with traditional web browser bookmark functions, the improvement of the Lexicon Sextant menu design, and re-refinement of the Lexicon Sextant main headings and sub-headings in light of user feedback. In the next stage, the researcher would like to recruit more participants (200 ideally), and invite them to install the Lexicon Sextant (Version 2.0) into their browser to experience its functionality over a period of several months. The author hopes that the Lexicon Sextant add-in will act as a complement to other browsers and its retrieval performance will improve as the Lexicon Sextant develops based on user experience.

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APPENDICES

Appendix A – Lexicon Sextant Pre-Survey

https://docs.google.com/forms/d/1kph2oqTlc_ILeBbsyF1AxfKRoG8ZueHUE7--JpwtOmg/viewform

Welcome to my survey! Please help by answering all the questions, thank you!

* Required

1. What's your email address? *

2. What is your gender? *性別

Male/Female

3. What is your Age? *年齡

4. How would you describe your current working status? *職業

Student 學生

Employed 員工

Self-Employed 自我創業

Unemployed 待業中

Employer 老闆

Retired 退休

Not looking for work 米蟲

Other:

Must select exactly 1 option.

5. What is your Highest Education Level? *教育程度

High School 高中

University 大學

Master 碩士

PhD 博士

Other:

Must select exactly 1 option.

6. How would you describe your computing skills? *認為自己使用電腦經驗值為

Beginner 初階

Intermediate 中階

Advanced 進階

Expert 專家

Other:

7. How many hours/day do you normally use the Internet? *每天花幾個小時於網路

8. Are you aware of the favorites (bookmark) Function? *您知道網頁瀏覽器內建書籤(我的最愛)功能嗎

Yes/No

Must select exactly 1 option.

9. Do you regularly save web pages using the favorites (bookmark) Function? *您有經常使用書籤(我的最愛)功能嗎

Yes/No

Must select exactly 1 option.

10. Do you find it difficult to manage your favorites (bookmarks)? *您覺得書籤(我的最愛)功能不易管理使用嗎

Yes/No

Must select exactly 1 option.

11. Do you know how to organize your favorites (bookmarks)? *您知道如何組織書籤(我的最愛)嗎

Yes/No

Must select exactly 1 option.

12. Roughly, how many bookmarks do you currently have? *數一下大約您現有幾個書籤(我的最愛)

None

<10

10-50

51-100

101-200

201-300

>300

Other:

Must select exactly 1 option.

13. If you use favorites (bookmarks), how many levels do you use? *如果您有使用書籤(我的最愛),請問您分幾個層次

1   2   3   4   5

14. Do you often experience problems revisiting a web page that you know that you have been to in the recent past? *您是否經常有重溯返回您之前流覽過網頁之經驗

Yes/No

Must select exactly 1 option.

15. How do you normally find web pages that you know you have been to before? *對於您之前已流覽過之網頁,你通常如何去找出來

Using History 使用歷史紀錄

Using favorites (bookmarks) 使用書籤(我的最愛)

Google Search 谷歌搜尋

Other Search Tool 其它搜尋工具

Direct Entry of the URL

One or more of the above 含上述一項或多項

Other:

Appendix B – Lexicon Sextant Post-Survey

https://docs.google.com/forms/d/1m_XZmMkcgF9cHbxOcHkA2BK7QRx5_3x0QEC3maarQuk/viewform

Well done! You have completed the tasks. Now there are some final questions. Please complete this before you go!

1. The concept of using a Pie is familiar and the information display is in a natural and logical order. *

Pie設計概念與視覺資訊之呈現方式符合邏輯.

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

2. The visual icons and layout fit appropriately to the context and allow users to adapt frequent actions and speed up the interaction? *

視覺圖像與排列符合情境與讓使用者容易熟悉互動操作模式.

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

3. The visual icons and layout contain relevant information and the overall design is visually appealing. *

依視覺圖像與排列相關資訊而言，整體設計是愉悅可接受的.

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

4. The six slices and sub-headings are logical representational equivalents for folders and files? *

六分派的組織層級與我們所熟悉的「檔案夾與檔案之關係」是相似的.

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

5. It is easy to create/delete a new bookmark? *

「我的最愛」書籤容易新增與刪除嗎?

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

6. It is easy to name a bookmark? *

容易命名「我的最愛」書籤嗎?

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

7. It is easy to tell the colour of the slices? *

容易區分圓派的六種不同顏色嗎?

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

8. The use of the History function makes it easy to view your history records? *

歷史紀錄功能讓您容易瀏覽您過去已瀏覽過的紀錄嗎?

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

9. Do you think that this method of finding a website would be quicker than using traditional methods in IE, Safari, Firefox, Chrome, etc? *

您認為以這方式來瀏覽與搜尋網頁,相較於我們用一般現有IE, Safari, Firefox & Chrome等網頁瀏覽器是否會比較快?

☐ Yes ☐ No

9.1. If yes, can you estimate how much faster?

若您答案為是,那快速的程度為?

	1	2	3	4	5	
A Little Faster	○	○	○	○	○	A Lot Faster

10.Do you have any other final comments or reactions?有其他改善意見與建議嗎

Appendix C – Lexicon Sextant - 72 chosen websites (4th Revision)

Note: Sub-headings in red denote selected websites.

1 Work	

1.Appraisal	https://appraisals.clarity.co.uk/
2.Career/Occupation	**http://www.careerbuilder.com/**
3.Company/Business	http://www.companieshouse.gov.uk/index.shtml
4.Intellectual Property	**https://www.gov.uk/government/organisations/intellectual-property-office**
5.Meetings	http://pukamble.tripod.com/meetings.htm
6.Office	http://office.microsoft.com/en-us/
7.Orders	http://docs.oracle.com/cd/E16582_01/doc.91/e15155/process_work_orders.htm
8.Product/Service	http://www.cisco.com/c/en/us/products/index.html
9.Project Management	http://www.pmi.org/
10.Promotion	http://theadventurouswriter.com/blog/how-to-get-a-job-promotion-ways-to-work-your-way-up/
11.Reports	http://ndla.no/en/node/53190
12.Retirement	**https://www.moneyadviceservice.org.uk/en/categories/work-pensions-and-retirement**

2 Lifestyle	

1.Art& Design	**http://www.moma.org/**
2.Baby/Child	http://health.howstuffworks.com/pregnancy-and-parenting/baby-health
3.Family & Friends	http://www.family-friends.org.uk/
4.Fashion	**http://www.vogue.com**
5.Fun/Entertainment/Games	http://www.rdasia.com/fun
6.Gardening	http://gardening.about.com/
7.Hobbies &Interests	http://www.buzzle.com/articles/list-of-hobbies-interests.html
8.Personal/Private	http://www.eharmony.co.uk/
9.Religion	http://www.theguardian.com/world/pope-benedict-xvi
10.Sexual/ Family Planning	http://www.familyplanning.org.nz/health_info_issues/sexual_health_information
11.Socializing/Dining	http://www.timeout.com/newyork/restaurants/100-best-new-york-restaurants-fine-dining
12.Sport & Fitness	**http://sportsandfitnessclubs.com/**

3 Travel	

1.Car	http://www.theaa.com/index.html
2.Country Information	http://www.countryreports.org/
3.Flights	**http://www.evaair.com/en-global/index.html**
4.History	http://www.travelhistory.org/
5.Holidays	http://www.booking.com
6.Luggage	**http://www.samsonite.com/home/home.html**
7.Maps/Directions	**https://maps.google.com/**
8.Natural Environment	http://www.tourism.org.nz/natural-environment.html
9.Passport/Visa	http://passport.gov.in/
10.Timetables	http://www.nationalrail.co.uk/times_fares/timetables.aspx
11.Traffic Reports	http://www.highways.gov.uk/traffic-information/
12.Weather	http://weather.edition.cnn.com/weather/intl/forecast.jsp

4 Health	

1.Alcohol & Drugs	**http://www.who.int/topics/alcohol_drinking/en/**
2.Arthritis	http://www.arthritis.com/
3.Blood Pressure	http://www.mayoclinic.com/health/high-blood-pressure/DS00100
4.Cancer	**http://cancerres.aacrjournals.org/**
5.Coughs/Colds/Flu	http://www.flu.gov/
6.Diet/Diabetes	http://www.mydiabetic-diet.com/?gclid=CNDCt-et_roCFQEUwwodv3YA-g
7.Five Senses	http://www.specsavers.co.uk/hearing/hearing-aids
8.Food & Cooking	http://www.simplyrecipes.com/
9.Heart Disease	http://www.mamashealth.com/Heart_stat.asp
10.Mental/Depression	http://helpguide.org/mental/depression_signs_types_diagnosis_treatment.htm
11.Rest & Relaxation	http://healthscience.org/index.php?option=com_content&view=category&id=72&Itemid=110
12.Vaccinations	**http://www.nytimes.com/health/guides/specialtopic/immunizations-general-overview/overview.html**

5 Education

1.Computing &IT	**http://newinti.edu.my/main/academic_programmes/computing-it**
2.Courseof Study	http://www.hotcourses.com/
3.Job Search	**http://www.monster.co.uk/**
4.Knowledge/Information	http://www.google.com/insidesearch/features/search/knowledge.html
5.Learning	http://www.bbc.co.uk/learning/
6.Presentations	http://prezi.com/
7.Research	http://www.researchresearch.com/
8.Science	**https://www.sciencemag.org/**
9.Subject Texts	http://www.state.gov/r/pa/ei/subject/
10.Technology	http://en.wikipedia.org/wiki/Technology
11.University	http://www.topuniversities.com/courses
12.Worked Examples	http://workedexamples.org/

6 Money

1.Currency	http://www.xe.com/ucc
2.Economy	http://www.usnews.com/topics/subjects/global_economy
3.Household Bills	http://www.thisismoney.co.uk/money/billshub/household-bills.html
4.Insurance	http://newindia.co.in/Content.aspx?pageid=58
5.Investments	http://www.whatinvestment.co.uk/
6.Mortgage	http://www.moneysupermarket.com/mortgages/
7.Online Banking	**http://www.barclays.co.uk/Helpsupport/OnlineBankinghelpsupport/P1242561782389**
8.Pension	http://www.pension.org.tw/tc/index.asp
9.Politics	http://edition.cnn.com/POLITICS
10.Salary	http://www.jobs.ac.uk/careers-advice/salary/?gclid=CNav662j_roCFUrJtAod9VwAiw
11.Stocks & Shares	**http://www.londonstockexchange.com/home/homepage.htm**
12.Tax	**http://www.reachtoteachrecruiting.com/taiwan-tax-rules.html**