

iDesign 2013 Report

Eureka for MLibrary

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1. Executive Summary

This report describes the major features of the Eureka system as well as its development and evaluation process. Contextual inquiry performed in the library revealed the difficulties in selecting reading material fit for the reader's interest. Eureka was developed to address this issue by providing a recommendation system based on user generated multimedia content related to each book. Furthermore, the system also seeks to motivate people to check out more books by captivating their attention when watching insightful multimedia content / book reviews. The ultimate goal of Eureka is to offer the possibility for people to explore, through a mobile platform, a book's content and its relationship to other books, therefore increasing their exposure to reading material that is otherwise difficult to discover or judge.

2. Introduction

In recent years, mobile devices impacted many behaviors of human life. Without the restriction of a desktop computer, it opened the possibility to access information from anywhere. The trend also affected in multiple ways the operation of various institutions such as college libraries. One of these influences is allowing college libraries to promote the use of their existing services. Being one of the top college libraries in the US, the University of Michigan Library system possesses a great collection of books and media. It is therefore important for the library to motivate the utilization of its resources whether for research or general purposes. In this project, we look at how to increase the utilization of these resources via a mobile access platform.

2.1 Goal

Our **primary goal** is to motivate people to discover and borrow more books from the MLibrary. To accomplish this, we first aimed to allow an easier way to discover books related to the reader's interest. Generally speaking, there are two approaches to this problem, recommendation and exploration.

Recommendation

A recommendation system derives suggestions from an user's reading history, allowing him/her to quickly and accurately decide their next reading. But from a non-frequent reader's point of view, such history is non-present and therefore the recommended readings are not accurate. This leads to frustrations when choosing books without a good reference only to return them later because they do not fit the borrower's interest. Another disadvantage of the recommendation system is that it offers suggestions based on algorithms as opposed to recommendations from other readers. Ultimately, recommendations from other readers are more respected because these come with a personal, analyzed interpretation beforehand, and therefore adding more meaning to the recommendation itself.

Exploration

For frequent users, exploration is an engaging and fun activity to find new reading material. It allows a sense of discovery while navigating book. However the task of exploring requires time, and physical presence while not guaranteeing the finding of reading material that goes on par with one's interests. Therefore, such activity is limited to serious readers who have the time and enjoy the act of exploring. A better exploration system would also encourage non-frequent

readers to engage in such activity as well as aiding frequent-users to more accurately find books of interest.

A **secondary goal** is to rise the awareness of using books as a source of information and inspiration. Nowadays books compete with more accessible digital medias and therefore its use has decreased over time. We are in no means implying that information from digital medias are worse than those of books, but rather that books are another rich source of information that has been left as an secondary option by many. Therefore, if book contents are made more available and accessible for everyone, potential users would be more willing to exploit this source for information and inspiration. Therefore, our challenge is not only to create a exploration experience, but also to increase people's book use.

By enhance the book collections' exploration experience into mobile devices, people will no longer be limited by requirements such as physical presence and time. A digital environment also opens up more possibilities for information representation while enhancing a new book discovering experience.

2.2 Definition

In this report, the following keywords are used according to these definitions:

Exploration: Refers to the search for books, that relate to one's interest but having no clear target. One might or might not find a desired book.

Discovery: The specific event in which a user, after exploring some time, finds a book that fits his/her interest.

Physical browsing: Refers to the activity of being physically present in the library, exploring book collections and expecting to discover a book.

3. Research

We referenced the Library's Usability Reports to develop an overall understanding about the quantitative facts regarding existing library users. We then conducted a contextual inquiry to understand how people browse and borrow books, as well as understanding more specific problems that hinders them from fully utilizing the MLibrary checkout service. The objective was to obtain qualitative user data as a base from which our solutions could reference to.

3.1 Target population

Our first target population are library frequent users who actively search for new books to read and expand their knowledge about topics of interest. The second group are those who normally read articles online but do not necessarily bother to spend time exploring or reading books.

3.2 Contextual Inquiry

The contextual inquiry include 8 semi-structured interviews. Interviewees were randomly selected from both Hatcher and Shapiro Library. The interview included questions about their backgrounds, reading and library use behavior, and feelings about the browsing experience. We also focused on identifying difficulties which people encountered in their book exploration attempts. Notes were taken, organized into affinity notes and affinity diagrams were created. This process helped us organized key user information and identify underlying themes.

3.3 Findings

The affinity diagram informed us that people have difficulty in properly determining potential books they would like to read. In many cases, people choosing books by either reading backside summaries or following known author names were misled into believing these books fitted their interests and taste. One of our interviewees characterized browsing for new books as a "hit or miss" experience.

Credibility

From our interview, we also discovered how users currently use various sources to find interesting books. These include recommendations from publishers, word of mouth and online book review services such as the *New York Times Book Review*. Furthermore, interviewees reported they weight the value of recommendations based on the credibility of the source.

Meaningful context

Besides using recommendation from others, people are also more prone to read books when these are related to familiar videos, radio shows, or books they are currently reading. It is through these new contexts and interpretations, that people show higher willingness to read books. As a result, meaningful context evolved to be an important factor that raises people's interest in particular books.

Physical books are limited in both quantity and depth of insight when presenting quick reviews for readers to quickly determine whether the book will fit their interest. This point was mentioned by the interviewees.

Sense of Discovery

In terms of physical browsing experience, one of our interviewee said he liked to read novels and often spent time looking around the shelves to find potential novels of interest. While a second one pointed out that when having a target book in mind, he stumbled upon another interesting one and decided to borrow that instead. In both cases, discovering a new book either by chance or intent was a rewarding experience and is therefore an important aspect of physical browsing.

4. Problem

4.1 How to Create Meaningful Context

In our research we understood that interest in books can be enhanced by meaningful context. Therefore, in order to increase the awareness of books, we need to understand how to create a meaningful context on the mobile platform. In this project, we are focusing on two approaches to create such context: connection between contents and social interaction.

Connection between Contents

Connection between contents is a very effective way to raise people's awareness about a book. For example, referencing from one book to another, or watching a video interview which mentions a book, are both important motivators for people to read the referenced book. Therefore, it is important to create a system that reinforces connections between multiple sources.

Social Interaction

Referencing books in a conversation or social setting also plays important roles in increasing people's awareness of book. The contextual inquiry showed people valued books mentioned in conversations with family or friends. Furthermore, the constant mentioning of book content in social circles exposes non-frequent users to their content. Therefore, the challenge lies in creating a context that encourages people to talk about books for them to ultimately read them.

4.2 How to Extend Physical Browsing Experience on Mobile Platform

Book collection browsing experience varies from person to person and is therefore hard to model. In order to understand how people browse the library, we chose **The Undergraduate Library Browsing Collection** as our reference. The Browsing Collection is located in an open space on the first floor of the library, allowing students to browse books as they please. Through observations of this location and interviews with library users (details in 3. Research Methods), we found the following challenges:

How to Support Sense of Discovery

Physical browsing comes with the uncertainty of stumbling upon unexpected books that may or may not be connected to one's interest. This activity becomes

extremely rewarding when a great read is found because the uncertainty of physical browsing creates the sense of discovery and fulfillment.

However when the Browsing Collection is used online, this sense of discovery is completely eliminated. The Collection becomes a filter option that is hidden away among many others. And once integrated into Mirlyn, users would have to know which book to borrow beforehand, hence depriving the possibility of discovery. Therefore, the sense of discovery that characterizes the Browsing Collection is eliminated altogether.

Limitation of Physical Browsing

Browsing through bookshelves is engaging but having to flip through pages and read random passages to judge a book may prove overwhelming for people. What's more, if an interesting book is not found, no reward is given to this effort. Hence, discouraging people from browsing further. In these terms, the problem becomes one of representing a book in such a way that enables people to quickly judge its content.

Furthermore, shelve organization of books is determined by either subjects or author. Browsing under these circumstances disables the possibility to discover topic interconnections between books of different subjects. For example, certain topics can have different interpretations and approaches depending on the subject it is being addressed on. In the traditional way of physical browsing, one would have to read each book to find these interconnections, that is, if they are aware of their existence in the first place.

Finally, browsing in library shelves requires users to be physically present at the location. The effort to reach the library deters many from doing so. Therefore, it is important to develop a way to encourage browsing without the physical constraints.

5. Solution

5.1 Overview

In order to extend the physical browsing experience to the mobile platform, our solution is to provide a mobile based exploration system that represent book content in the form of multimedia snippets. By viewing snippets, users can quickly catch the idea of a book and decide whether it relates to his/her interests. Furthermore, a snippet can put book content in a **meaningful context**, allowing users to view it from a different perspective and therefore inciting new meaning.

Moreover, our system allow users to **explore** other books via connections between snippets. Users can therefore discover books specifically related by content he/she already find interesting.

To summarize, our digital platform allows an enriching exploration experience by providing diverse book content snippets which utilize the multimedia to put content in a meaningful context.

5.2 System Features

Book Map & Snippets (User-Generated Content)

When launching the system, the user will see a list of books with a series of snippets by their side. These books are displayed according to their popularity. When selecting a book cover or snippet, the respective book's map of snippets is displayed. Users can zoom in/out and navigate up/down or left/right to explore the snippets within this particular book map. This interaction gives freedom for the user to explore each snippet as they please. Furthermore, each snippet displays an "anchor" indicating the chapter to which the snippet is referencing to.

Contents provided in snippets are different from those of book backside summaries. Snippets contain other reader's recommendations (word-of-mouth), mini-analysis on specific topics and can jump to other relevant book subjects to provide other perspectives and interpretations. This is why, when paired with other interpretations and contexts, these topics can gain new meanings.

It is under this meaningful context that users can judge if a book is worth reading. Even more, the user can also discover other books that are related to the original one via the snippets.

Home

Sometimes it is hard to quickly find out useful information in the map navigation representation; therefore, we also provide another linear exploration interface feeding by sorting of popularity, time, category, or etc.

Posting

When users decide to post reflections, thoughts, or information related to a specific book chapter, he/she can choose to use a combination of text, image or video to best communicate their thoughts. Meanwhile, different types of media allows viewers to intuitively grab the information about a book in their preferred channels.

A secondary aspect of posting is that snippets can engage in conversation with adjacent existing ones, either by complementing or contradicting them, and therefore creating deeper meaningful context between them for the user to view.

Rating System

User-generated content can create many unwanted snippets, therefore we implement a rating mechanism that allows only snippets which are truly insightful to be kept while others disappear over time.

Social Networking

To increase exposure and drive traffic into the system, we provide simple functions for frequent users to share snippets over existing social networks. Sharing snippets is like sharing insightful ideas which can start conversations outside our system. Potential users, if stumbled upon a provoking snippet, will therefore be tempted to visit our system to feed their curiosity and ultimately consider borrowing the snippet's book.

6. Design Process

6.1 Personas & Scenarios

Personas were created to capture the needs and motivations of our interviewees and to represent our users. In short, they represent readers with different usage levels of the library borrowing services as shown below. Please reference **appendix A** for more details.

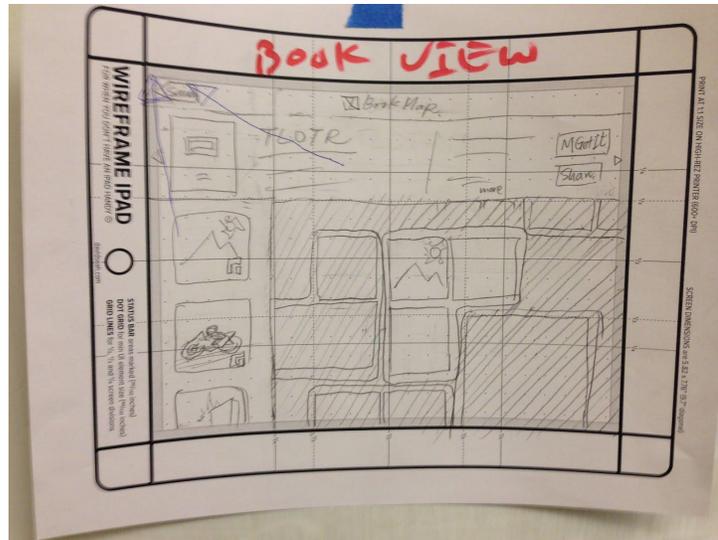
- Helina Wilde, a senior year student majored in Philosophy and English Literature, a Library frequent user who want to explore more books.
- Richard Koffman, a PhD student majored in Economics, only borrow books when in necessity, but need to find books about an unfamiliar subject.
- Matt Zhao, a first year international student majored in computer science, not familiar with the library service because of cultural and language barriers.

Our proposal would have to address the reasons why Richard and Matt do not borrow books frequently at library, while still satisfying the needs of the expert reader, Helina.

The initial idea was creating a user-generated collection of book snippets with multimedia content from which other users can quickly judge a book. Therefore, not only can Helina use this system to explore more books, but Richard can also find related content by book to book snippet connections. As for Matt, the visual elements in the snippets plus the social networking aspect of the system can help him discover books of interest regardless of language barriers when browsing the library collections.

6.2 Lo-Fi prototype

We agreed the application should present three levels of information. First, the unit of a map, called a **snippet**, will contain multimedia information posted by an user. Second, a group of snippets, belonging to a book, would be called a **map**. Each book has its own map. And third, the ability of a snippet linking to another book's snippet would provide information about topic relationship.



the snippet presented in the book map

Navigation features involved starting from a search page, presenting book covers and their most popular snippets, to a book map presenting all the snippets of a book in a draggable and zoomable interface. The snippets in the search results would give a preview of the book map, allowing them to enter it if interested.

Wireframe sketches were done individually with each team member envisioning how the system would present information and interact with the user. These proposals were later presented and put together under one coherent design which was translated into a paper prototype. The Wireframe sketches can be found in **Appendix A**, and the Lo-Fi prototype can be found in **Appendix B**.

6.3 Usability Testing

We tested our paper prototype with two participants.

It became clear from our evaluators that the idea of using snippets to present user generated book content was not readily understood. Evaluators did not understand, from the layout, that snippets belonged to a book but were rather entities of their own. Furthermore, when explained about their connection, evaluators mentioned it would be more useful if the snippets themselves were connected to specific areas of the book, such as a chapter.

When observing the snippets, the evaluators' attention were captivated by the multimedia content of each snippet and proceeded to move from snippet to snippet in search for other multimedia content to look at. Furthermore, evaluators failed to navigate to other book's map through snippets and also questioned the credibility of the snippets being presented.

6.4 Mid-Fi Prototype

Based on the feedback from the usability testing, we determined the design should make more clear that snippets were user generated. Furthermore, the design had to reinforce the idea that related books could be reached from the present one, effectively providing exploration of books through the snippets of others. These problems were approached with visual solutions to present the idea more clearly for the user.

Moreover, we detracted from displaying menus on top and bottom of the screen. This decision was made to preserve maximum vertical space since the application was intended to be used on a horizontal ipad position. The menus were therefore placed on a left bar, with optional menus showing whenever needed. This guarantees maximum screen real estate for our map. The Mid-Fi prototype can be found in **Appendix C**.

7. Discussion

7.1 Complexity of map

By using the metaphor of “map”, the design retains a sense of discovery. However, the amount of snippets shown on a map can increase to the level of being overwhelming for some users. On the other hand, as the snippets number grow, the organic organization of the map can become chaotic, thus deterring from the overall exploration experience.

7.2 Support for more multimedia types

Currently only three types of media are offered: text, image, and video. Limiting the number of media types reduce the potential complexity of creating a snippet, but can also limit ways for users to communicate their thoughts. In the future, other types of media such as audio, location, or quotes and be implemented as well while keeping the snippet editing process simple and easy to use.

7.3 Difficulty of snippet creation on a mobile device

When creating a snippet with multimedia, users will often need linking to other online content to embed them. However, the actions required to do so, such as uploading pictures or pasting links, is relatively difficult to do through a mobile interface. To provide a more user-friendly environment for people to create snippets, the system might need to support access via a more convenient editing environment like the browser in the desktop/laptop computer.

8. Conclusion

In order to improve library utilization and overall awareness of books, we designed an innovative system that focuses on the exploration of books. The snippets of a book help people understand their content through both multimedia and the meaningful context they produce. We designed a map interface to maintain the sense of discovery present in a physical browsing experience. Furthermore, options to filter the snippets and books make the exploration process more convenient. Moreover, people can also post their own snippets and engage in conversation about the book content. Finally, the social interaction and sharing features help people to spread the discussion over social network and eventually increasing the awareness of books.

By using user-generated content to describe a book, we hope to create a community of savvy readers and contributors. Their existence will provide moderators for the maps and therefore adding more credibility to the snippets. As the community grows, newcomers can follow expert users with same interests, read their snippets and trace their activity to discover new books to read.

Looking forward, Eureka could be expanded to the entire library collection and making more library resources easier to explore through mobile interface. What is more, people will be able to create more meaningful connections between different resources and subjects. By using this system to select books, people will be more aware of potential books and resources and would also be more likely to explore the library's vast collections. This would ultimately increase the utilization of the school library and help bring its services to a larger population.

Appendix A -- Personas and Scenarios

Persona 1 -- Helina Wilde



- Female
- 22 yrs old, Senior Year, from Texas
- Philosophy / English Literature

Computer literacy

- Novice. Notebook. Email / web browsing/word processing
- Bought smartphone last year

Reading Habit

Library frequent user / sometimes buy books
read literature & fictions / classic novels/ poetry/ history
Prefer physical books

Goals

To explore more books she might be interested in. Choose books not only on book summaries but also other ways / methods.

Scenarios

Helina goes to the library to return three books that she borrowed before. After returning them at the front desk, she deliberately looks for more interesting books to borrow since she is already in the library. She spends a few minutes looking around the shelves and reads the summaries of a few books to determine if they fit her interest. Before checking out, she quickly grabs a book from her favorite author and borrows it along with the other interesting books.

After reading a few books in her house, she felt fooled by their summaries since they were not interesting at all. Helina was alright with it since it happened before as well. Although she knows that finding books is a hit or a miss, she still wondered if there was any other more efficient way to explore new books.

Later on Helina talks about this issue with her friends whom she often shares her reading experience and books with. Her friend suggests to use the new MLibrary service to check out more interesting books. Helina takes a look at the new site and found out that some of her friends have already been using it to share books of same interest. She types the book title that she mistakenly borrowed today, and finds out that one of her friends **shared a comment** of it. By checking the comment, she accidentally finds another book and feel like borrowing it from library next time. She also found it really fun and exciting that she could actually create snippets of her favorites books. Helina thinks this site could be a good source to explore more books that she really wants in the future.

Persona 2 -- Richard Koffman



- Male
- 28 yrs old, from New Jersey
- Researcher / phd student / Eco / GSI

Computer literacy

- Middle
- Ipad, laptop, Bloomberg, Word, LinkedIn

Reading Habit

read businessman and management books
want to explore history of economics (GSI)
not frequent user of library/ seldom go to library (only for reference/journal)
use ipad to read recent news updates and economic journals

Goal

To find different perspectives about the same topic, dig into specifics and judge by himself.

Scenarios

Last week after Richard Koffman, an economics PhD student, discussed with his advisor about his financial model, Professor Jones informed him that he will be the GSI for the economic history class. Although the professor said the course will not be too difficult, but he is still a little bit nervous about how to preparing course material. Coming from a marketing background, Richard knows modern economic theories very well, but not so much in the historical aspect. In order to ensure the quality of his teaching, he decide to spend some time read one or two compact and comprehensive books about this unfamiliar subject. He looked up the books in the school library, but found 10 related books. Since he has little understand about the topic, he wonder which one would fit with his interest.

While he hesitated, a colorful snippet caught his attention. He clicked on the link "See what other people post about these book" and landed in a catalog of book snippets. These collection of images and text, really help him filter out books that are either too technical or too casual. And then he focus on two candidates and compare more detailed Amazon book review in the book information page. He finally decided the book to read, and he check it out using the MGetItt button right next to the book.

After this experience, he found Eureka to be very useful, because it help him to filter the articles and books he want. He even once recommend it in his economic history course. Also, thanks to the website, he now use library's services more frequently and satisfactorily.

Persona 3 -- Matt Zhao



- Male
- 18 yrs old, Freshman, International student
- computer science / psychology
- good speaking skill/ not so much in reading

Computer literacy

- high expert
- laptop linux
- programmer / video gamer

Reading Habit

read cs books, asian detective novels/ fantasy novels
not familiar with the library service
studying at library but not borrow books

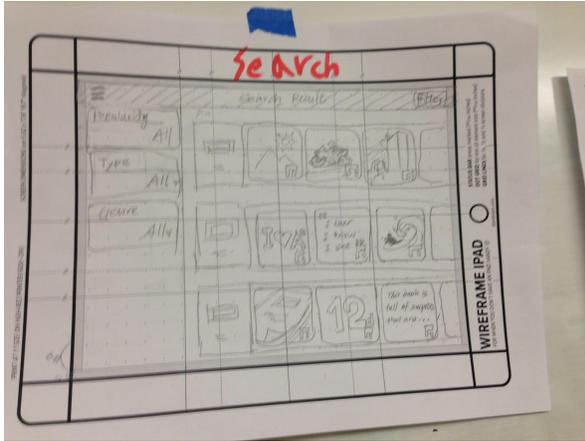
Goal

embrace American culture
join the professional fraternity αβγ

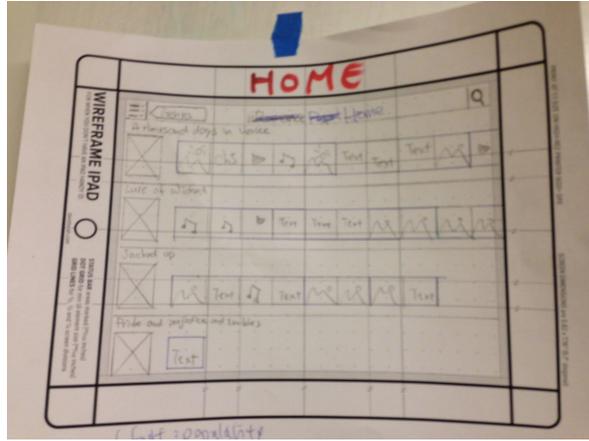
Scenario

He is new to the US and is not very familiar with English nor the culture. He read many books back home in Chinese. He used to read novels a lot but now the language barrier cause some issue. He also likes and watched a lot of American TV shows to get some sense of American culture. He joins fraternity and dancing club. He spends three nights a week on these extracurricular activities. However, he still finds many inside jokes that he cannot understand, especially some current popular topics. He keeps updating his information from browsing his facebook pages and posts from his facebook friends. Sometime, he will find an interesting youtube video and he will click related video clips to watch more. One day, while he was at a party, he heard about a very interesting and useful website called Eureka. He posted his youtube links to the Eureka website and found many other related material such as magazines, novels, journals, and DVDs. Furthermore, Eureka has many pictures and snippets which allows him to browse and comprehend the content really fast, and the information is updated.

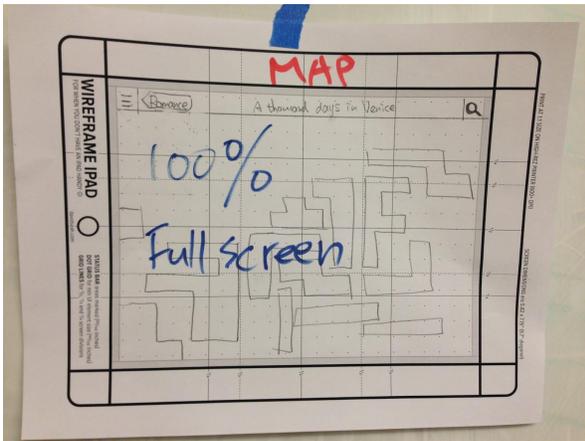
Appendix B -- Wireframe Sketch



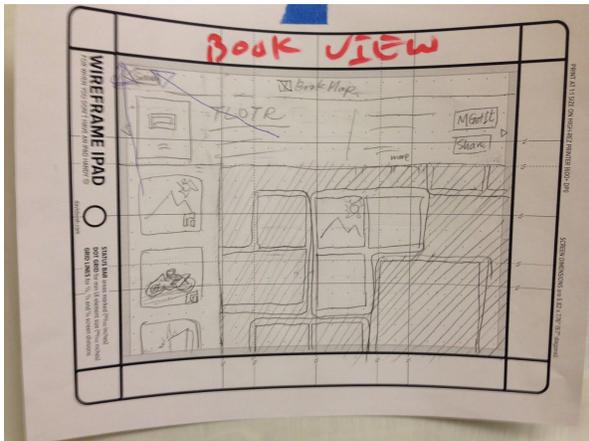
Search Result



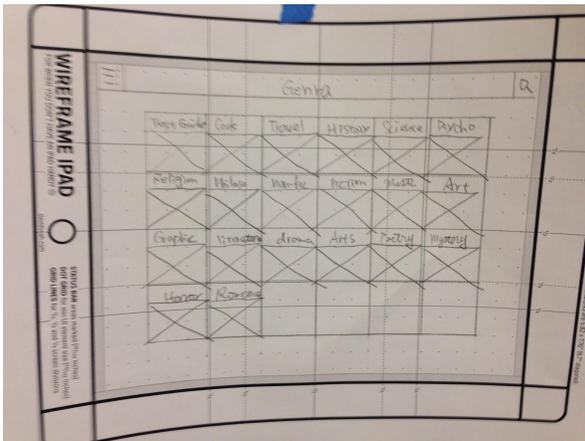
Home



Book View Map (Zoom out)



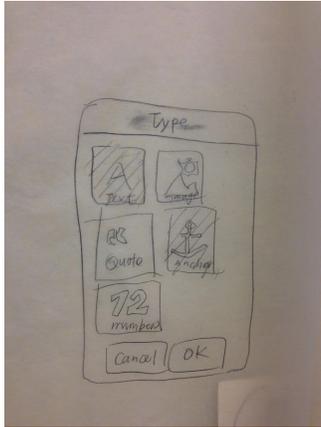
Book View Map (Zoom in)



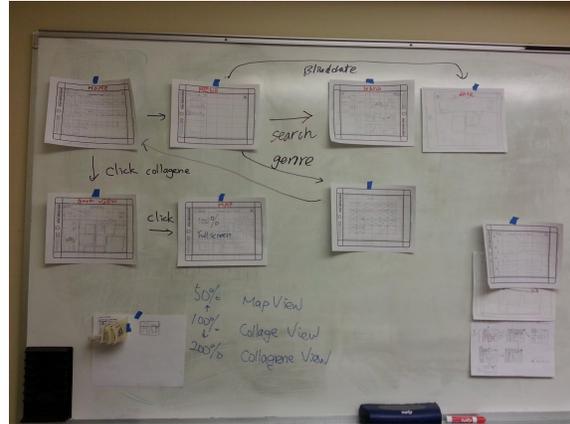
Genre



Menu

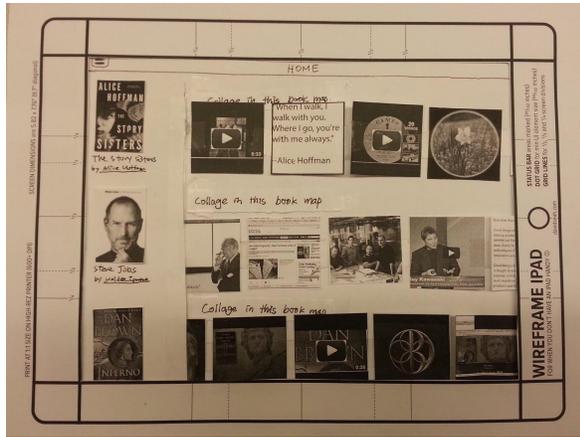


media type selection

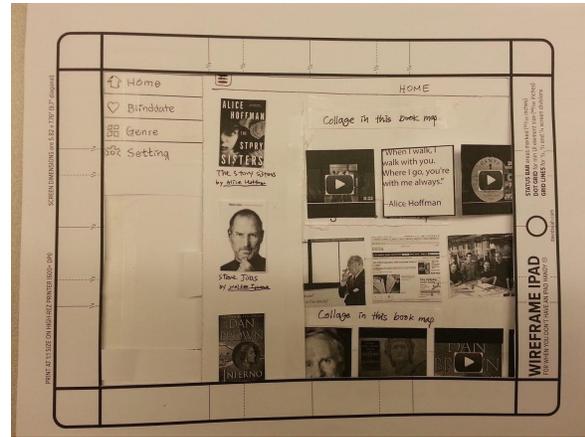


Interaction Map
(the relationship between each wireframe)

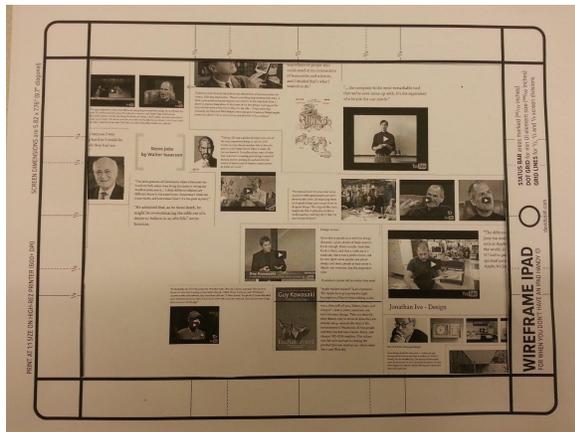
Appendix C -- Lo-Fi Prototype



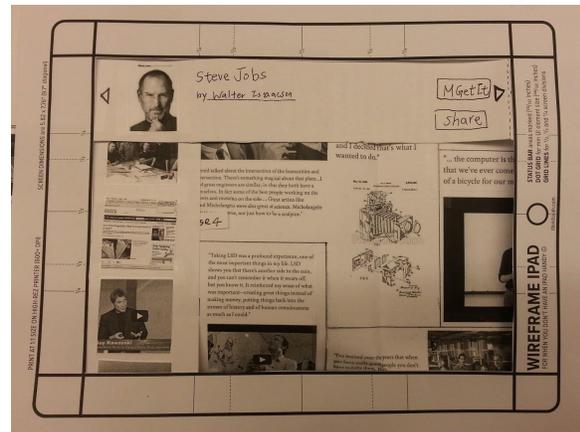
Home



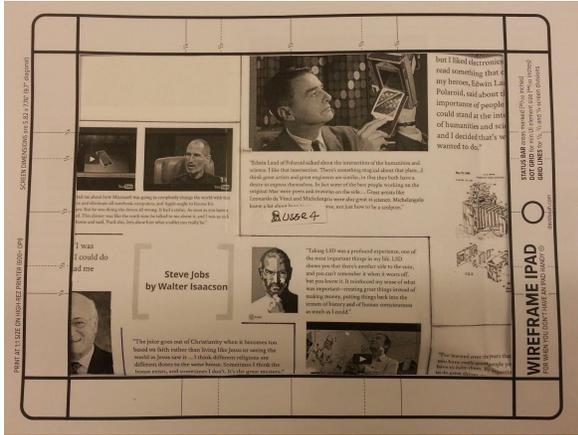
Home + Menu



Book Map View



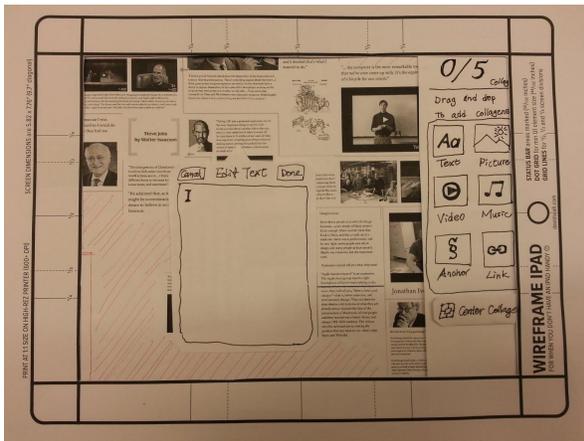
Book Map View + Navigation
(Same as Search Result)



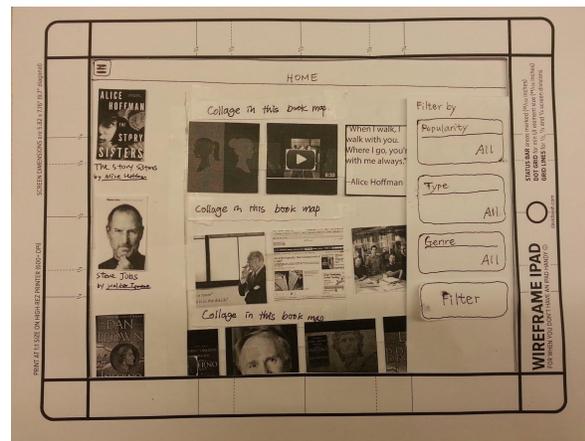
Book Map View (Zoom in)



Snippet Detail + Share



Post + Edit



Search Filter

Appendix D -- Mid-Fi Prototype

Please see <https://sites.google.com/a/umich.edu/idesign-2013/>

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