Next Generation On-Line Library Guides

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ABSTRACT

The advent of the World-Wide-Web has resulted in many libraries putting up on-line guides as replacements or compliments to the traditional paper-form library guides. A wide-range of guides that are generally static in nature exist today. This paper examines the characteristics of existing guides and infers that there has been general neglect or ignorance of existing Web technology that can be put into good use in the delivery of the guides. Subsequently, it proposes the next generation library guides to harness existing Web technology to provide a host of new features that will help improve information presentation, information accuracy, lower maintenance costs, enhance library services and create a more interesting product for end users.

INTRODUCTION

The World-Wide-Web has heralded wide-scale information publishing by numerous business and non-business organisations. In this respect, libraries have not been left far behind. Although libraries are service-oriented by nature, they see the on-line publication of library guides as an efficient and effective means to introduce its services, facilities and an opportunity to enhance its public relations image.

Numerous on-line library guides exist today. WebCATS¹, which maintains a listing of library guides on the Web globally, have approximately 50 listings of on-line guides within the Asia and Pacific Rim region alone. The actual number is likely to be much higher due to non-registration by other existing libraries. In Singapore for instance, only 2 listings are included although the actual number is closer to 10. There has been a proliferation of new guides on the Web within the last two years. There appears to be some form of competition to be the pioneer of this revolution and to launch a product that is superior to others. To some extent, the second factor is dependent upon the amount of resources that are committed to deliver the final product.

In the simplest form, an on-line guide can be constructed by transferring and converting the existing paper-form guide into the Web authoring language, HyperText Markup Language² (HTML), and to cross-link related information together via hyperlinks. On the
other extreme, it could be professionally crafted product with bells and whistles that normally come in the form of multimedia and animation. Not surprisingly, the majority of existing on-line guides come in-between these two extremes.

CHARACTERISTICS OF EXISTING ON-LINE GUIDES

The contents or information presented by existing on-line guides do not really differ very much from one another. It generally 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.

By evaluating a sample of approximately 20 typical on-line guides, a number of common characteristics become apparent:

**Extensive use of static information:** Most 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.

![Figure 1. The University of Hong Kong Libraries (Hong Kong)](image-url)
Figure 2. Temasek Polytechnic Library (Singapore)

Figure 3. National Library (Singapore)
Home page design: In the home page design, one of three basic approaches are used: full text-based, full icon-based and a hybrid of icon and text design. In the full text-based approach (such as the University of Hong Kong Library\(^3\) of Figure 1), hyperlinked text are used to display the contents and provide the links to detailed information. In the full icon-based approach (such as the Temasek Polytechnic Library\(^4\) (Singapore) of Figure 2), specially designed image and descriptive icons of the same size are used to organise the information and allow the user to proceed by clicking on the selected icon. Depending on the size of the icons, this layout generally limits the amount of information in contrast to the fully text-based approach. The final hybrid approach (such as the National Library\(^5\) (Singapore) of Figure 3) contains a mixture of both text and icon-based layout. This adds variety and can be more visually attractive but may suffer from the drawback of speed in locating the topic of interest.

Lack of consistency in information presentation: Apart from the home page and floor plans that are normally different, other pages in most guides generally contain various forms of layouts without any consistency in information presentation. For instance, an icon-based menu may or may not exist on each page. If it does, it may not necessarily appear on the same place within the page. However, there do exists guides (such as the National Institute of Education Library\(^6\) (Singapore) and the University of Sydney Library\(^7\)) that adopts a consistent approach. Apart from having the advantages of minimising confusion, reducing time wastage and impairing confidence to users\(^8\), it additionally gives an impression that the information is properly planned, structured and presented by some central authority.

Differentiation of page display contents: Page display contents is differentiated among guides by the amount of usage of text, icons, images, animation and multimedia. This has a direct implication on the speed at which a page is downloaded and hence displayed. Guides that contain more of the latter are obviously aimed at delivering more visually stunning GUIs or state-of-the-art technology at the expense of speed. Animated GIF image files\(^9\) 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. Until the bandwidth of Internet increases in future, having too much of the latter can prove to be disastrous as the user waits despairingly for the image, audio or video file to be loaded prior to display.

However, a possible solution is to have an option at the beginning of the guide to allow the user to turn off the image (or multimedia) display and convert it into text mode (such as that employed by Manukau Libraries\(^10\) (New Zealand)). This obviously works in certain situations but not all. For example, turning off the image display when a floor plan of the library is desired clearly does not make sense. Although such a facility can be set as one of the options of the Web 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.
**Organisation of information:** The organisation of information in guides can take the form of a wide shallow tree or narrow deep tree structure. The first is characterised by presenting all the 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 is characterised by the need for scrolling and hyperlinks within documents. Navigation around the information space and hence the ease of locating information is found to be more efficient using the shallow tree concept. Hence, this is the preferred mode to organise information.

**Multi-lingual guides to cater for native tongue:** Such guides exist in a number of countries to cater for both English and her native tongue. In such guides (such as Tsinghua University Library\(^{11}\) (China) of Figure 4, and Kyushu University Library\(^{12}\) (Japan)), some form of option is available for the user to select the desired language on the home page. In this instance, the client computer must have multi-lingual support to facilitate such a display.

**Amount of information in guides:** The amount of available information varies from guide to guide. To a large extent, it will depend on the size of the library and the
resources committed to develop and maintain the guide. In certain situations, 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 that allows source codes of existing documents to be downloaded 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.

**Limited use of existing Web technology:** Most guides have been slow to catch up and harness the developments of Web technology. For example, there still exist guides (such as the University of Adelaide Library\(^1\) (Australia)) that curiously prefer not to utilise the cliché that 'a picture is worth a thousand words' but instead, chose to use long text descriptors to describe paintings (hung on library walls) that are left to the imagination of users.

![Figure 5. University of Texas Library (USA)](image)

Most on-line guides also contain images of its floor plans. However, the majority of these are static images without any added functionality. Clickable floor plans (such as those presented by the University of Texas Library\(^{14}\) (USA) of Figure 5) which are more effective than static images and allow users to initiate for more information, are seldom used. Each number node on the floor plan can be clicked and activated to load a photo image of the corresponding location and to provide further description of its services and functions.
An analysis of these characteristics reveals that the area most lacking is the limited use of existing Web technology. Existing search facilities, indexing, and database support that are currently available are hardly utilised in most on-line guides. Many of the aforementioned characteristics pertain to principles of good guide design. These are fairly well documented (e.g. Graphics Research Laboratory Inc.) and can be easily adopted in existing guides. The surprising limited use of Web technology may be attributed to the need for technical or media specialists that is lacking in most instances; or that development and maintenance costs are prohibitively high; or that cost-performance payoffs are too low to warrant implementation. Nonetheless, it is an area worth further investigation since it can be used as a basis to derive the features of the next-generation library guides.

FEATURES OF NEXT GENERATION LIBRARY GUIDES

A number of features aimed at extending the largely static nature of existing guides by employing current Web technology to produce the next generation on-line library guides are proposed:

- **Virtual Library Tour.** This tour is an essential element 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 can be used to add variety, stimulate interest and offer an innovative way to present the tour. 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’s example to support clickable paintings. This, in turn, could activate a larger image of the painting and accompanying text. Such 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. Such 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.

- **Support for Search Facilities.** Search facilities provides the means for the user to get to 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 anything between 15 to 30 specialised libraries within the same academic environment (such as the University of Sydney with 29 libraries!). In this instance, internal search engines are preferred as they can be used to limit the search information 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 and allow cross-referencing of information. Subject areas can be directly related to the headers of each HTML document (page). This can be extended further to include certain keywords in each document. At the extreme, a full-text keyword search
can be developed for comprehensive search support. Such functionality would generally require the use of a dedicated and separate database system (such as the D4W3 system developed by the author\textsuperscript{16}). This option is obviously unfeasible for small-scale guides but might prove otherwise for cases of multiple library guides (such as the University of Sydney) 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 is directly linked to an external database (e.g. Msq\textsuperscript{17} and MsqJava\textsuperscript{18}). This allows a database to be employed to store information that are subject to more-frequent changes or require most maintenance. Examples of such information include dates of terms or semesters, public or bank holidays, library opening hours, staff information, new acquisitions or special announcements. With this facility, a change in values of the 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.

A number of advantages exist for having such a facility. First, it reduces maintenance costs by having a central location to store common frequently changed data and eliminates the need to identify the various affected Web pages prior to update. Second, it minimises or eliminates information duplication. The University of Sydney example with 29 specialised library guides illustrates how the library opening hours would have to be duplicated among individual guides. 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.

The database support can additionally be used in an innovative manner to inform users of new acquisitions (of books, audio-visual materials, etc.) 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 on the guide. For example, an audio clip from a new compact disc acquisition can be recorded and stored in the database with the accompanying bibliographic information. Users browsing the 'New Acquisitions' page of the on-line guide can ‘sample’ the on-line data (i.e. audio clip) prior to borrowing.

- **Linkage To Other Library Functions.** The library guide can be linked to other library functions to provide a host of new services to users. This may include checks on library record statuses, holding information, requests for inter-library loans, new book recommendations, and general feedback to the library. However, not all functions require links to external programs or interfaces to the library guide. For example, an option can be developed to allow users to calculate overdue fines by defining the date of borrowing and intended return, or obtain
library opening hours over a period of time. In the latter, users will currently need to obtain information on the general opening hours, semester term dates, special holidays and examination periods and work out the library opening hours by themselves. Although this is not a terribly difficult task to do, having such a facility can prove useful to assist an external visitor in planning for a visit to the library, or a student preparing an examination revision schedule.

- **Improved Web Authoring.** 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. Only when file loading is complete would an external application be invoked to playback the file. This is necessary since current Web technology does not support on-the-fly playback where data is played back as it is been received by the client’s computer. Careful planning must take place for using multimedia at this stage 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 holding 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 surveyed and presented the characteristics of existing on-line library guides and concluded that a significant portion of existing Web technology has not been used in the delivery of the guides. A number of features for the next-generation on-line guides are proposed. These are likely to give rise to improved information presentation, information accuracy, lower maintenance costs, enhance library services and create a more useful and complete product. Such a guide is currently been developed at the School of Applied Science, Nanyang Technology University. The completed guide would exhibit and demonstrate the features outlined in the paper.
REFERENCES


