On-Line Library Guides On The World-Wide-Web

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ABSTRACT
The surge of interest in the World-Wide-Web and its potential advantages has resulted in many institutions and organisations using it as a vehicle to publish information to reach the masses. In this respect, on-line library guides have not been left behind. This paper examines the appeal of using the Web to publish such information and highlights the characteristics of available on-line library guides with the aim of deriving a set of enhancements for a new generation of library guides. These include the provision of a virtual library tour, detailed guides of functions and facilities, search facilities, database support for maintenance and publication, access to library functions, improved Web pages through emerging Web technology.

KEYWORDS
On-line library guide, World-Wide-Web, guidelines, information technology, management

INTRODUCTION
The World-Wide-Web is a wide area hypermedia information retrieval initiative aimed to give universal access to a large universe of documents. The HyperText Markup Language (HTML)(W3C, 1990) is a hypermedia language used to construct Web documents. It is designed to specify the logical organisation and formatting of general text documents, with extensions to include inline images, audio, video clips, fill-in forms and hyperlinks to other HTML documents and Internet resources. Users navigate around the Web by moving from hyperlinks to hyperlinks, or by specifying direct hyperlinks. Hyperlinks provides a powerful means for navigation and cross referencing information.

From the start, the Web has been used extensively for publishing information. When applied to electronic library guides, the Web provides an innovative electronic means to effectively introduce library users to library facilities and services. Alternatively, it can be used as a public relations tool to establish a global presence and heighten public interest; as a marketing tool to advertise library collections and special services; as an information kiosk to provide up-to-date information and announcements; as a platform to answer...
frequently-asked-questions (FAQs); and as a support tool to solicit users’ feedback, recommendations and answer queries.

**USING THE WORLD-WIDE-WEB FOR LIBRARY GUIDE PUBLICATION**

There are numerous on-line library guides that are in existence today. WebCATS (Scott and Macdonald, 1997), which maintains a listing of library catalogues on the Web globally, have approximately 50 listings of on-line library guides within the Asia and Pacific Rim region alone. The actual number of available guides is likely to be many times more due to non-registration by other existing libraries. For instance, only 2 listings are included for Singapore although the actual number is closer to 10.

There may be several reasons why an on-line library guide on the Web is so much more popular and appealing than its traditional paper-form. The Web is an accessible, easy-to-use and established technology (especially in the academic and college library environment). In order to publish and read information, three basic components are needed: access to a Web server, an HTML authoring tool and a Web browser, all of which are easy to access or acquire as freeware or shareware. A library guide on the Web is available 24 hours a day and accessible by anyone with an Internet account and therefore not confined to just library users. It can be a high-quality professional product containing multimedia and other media types which are impossible in paper form. Proper linking and cross referencing of information using hyperlinks is achieved easily.

In a service industry such as the library, a good product can directly enhance the public relations image of the library. With the availability of good HTML authoring tools and good existing examples on the Web, creating or tailoring of downloaded information is relatively easy and attainable in a short time. As such, the cost factor may not be as high as those associated with introducing and using other forms of new technology. In fact, it may turn out to be cheaper in the long run. Most guides will generally contain a library tour to introduce new users to the library, its functions and services. Users can take their own time to discover and learn without having to follow a normally fast-paced ‘show all’ guided tour held at the beginning of each new academic year. There may be educational advantage of using this medium of instruction. For example, it is easier to find a library location from an photo-image with accompanying audio instructions as opposed to using a static map. Furthermore, there is the possibility to relate the guide to other aspects of library functions (such as catalogue holdings, overdue items, fines, etc.).

Associated with these advantages, however, are a number of drawbacks for Web publication of on-line guides. One of the main drawback is the difficulty to design a really usable system to cater for a wide range of novice and experienced users. The cost of developing the guide can be high especially when multimedia is introduced since this may require the need for media specialists in the development team. In addition, there exists limits on current Web technology, especially in the area of multimedia support. The sheer size of multimedia data can result in the slow delivery of information over the Web, so that careful planning and correct dosages of multimedia usage are required. In as far as the guide can deliver information, it can at best be an aid to the librarian. To a large
extent, the library will still continue to promote its services through good human relations with its users. Finally, there is no control over the speed of emerging Web technology so that what is achievable currently may be obsolete within a short time. This will give rise to additional maintenance and upgrading costs.

EXISTING WORLD-WIDE-WEB LIBRARY GUIDES

Due to the large number of available on-line guides on the Web, it is obviously not feasible to carry out a thorough review of them. Instead, we have focused on Asian libraries with occasional references to other guides in the US. The main aim of the review is to use a comparative sample to examine the design, contents and special features to highlight problem areas and to aid the derivation of a set of enhancements for future library guides.

The contents or information presented by existing guides do not really differ very much from each other. The general contents include a library tour for new users covering the library history, main functions and departments, library rules and regulations, membership information, professional staff, and floor plans; detailed guides for particular departments and services; and library collections. Other forms of information that are less common include new acquisitions, special collections, users’ feedback, help-desk facilities and search engines for locating information quickly.

![Figure 1. The University of Hong Kong Libraries (Hong Kong)](image_url)
Almost all guides contain pages of static information that are hyperlinked together with little or no exploitation of multimedia. The design layout varies from each other although a content-based home page is used almost throughout all guides. Three basic approaches have been adopted. The first uses a simple and text-based design to display the contents
and provide links to each topic. Figure 1 shows the University of Hong Kong Library’s (UHKL, 1995) home page that utilises this approach. The second uses an image or icon-based design to organise the information and allows the user to proceed by clicking on an image or icon. Figure 2 shows the National University of Singapore Library’s (NUSL, 1996) home page that is icon-based. All the icons are of the same size and have some form of hyperlinked text to indicate the meaning of the icons. Due to the size of icons, using this form of layout does not permit as many hyperlinks as the text-based design. The final approach is a combination of both text and icon based layout. Figure 3 shows the Nanyang Technological University Library’s (NTUL, 1997) home page which adopts this approach. This design adds variety and is more visually attractive but may pose some difficulty for the user to find the topic of interest quickly.

There is a general lacking of consistency in the layout for presenting information in most library guides. Apart from the home page and floor plans that are normally different, other pages may contain different forms of layouts so that an icon-based menu may exist anywhere on the left-hand side, right-hand side or bottom of the page although almost all will have a link for the user to return to the home page. A consistent guide such as the National Institute of Education Library, Singapore (NIEL, 1997), divides the page into two vertical sections and uses a dark blue frame with icons on the left and information on the right throughout all pages. The University of Sydney Library, Australia (USL, 1996), uses a consistent all text-based design with two levels of information so that each page of textual information contains two hyperlinks at the bottom of the page to allow the user to move up one level or go back to the main menu as shown in Figure 4. Consistency has been advocated as a desirable feature in Graphical User Interface (GUI) design (Marlin,
1988) since it minimises confusion, reduces time wastage and gives confidence to users. It also gives an impression that the information structure is properly planned and maintained by some central authority.

The page display is distinguished among guides on the amount of usage of text, icons and images. This has a direct link on how fast a page can be loaded and displayed on the
browser. Guides that contain more of the latter (i.e. images) are obviously aimed at delivering more visually stunning GUIs at the expense of speed. Animated GIF image files (Frazier, 1995) placed in HTML documents in the same manner as any other inlined image are occasionally used to enhance the GUI and provide animation within the set of GIF frames. A full-page image that is generally utilised as a background in some guides, such as the Tsinghua University Library, China (TUL, 1997), of Figure 5 requires a long time to load. This is the same observation for documents containing large images or many small images (e.g. Indian Institute of Technology, India (IIT, 1997)). A possible solution is to have an option at the beginning of the guide to allow the user to turn off the image display and convert it into text mode. This approach has been adopted by Manukau Libraries, New Zealand (ML, 1997), as shown in Figure 6. Although this can be set by the user as one of the options of the browser, such a feature located at a strategic position in the guide is nevertheless convenient and nice to have. This should be especially incorporated in guides containing multimedia so that it becomes possible for the user to disable them when deemed necessary or when multimedia support is unavailable on the client computer.

In Asian countries where English is not the first language, such as China, Japan and India, some multi-lingual guides are in existence (e.g. Tsinghua University Library, China; Kyushu University Library, Japan (KUL, 1997)) to cater for its native population. In such cases, some form of option is available for the user to select the desired language on the home page. However, it is found this is likely to lead to incomprehensible information as it requires the correct font or multi-lingual environment support on the client’s computer which is generally unavailable.

The organisation of material in the guide, which directly affects the ease of navigation around the information space, generally follows one of two main structures. The first structure uses a wide shallow tree concept to present information within two or three levels deep. Pages are kept short to eliminate scrolling. Hyperlinks referencing other sections within the same document are seldom or not used at all. A key-theme per page with minimum or no repetition of information is another feature of such an approach. This structure can be identified by the many topics found in the home page contents. In contrast, the second structure uses a narrow deep tree concept. Document scrolling, hyperlinks within documents, and deep nested connectivity are features of this approach. The first approach is proposed as a better design for its simplicity and organisation since the latter can impede quick recognition of contents, require more time for scrolling and finding information, and increase the likelihood of getting lost within the guide.

The amount of available information varies from guide to guide. In general, it appears that guides developed at Singapore sites are more comprehensive and of larger project scales when compared with those in China (e.g. Tsinghua University Library), Hong Kong (e.g. Chinese University of Hong Kong Library (CUHKL, 1997)), Brunei (e.g. Universiti Brunei Darussalam Library (UBDL, 1996)) and Australia (e.g. University of Sydney Library). In certain cases, there seems to be some inability to judge on the type and extent of information needed by users. As a result, there is a tendency to put in more rather than less. This may also be influenced by the ease of Web publishing which allows
source codes of existing documents to be downloaded easily. Easy downloading of information has in effect reduced the learning curve for Web publishing and allow good designs to be adopted easily. However, putting more than less could lead to information duplication and subsequent maintenance problems. In addition, information outside the scope of a library guide, such as other Internet resources, can also be found in a small number of library guides. In one case, there is a provision for the user to download a word processor from a library guide! It is not clear whether such information is maintained by the library or are links to resources maintained by other establishments such as the computer centre.

The language used in most guides is specific and geared towards a more formal ‘library-oriented’ language that is governed by the priority to enforce library rules. There are isolated cases, such as University of Adelaide Library (UAL, 1996), that has adopted a more different tone and approach. In this guide, the library tour is presented as an adventure with a sequential walk-through of the library building to introduce its resources and even its paintings on the wall. The text is lively and adventurous-like. However, the cliché of ‘a picture is worth a thousand words’ is rarely utilised. In its place are long text descriptions (of paintings) that are left to the imagination of the user.

Figure 7. University of Texas Library (USA)

Almost all library guides contain images of its floor plans. However, the majority of these are static images without any added functionality. Clickable floor plans are more effective and allows users to initiate for more information. Figure 7 shows the University of Texas Library, USA (UTL, 1997) guide’s clickable floor plans that can be activated by clicking the numbers on the floor plan or text links shown on the lower half of the page. Each link loads a photo image of the location and provides further description of its
services and functions. Taking this concept a little further, it may be possible to show a photo image of the wall of the previous University of Adelaide library to support clickable paintings. This in turn could activate a larger image of the painting and accompanying text. Such a functionality may be used effectively to highlight the rich history or special features that some libraries possess. These could include the university crest, coat-of-arms, special architectural design, stained-glass windows, sculptures, paintings and other items of interest. Nonetheless, such form of information that might prove beneficial for visitors or other interested users, is found lacking in most library guides. A totally text-based library guide might prove too ‘dry’ and unappealing to most users.

Another small but important feature that is apparent in some uncompleted guides is the amount of ‘under development’ or ‘under test, currently unavailable’ phrases that are present throughout the guide. This can be annoying and at times stressful to the user especially when it applies to almost the whole guide. It is likely to be more acceptable to have a page of information to highlight these new developments with estimated completion dates contrary to current practice. Development work can be done and tested separately prior to linking the completed information on-line.

PRINCIPLES OF GOOD LIBRARY GUIDE DESIGN

The principles of good design of library guides (or more generally Web publication) have been well documented (e.g. Graphics Research Laboratory Inc., 1996) and to some extent, could be inferred from the previous section. These have been summarised (Cox, 1996) to include the use of ‘one concept per page’; be simple and consistent; adopt a broad shallow structure to organise information; employ an attractive and engaging GUI; use appropriate media and icons to represent data; define destination of links clearly; ensure accuracy of information, provide access points to address user’s likely query; avoid long unsorted lists; and optimise trade-off between cost and maintenance. The end result of the guide will depend on the resources and effort committed to guide development and maintenance. Although such form of generic design principles are useful, it may not be sufficient to ensure that the best product is achieved. When feasibility permits, a users’ survey can be conducted prior to guide design to find out what works best for the users’ community it serves. The survey may include presentation of good existing guides’ facilities and functionalities. Due to educational, technological, economical and socio-cultural differences between countries, what works well in one country may not necessarily imply that it will have the same effect on another.

A NEW GENERATION OF LIBRARY GUIDES

A number of enhancements are proposed for creating a new generation of on-line library guides on the Web. These aim to extend the largely static nature of the first generation of guides to employ current Web technology to produce a new generation of guides that possess the following features:
• **Virtual Library Tour.** Such a facility is useful to introduce new users or visitors to the library. The tour can serve as a public relations tool to introduce the library’s history, departments, functions, facilities and services. Clickable floor plans and photo images can be used to add variety and stimulate interest. Consistency in information presentation is desirable.

• **Detailed Guides of Functions and Facilities.** This is the lowest level of information to provide detailed information for users. Users’ most likely queries can be formulated and presented as a set of FAQs to maximise use of resources. Appropriate links to cross-reference detailed information from the home page and floor plans are useful so that users have alternative options to navigate around the information space.

• **Search Facilities.** Search facilities aids the user to get the desired information quickly. This is especially useful if the guide is large or is a combination of many guides within the same establishment. In fact, it is not surprising to find 15 to 30 specialised libraries within the same academic environment. For example, 29 different libraries have been detected at the University of Sydney! As opposed to using the commercial global search engines that are available on the Web, internal search engines are preferred to limit the search space and enhance efficiency.

Different strategies for implementing the search facility are possible. The simplest method would be to derive an index page on various subject areas to allow cross referencing of information. These subject areas can be directly related to the headers of each HTML document. If necessary, this can be extended to include certain keywords in each document. At the extreme, the whole library guide can be keyword indexed to allow for comprehensive search support. Such a functionality would generally require the use of a dedicated and separate database system such as the D4W3 system (Foo and Lim, 1997) developed by the author. Such an option is obviously unfeasible for small-scale guides but might prove otherwise for cases of multiple library guides or where the library guide is only one aspect of the total Web information environment that is published by an organisation.

• **Database Support For Maintenance and Publication.** Web pages can contain inline information that are directly linked to an external database (e.g. Msq1 (Hughes, 1993) and Msq1Java (Collins, 1995)). Thus, a database can be used to store information of library guide contents that are subject to change or those that require most maintenance. Such information may include dates of semesters, public or bank holidays, library opening hours, staff information, new acquisitions or special announcements. With this facility, any change in values of database records will be automatically reflected on the affected Web pages. Separate Web pages that are only accessible by librarians can be used to provide the inputs or updates to such information.
There are a number of advantages in having this facility. First, it reduces maintenance costs by having a central location to store common frequently changed data. It eliminates the need to identify the various affected Web pages prior to update. Second, it minimises or eliminates information duplication. For the example of the 29 library guides, the library opening hours would have to be duplicated among individual guides (provided they are the same!). Changes in opening hours for a special holiday will necessitate changes by the various library guide administrators. Third, it ensures accuracy of information since it is centrally maintained with proper checks. Fourth, the database can be utilised to support the search facilities mentioned previously since a search engine is readily available and part of the database functionality. In addition, the database can be used in an innovative manner to inform users of new acquisitions or library developments. Such information can be stored and updated on the database periodically. By using a set of generic templates, it becomes possible to automate such a feature and publicise this information. For a book, the information may include an image of the front cover, abstract and other bibliographic information. For special audio-visual collections, information can even include excerpts of audio or video clips. In this instance, users can actually ‘sample’ the on-line data prior to borrowing. However, there is a price associated with having this facility which include the initial set-up and development costs, and the additional technical know-how required for implementation.

- **Provide Access to Library Functions.** The library guide can be linked to other library functions to provide a host of services to users. A number of existing guides already contain facilities to allow users check on their library record statuses. In the announcement of new acquisitions, a call number can be present (e.g. University of Texas) and linked to the library holdings so that users can check the status of the item directly from the Web page. Access to requests for inter-library loans, new book recommendations, and general feedback are some of the other possibilities. However, not all functions necessitates external separate interfaces to the library guide. For example, an option can be developed to allow users to calculate overdue fines, or obtain the library opening hours over a period of time. In the latter, users currently need to refer to the general opening hours, semester term dates, holiday and examination periods and work out the library opening hours by themselves. Although this is not a terribly difficult task to accomplish, a small facility like this to aid examination revision planning or visits by visitors can be useful.

- **Improved Web Pages Through Web Technology.** Multimedia, animation and animated-GIF are potential tools that can be exploited by the developer to produce more active and engaging guides. Multimedia is hardly utilised due to the large sizes of media files that take a long time to load. When file loading is complete, an external application is invoked to playback the file. This is necessary since current Web technology does not support playback on-the-fly where data is played back as it is been received by the client’s computer. Thus, careful planning on the use of multimedia at this stage is needed to ensure an acceptable level of
service. Another alternative to handle the multimedia data is to store the complete library guide (including all media data) on a set of dedicated computers in the library so that the Web browser can access the information on the local hard-disk immediately without having to go through the Web server. This will enhance the efficiency on these computers at the expense of additional resources and maintenance costs. However, this approach is only applicable to these dedicated computers and does not solve the problem of normal access through the Web server.

Animation techniques could be introduced into floor plans to provide animated directions to reach a particular location. When combined with the library’s classification and holdings information, it may even direct a user to the shelf where the item is displayed. Animated GIF when used correctly and sparingly at the right locations can provide a more visual pleasing display and create a sense of excitement. Special library announcements, collections and new acquisitions are examples where animated GIF can work well.

Conclusions

This work has examined existing on-line library guides on the Web and highlighted their main features and characteristics. Based on current Web technology, a list of possible enhancements are proposed to transform the largely static nature of the first generation of guides into a new generation of multimedia library guides with many superior features and support. Such a guide is currently under development at the School of Applied Science, Nanyang Technological University.

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