

# **BookIt: An mobile-friendly interface for locating library resources**

By David Ross

**Clickable Prototype:** <http://share.axure.com/A7XTWD>

**Project Website:** <https://sites.google.com/site/idesignbookit/>

## **Background and Problem Statement**

Despite the rise of digital collections such as HathiTrust, Google Books, and Wikipedia, which allow students to perform research without ever having to set foot in a library, many professors require that students use physical, rather than online sources when writing research papers. This is borne typically not out of a desire to increase the rigor of an assignment, but rather to get students to use peer-reviewed materials when performing research as opposed to the unfiltered content of internet sources. Many undergraduate students, particularly underclassmen, suffer from what Mellon (1986) calls “library anxiety”, that is a feeling of being lost due to “the size of the library, lack of knowledge about where things are located, how to begin, and what to do”. Part of this anxiety stems from the task of physically locating resources in the library. As Hahn reports in his study, students typically “don’t even know where to start when confronted with a call number.” The general process, as Hahn notes, is essentially “finding a starting point and moving toward increasing

levels of individualized specificity: the broad shelf range, to the actual shelf, to the column of books, to the item.” The problem that I am addressing in this contest is how to provide tools to make it easier for students to physically locate a relevant item in the library.

## **The Solution**

The solution I decided to pursue was to create a mobile app -- which I called “BookIt” -- which would help ease students’ anxiety about navigating the library and allow them to locate relevant resources. The title “BookIt” is a play on words, suggesting the app’s library-related function as well as its goal of getting users to “book it (i.e. “move quickly”) through the library without fear of getting slowed down.” For one, this provided an obvious way to keep with the iDesign contest’s theme of “going mobile”. However, a mobile app also allows users to collect feedback in real-time about how close they are to their goal and adjust their course when necessary, without having to wander back to a computer and use the library website. In addition, smartphone usage is increasing among students, most of whom are well-acquainted with the ability to download and use apps on their phones.

The decision to design the product as an app was made due to the fact that unlike a mobile website, an app can store data for areas of the library where a user may be forced to go offline due to weak signal. However, several of the

designs could conceivably be used in a re-design of the library's mobile website. In addition, although this design is styled as an iPhone app, this choice reflects the author's familiarity with the platform rather than an intentional decision to develop for the iOS platform over other mobile computing platforms. Technologically speaking, the app could function capably on Android and other mobile computing platforms.

## **Target Audience**

As alluded to above, the target audience of this app were freshmen and sophomore undergraduate students from all majors and colleges. Of particular interest were the subset of these students whose courses or specialization required that they navigate the Hatcher Graduate Library or Shapiro Undergraduate Library, as these are the two of the largest and most complex libraries at the University of Michigan. Underclassmen were chosen as they were more likely than upperclassmen not to have used an academic library before. Even if they were familiar with the Dewey Decimal classification system, the task of navigating the Shapiro Undergraduate Library and the Hatcher Graduate Library represents a more significant challenge than an average public or high school library.

## The Process

Admittedly, the path to a solution was messier than I anticipated. My general process consisted of applying the following steps in roughly the order in which they appear below:

- 1). Consulting previous research on the topic.
- 2). Brainstorming a list user requirements
- 3). Taking inventory of existing products
- 4). Designing and prototyping the app.

### **Step #1: Consulting previous research on the topic.**

The most helpful by far of all of the sources I consulted were a series of articles written by Jim Hahn from the University of Illinois. For several years, Hahn has led an initiative to develop several mobile apps for the University of Illinois library. One of these apps is Minrva, a wayfinding app available on the Android market. Minrva includes a GPS-like map (see screenshots below), which allows students to search for resources both in the catalog as well as on the shelf.

Each of Hahn's articles provided a couple of key insights with regard to user needs. Hahn's ethnographic studies with undergraduate students reveals that

the process of searching for a resource in the library may be thought of as “moving from general direction finding to more granular locations”, that is the process of “finding a starting point and moving toward increasing levels of individualized specificity: the broad shelf range, to the actual shelf, to the column of books, to the item” (Hahn, pg 21, 2011). In Hahn’s study, he asks 16 undergraduate students to describe the process of locating items in the library by using the think-aloud protocol. Hahn found that the most common causes of confusion in the process of locating an item were a). failing to understand how the call number to the student locating the item and b). failing to how each column of books progressed (pg 21). In addition, the most common wayfinding techniques Hahn observed students use to navigate the stacks were looking at the end caps of shelves, looking at the call numbers of items on the shelves, as well as looking at signs throughout the library (pg 12). Hahn concludes that students have trouble associating call numbers with a particular section of the library or a particular genre (not realizing or remembering that by the Dewey Decimal system, call numbers are in fact associated with genres).

In addition, I also consulted several of the U–M Library’s usability research studies. One survey revealed that nearly 70% of undergraduate students who participated in the survey owned a smartphone (Mobile Survey Report, 2012), suggesting that a mobile app or website would effectively reach the target

population. While existing mobile services were not utilized by the majority of undergraduates, a few services were used by over 20% of students: finding library hours and info and searching the library catalog (Mobile Survey Report, 2012). The highest ranked services that users said they would use are renewing books currently checked out, getting due date reminders for checked-out books via text, finding location and availability of library computers, reserving study rooms, reading e-books, as well as scanning bar codes to find out if a book in a bookstore is available in Mirlyn (Mobile Survey Report, 2012). This gave me a list of ideas to focus on when designing my system.

### **Step #2: Brainstorming a list of user requirements**

The next step in the process was to generate a list of user requirements, or functions which the app would be required to support. In addition, a few preliminary designs were drafted to generate ideas for how the app might support the proposed requirements. If a requirement was found to be unsuited for a mobile phone, it was refined or dropped altogether from the list. The desire was that all the functions be related to the overall goals of helping the user find his way throughout the library. This was the criteria by which some functions were selected while others were omitted.

### **Step #3: Taking inventory of existing products**

Once the requirements were generated, several different apps and services were reviewed to generate ideas for how to design a user interface that would fulfill these requirements. The Google Local app inspired the design of several different parts of BookIt. Google Local's strength is that it displays all relevant information on the search results screen, such as whether a business is open or closed, it's address, how far it is from the user's current location, its overall rating and average costliness. Users have similar needs when searching the library catalog or finding library hours. When searching for a resource, if a user is looking for resources that might be cited in a research paper, the first pieces of information they will want to know are whether potential resources are available for loan, whether they are in book format, and where they can be located. Similarly, when browsing a list of libraries for hours, users want to know whether a particular library is open or closed, and how long it will remain that way (i.e. if closed, when will it open, and vice versa). Designing an interface that allows users to quickly access this information is of great importance to the end user as it will allow him to spend less time determining the optimal hours to visit the library or resources to check out, which in turn improves user satisfaction with library services.

Another major requirement for the system was that it support indoor wayfinding. Again the first place to turn to was Google Maps, but upon discovering that Google Maps only supports indoor mapping in a limited

capacity, other sources had to be identified for consideration. While the aforementioned Minrva app from the University of Illinois does possess the ability to show where resources are located on a particular floor of the library, it does not have the ability to provide students with directions from their current location in the library to their desired resource. To provide a better idea of what a solution might look like, several indoor mapping apps were consulted. Two of the best that were Fastmall and Point Inside. These apps include several features of interest. For one, both provide the ability to locate exits, elevators, and restrooms throughout the building, and allow users to choose which to display on a map at any given time. They both have the ability to alternatively display floorplans for different floors as well as identify the individual stores on each floor. The apps differ however in a few respects when it comes to actually showing a user where he is inside the building. Fastmall allows a user to input his starting point and destination and provides a set of step-by-step directions to reach this point (even if the starting point and destination are on different floors). Point Inside allows users to locate themselves at any point inside the building. Given that both apps only provide floor plans for shopping malls, the question of how much of the interface can translate over to the design of a wayfinding app for a library is a question that still remains open and which my design admittedly has not fully solved.

#### **Step #4: Designing and prototyping the app**

The app was prototyped using Axure RP 6.5 Pro. This software was chosen for its ability to simulate the behavior of an interactive system, rather than just its look and feel. In addition, Axure allows for the generation and sharing of clickable prototypes which can be used to communicate key ideas with stakeholders. The sketches created during the requirements gathering were used as a starting point for the designs created in Axure. Generating the medium fidelity prototype involved making decisions about the look and feel of the interface. The goal was to simulate a look and feel that could conceivably be used to create the final product. In addition, the individual pages were linked together to provide an idea of how the app's navigational scheme would work and function. Finally, the interface elements that best met the requirements were selected and adapted into the prototype. The result can be seen at <http://share.axure.com/A7XTWD>

## **The Design: Features of BookIt**

All the functions that the app supports are listed on the home page. To access certain functions like viewing the "My Loans" and the "Saved Resources" pages, the user has to log in with his Uniquename and Kerberos password. Each item relates in some way to the theme of wayfinding. The page "Locate an Item in the Library" allows users to enter in an item's call number or title, after which they will be shown the general area in the library where that item is

located. This page actually functions as the main search interface for the library as opposed to Mirlyn (although it does allow users to navigate over to Mirlyn if desired). The user can click on the tab located at the bottom of the resource to bring up a menu which allows him to save, share, or reserve the resource, or view other holdings for that resource. If the user wishes to view the full Mirlyn page for the resource, he can click the “more info” tab and be taken to it.

The “Hours and Info” page presents the full list of U–M libraries and allows users to view which ones are currently open and to what time. Like the contacts list in an iPhone, the list of libraries is alphabetical and features a scrolling mechanism that allows users to progress between each initial letter quickly. Filters at the top allow users to view libraries which they have marked as a “favorite” (this can be accomplished by clicking on an individual library and selecting “Save to Favorites”) as well as which libraries are currently open. When a user clicks on an individual library page, he is taken to a menu which displays information for the library, including its hours, phone number, and website. In addition, the user can locate the library on Google Maps by clicking “see on map” or forward the library’s hours and other information to one of his contacts.

The ability to search for library hours was included in the design of BookIt since users will have to know when a library is open in order to successfully

navigate to their desired resource. However, if the library is closed at the moment, users can always bookmark items for later reference. These can be accessed under the “Saved Resources” page. Upon navigating to each resource, the user is presented with the option to locate the item on the map or to view other holdings for that same resource. This allows the user to easily perform a search again later without having to relocate the resource or its associated call number.

Finally, the “My Loans” page allows users to manage their account and . In keeping with the app’s theme of displaying relevant information on the very first page, under the “items checked out” field, the app displays which library a resource came from as well as how soon it needs to be returned to that library. From this page, a user can elect to renew individual books. In addition, in the top-left corner is a text bubble, which, if a user clicks, will take him to a separate page at which he can sign up for SMS alerts that will be sent near a book’s due date.

## **The Scope**

The primary user was envisioned as an undergraduate who, although possibly familiar with libraries, had never used an academic library before and was not confident in his ability to navigate the stacks. The needs of graduate students, professors, and staff may be served by this app, but these

populations were considered to be secondary users and were not the primary audience of BookIt. In addition, the main resource type served by BookIt are all resources (cataloged under the Dewey decimal system) that can be withdrawn from the library. Resources not meeting this criteria such as reference materials and journal articles were not considered within scope for this design. In addition, the needs of users navigating the Shapiro Undergraduate and the Hatcher Graduate library. It is possible that this app will need to be adjusted if the scope is expanded to include other libraries. Finally, the search interface in BookIt does not intend to replace Mirlyn, but rather to provide a basic supplement. Mirlyn remains the more powerful search engine, as BookIt lacks several features of Mirlyn, such as the ability to search online databases and filter results. It is possible that if developed, users could send search results from Mirlyn to BookIt so as to utilize BookIt's mapping utility.

## **Discussion and Future Direction**

Overall, it was a pleasure working on this app. Future direction includes testing and refining the interface so as to diagnose any usability problems that the current design presents. In addition, work will likely be done to expand the "Locate an Item" section, which as it stands currently, is fairly basic. In the future, this section could conceivably include the ability to provide users with step-by-step directions to desired items, alternate between levels of the library,

and display exits, restrooms, and library help desks, among other things.

Finally, more work will have to be done to refine the scope of items that can be searched for using the BookIt interface and to explore the ways in which BookIt can integrate with other channels of information in the library, both online and offline.

## **Conclusion**

BookIt presents an intriguing, mobile-friendly alternative to the traditional library catalog, for which there are several incentives to develop. For one, it would increase the comfort level of users with using library resources. This in turn would encourage users to feel in control and makes them more likely to explore what the library has to offer without the fear of getting lost or “intruding”. In addition, developing BookIt would encourage students to think of the library as a source of technological innovation rather than as a “technologically obsolete” institution. Finally, BookIt gives the library the ability to reach its patrons in a channel where increasingly they are operating and working.

## **References:**

- 1). Mobile Survey Report. U-M Mobile Library Group. June, 2012. <http://www.lib.umich.edu/usability-library/usability-report/mobile-survey-report-2012>
  
- 2). Hahn, J. & Zitron, L. (2011). How first-year students navigate the stacks: implications for improving wayfinding. Reference & User Services Quarterly 51 (1) 28-35. <https://www.ideals.illinois.edu/handle/2142/24002>
  
- 3). Mellon, C. (1986), "Library anxiety: a grounded theory and its development," College & Research Libraries, Vol. 47 No. 2, pp. 160-165.

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