Inpica

Final Project Report

Advised by Prof. Coye Cheshire

08MAY2013, UC Berkeley School of Information

By: Arian Shams, Gaurav Shetti, Jacob Portnoff, Naila Al-Khalawi

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1.Introduction

Many of us realize the importance of harmony in our homes, but few know how to go about creating it. While obtaining professional services can be costly and doing it yourself can be exhaustive, Inpica offers a way out. Inpica is a collaborative web platform that re-imagines the way we go about arranging the spaces we live in. By combining the convenience of virtual design tools and the collective experiences of friends and family, inspiration is only a few clicks away. Patent. Pending.

Inpica is latin for 'the magpie.' The Magpie is a bird renowned for its well-built nests that are often found decorated with colorful bits of string or other brightly colored objects. As the most design-conscious of birds we felt it was appropriate to name our application after it.

2.About Us

Team Rasblue is composed of:

Arian Shams – "The Taskmaster"

Gaurav Shetti – "The Businessman"

Jacob Portnoff – "The Voice"

Naila Al-Khalawi – "The Talent"

3.Acknowledgements

This project would not have been possible without the support and guidance provided by our mentor, Coye Cheshire.

We would also like to thank George Willman for his time and expertise with regards to the patent process.

Thanks to everyone who answered our surveys and participated in the interviews. Your feedback was invaluable.

4.Project Rationale

The problem of interior decoration has plagued mankind since the invention of interior spaces. Especially as the cramped quarters were expanded, people struggled with what to incorporate in their living space and where to place it. Easy access to furniture and information are ubiquitous in this age, but in spite of that, many people find that their moving and remodeling a challenging and tedious task. Our project team set out to provide them with a simple, low cost means of solving this common and pervasive problem.

5.Research

a. Comparative Analysis

Our interest in the field of interior decoration led us to a comparative analysis of the products currently available to users. Our research led us to understand that there were three sources of assistance that people were currently able to access.

1. Paper based products
2. Computer generated modeling
3. Professional Interior Designers

These three sources each provided a unique benefit but each suffered from major flaws. In particular, each was cost prohibitive in one form or another. Both paper products and the computer model required a level of mastery of the tools before any value could be generated, and our personal experiences and the personal experiences of those we interviewed suggested that these tools were pursued more because of a lack of better options than due to real loyalty.

1. Paper based Products

Paper products are readily available to anyone with paper, pen, and scissors. A sophisticated user can generate a complete floor plan layout in more than an hour that involves a sketch of the room/floor and furniture cutouts (ideally to scale) (see fig 1). These products are available at a low purchase cost but do require a certain degree of drawing and cutting skill. In particular, a good, too scale, floor plan is critical to giving a user an accurate plan for their furnishings, but this is not something that everyone is capable of completing in a short amount of time.

Paper products have been praised for their tangibility and tailorability by researchers before.[1] Paper floor plans and furniture models are no exception. Paper products, though, often lack the critical affordance that comes with their digital cousins namely, reproducibility, quick searching, and easy sharing.[2] A paper floor plan is a stationary model that cannot be easily transported or shared. It exists only in one state at a time, as well, so it can be difficult to do a comparison of plans without manually creating an exact replica. For these reasons, paper is not an ideal product for this task.

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[1] Sellen & Harper, 101-102
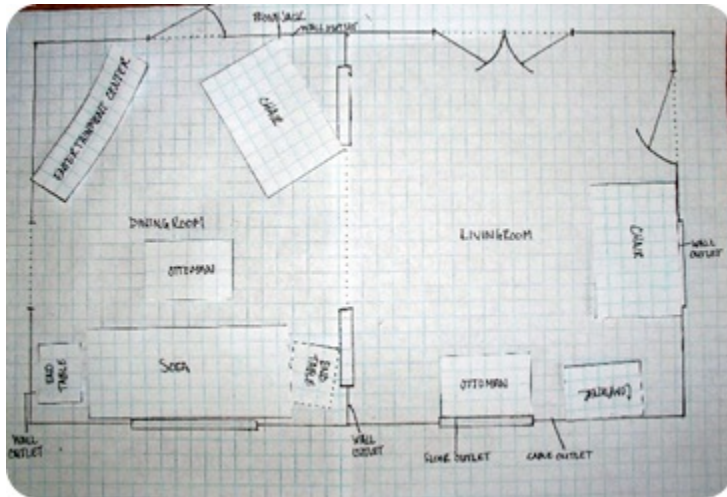
[2] Sellen & Harper, 148-149

Figure 1 – Example of Paper Floor Plan

2. Computer generated modeling

In comparison with paper, the computer modeling programs currently available are significantly more advanced. They come in a variety of flavors, but most present individuals with a sophisticated and complex layout that allows users to build a serious floor plan.

In the case of Autodesk Homestyler (see fig 2), their product offers hundreds of unique pieces of furniture and accessories for placement on a floor plan. Every item placed on the layout has numerous variables and factors than can be fine tuned and adjusted, just so. The end result of such a project is a finely rendered 3D model of your potential room. The examples they provide show incredibly sophisticated rooms with both furniture and art placed in a fine and fashionable manner.

This ideal model, though, can often fail to live up to reality. While the 3D rendering is fun, the effort required to create such a model that is worth making three-dimensional is more than most people are willing to work. The high cost towards plan completion makes it harder for the average, uninitiated user to take command of this sort of product and produce the visualizations that he/she needs to complete their interior decoration.
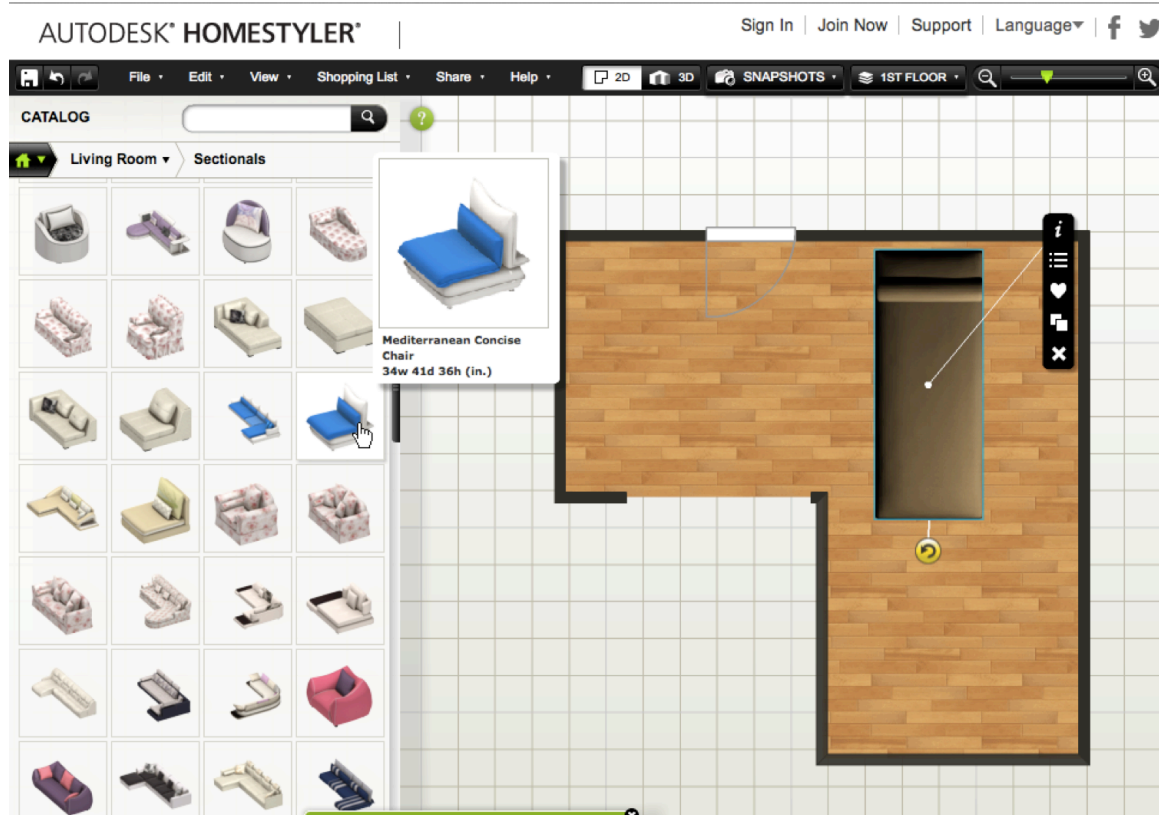
Figure 2 – AutoDesk Homestyler

3. Profession Assistance

The final category of competition comes from design professionals. While the design industry was hit hard by the economic downturn and the dent that this caused in new housing, it still represents a nearly $10 billion a year industry.[3] A great deal of that money comes from trained professionals providing paid-for assistance in interior design and decoration.

Fixr, a website to help homeowners plan out renovations states that the typical cost for a small project is between $50-$200 per hour while a medium sized project can cost upwards of $6,000 in total for the design.[4] Their expertise gives credibility to their design plans, and the formal training they receive gives them a basis for their design plans. Often they will provide a customer with a list of furniture and accessories that should be purchased as well as color schemes and other products necessary for their design to be complete.

Hiring an interior designer will certainly alleviate the problem of interior decoration from a user. But the time cost is not negligible and the high dollar cost

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[3] http://www.asid.org/content/state-industry

[4] http://www.fixr.com/costs/interior-design

puts this option well out of the range of most Americans. As a result, there is a ceiling on how far this option can penetrate into the market.

The results of our competitive analysis lead us to conclude that there was space in the interior design and decoration market. It appeared to us that expertise was desired, but was priced out of the range of most individuals. It also appeared that people wanted tools to help them plan out their interior decoration and moving but did not currently have a simple or low cost tool. As a result, we decided to pursue the creation of such a low cost tool that could also be used collaboratively.

b. Interviews

In order to fully understand with what it was we needed to provide our users, our group conducted a series of interviews with professional interior designers, architects, and interior design students. These interviews were done in the Bay Area and were done in person, over the phone, and via email.[5]

We discovered that one of our early plans of getting interior designers to provide their expertise on our site was very optimistic. Several discussions with interior design professionals made it quite clear that this was a pipe dream. The professionals only had interest in using their knowledge in a professional setting. Said the Program Director of the Berkeley extensions Interior Design program, Rae Hagner, when we mentioned that we were building a program to help amateurs do interior design,

> My initial reaction is that you are doing a disservice to the user and the profession by promoting such amateur use of digital tools. There's so much bad design around us and unfortunately, the average citizen is not aware of it because of all the mediocre stuff shown on TV and promoted by manufacturers whose main goal is to sell their products.[6]

Needless to say, this changed some of our opinions and the direction of our product development.

Our hope for collaboration between professionals and amateurs was clearly not a realistic possibility, but interviews with amateurs showed that there was still interest in the idea of a simple tool that could be used collaboratively amongst friends and family to help generate interior decoration and/or moving plans. We

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[5] See Appendix A – Interview Questions for details on what questions were asked

[6] See Appendix C – Selected Interviews, Selected Interview 1

learned from our interviewees that there were a number of activities including browsing for furnishings, making a layout or floor plan, and talking with close friends and family that were important in how they moved or decorated.[7]

c. Survey

After the interviews, we decided that the next important step to take would be to confirm or deny our assumptions about the general interest in the topic amongst the general public, as well as gain some much needed insight into how non-professionals approach interior decoration and floor planning. As a result, we came up with a short survey that gauged general interest in interior decoration, how people approached the problem, and to what extent they collaborated in the process.[8]

The survey was submitted to a variety of email listings and private networks of friends. Overall, the results were skewed towards those who have access to ischool email listings, but people outside of the school and alumni network were contacted and responded.

We registered 53 responses over the course of a few weeks, and the results were encouraging. Our assumption of interest in the topic proved true, with a large majority 'liking' or 'strongly liking' interior decorating their personal space (see fig 4).

Question 2

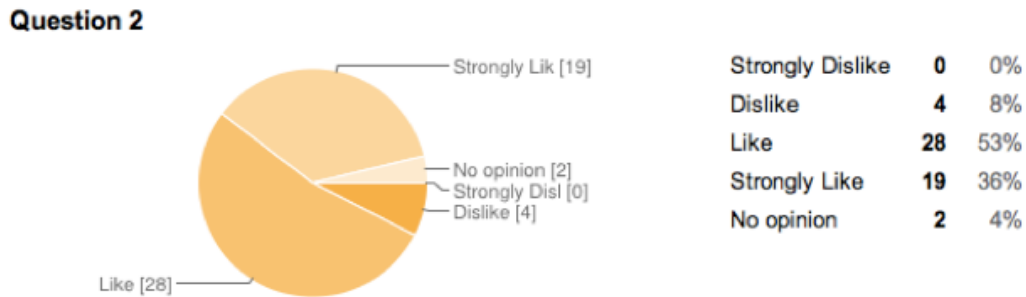|		
Strongly Dislike	0	0%
Dislike	4	8%
Like	28	53%
Strongly Like	19	36%
No opinion	2	4%

Figure 4 – Response Results to the Question: How much do you like decorating/designing your personal space?

Further encouraging signs came from the survey questions about the planning process (see fig 5). People clearly had an interest in making a good plan and layout, but they were not united on the tools they used.

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[7] See Appendix C – Selected Interviews, Selected Interview 2

[8] See Appendix B – Survey Questions for the questions used in the survey

Question 4

Very detailed (measurements and furniture proxies)	12	23%
Detailed (basic measurements)	15	28%
Not detailed (just some sketches)	8	15%
I don't make a floor plan	18	34%

Figure 5 – Response Results to the Question: When redesigning or moving, how detailed of a floor plan do you make?

Another interesting result can be seen in fig 6. A plurality was inspired by the moving process and only a tiny minority was "not really interested."

Question 3

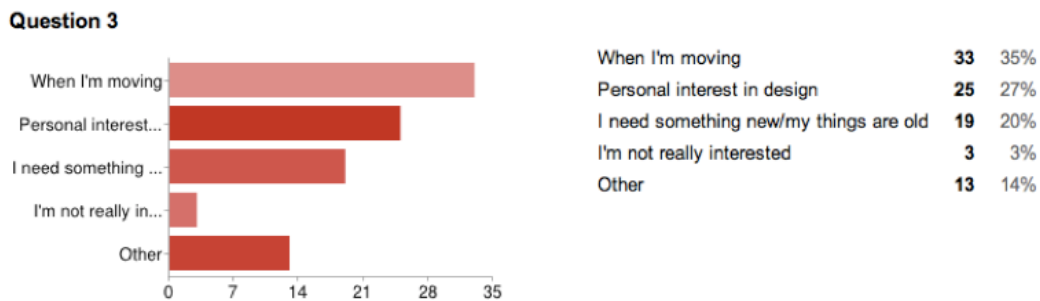|		
When I'm moving	33	35%
Personal interest in design	25	27%
I need something new/my things are old	19	20%
I'm not really interested	3	3%
Other	13	14%

Figure 6 – Response Results to the Question: What inspires your interest in decorating your space?

As for collaboration, our survey results suggested some very interesting and useful clues on how to build our system. A majority of respondents indicated a willingness to assist friends, family, and even acquaintances in designing their personal spaces. A majority also suggested that they would ask close friends and family to help them decorate their personal spaces. What this suggested to us was that building a completely open platform for anyone and everyone to help design your space would be unimpressive to many users. Most users wanted help, but they wanted it from specific people.

From these surveys we were able to build models of several types of users. We found that there were dividing points amongst the respondents based on their relationship status, whether they liked designing without moving, and what sorts of technology and tools they used to complete their plan. Once these groups had

been identified, we setup interviews with members of each group to gather further information on the way people currently do interior decoration and how they would like to do it.

Drilling down past what we could get from more generic survey questions, in our follow up interviews we were able to get at serious and more complicated process questions. While the survey gave us confidence in our assumptions about interest in the field and a need for a new tool, the follow up interviews helped us develop the way we would build this tool. Our responses covered a variety of users and were critical in our creation of our application.

We learned from the interviews that the process people went through was different across our different clusters of people in several critical ways. The most important difference was when people actually conducted their planning and decorating. Those who did so constantly, those who did so when moving and were transient, and those who did so when moving and had more established lives. These interviews proved useful in helping us decide which users to pursue and in designing the way we would build our application.

6.User Interface Design

a. Approach

Having established a thorough understanding of the problem space, we started thinking about simple and low cost ways to allow people to collaborate and visualize their homes. The team followed and agile design approach that focused on establishing user needs, developing prototypes, testing and iterating throughout the development of the final product. Inpica's interface design was informed by the insights we obtained from the research described in the previous section. Next, we will outline how the user research was translated into specific features that came to form the prototype and later, the final product.

b. Assumptions

Although we heavily relied on user research in throughout the development process, we also made a number of assumptions to help better frame the problem.

- Home design and decoration is a complex process that can involve several contributors living in the same space.
- Moving and or/ redecorating is costly (in terms of both money, time and effort).
- Many seek help from professionals or advice from people they know.
- Currently available online tools only serve part of this process but none solve the all aspects of the problem.
- Design enthusiasts would be willing to provide others with design advice online.

c. Concept generation

Insights	Design implication
Interest • In general, the degree to which people care about redecoration is proportionate to the amount of time they plan to live in a space • General interest is often less important than necessary time and energy to make changes • People seem interested in doing more planning, but not spending more time/energy on it	Reduce time / energy needed through a free online tool (no software download needed). Only quick registration process is required.
Process • People prefer to build their own design option then ask for opinions rather that delegate the entire task. • Redecorating is a Long term process that can span over 6 months at a time • Furniture measurements are important in a fresh move, but for redecoration, people may not use floor plans at all (images only). • Redecorating less often involves moving furniture than it does involve less easily visualized paint colors and pictures • Collecting furniture and décor ideas is cumbersome, much of this activity is done online	Initiator must retain full control, but should easily be able to get feedback/advice from others. Ability to store versions of the mockup and refer to them in future. Cater towards movers and redecorators by offering floor plan image upload and drawing tools. Furniture is only one aspect, we need to reflect moods, colors, materials via pictures. Online collection can be integrated in the browsing experience via bookmarklet.

Collaboration

- The amount of advice people are willing to give is relative to the degree of relationship they have
- Privacy is important.. Many will not share floor plans public ally but with select friends and family
- Within a couple, one person usually is the driver of the change
- Consultation is expected within a couple before any changes are made

invites would be initiated by the owner, collaborators don't need accounts once invited (special ink?) with limited permissions (no floor plan amendment privacy options should be available- designs shouldn't be public couples/ roommates can have shared ownership

d. Wireframes

Several low fidelity paper sketches where developed by the team members to consolidate the concept. Visio mockups helped further develop UI elements and converge on the basic navigation and flow. Given the various observations and interviews, we decided to design for the web rather than mobile. Movers and redecorators indicated that much of their planning was done online by browsing furniture and home design websites and bookmarking the sites they liked or saving individual images. We wanted to facilitate this process and integrate it in our solution seamlessly, hence the addition of the Inpica bookmarklet.

The main website comprised of three main sections; a homepage with information about the solution, a dashboard that allows users to manage their designs, and the design tool itself. This flow was further developed in the high fidelity Keynote prototype, in which we also introduced interactive capabilities. Such interactivity allowed us to begin conducting user tests and iterate on the design until the solution was ready for final development. Prototyping with Keynote was particularly useful since it provided a low-cost way of establishing the degree to which the product met user needs.
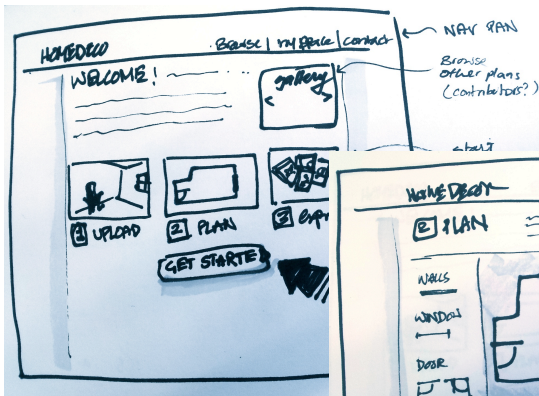
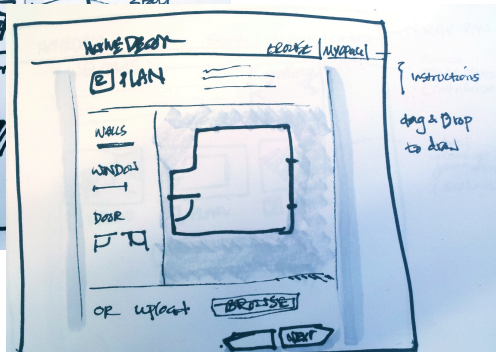Figure 7 – Iteration 1: Concept paper sketches (Intro page.)

Figure 8 – 2D modeling tool for designing interior spaces

Figure 9 – Iteration 2: Visio wireframe that shows the modeling tool in higher fidelity
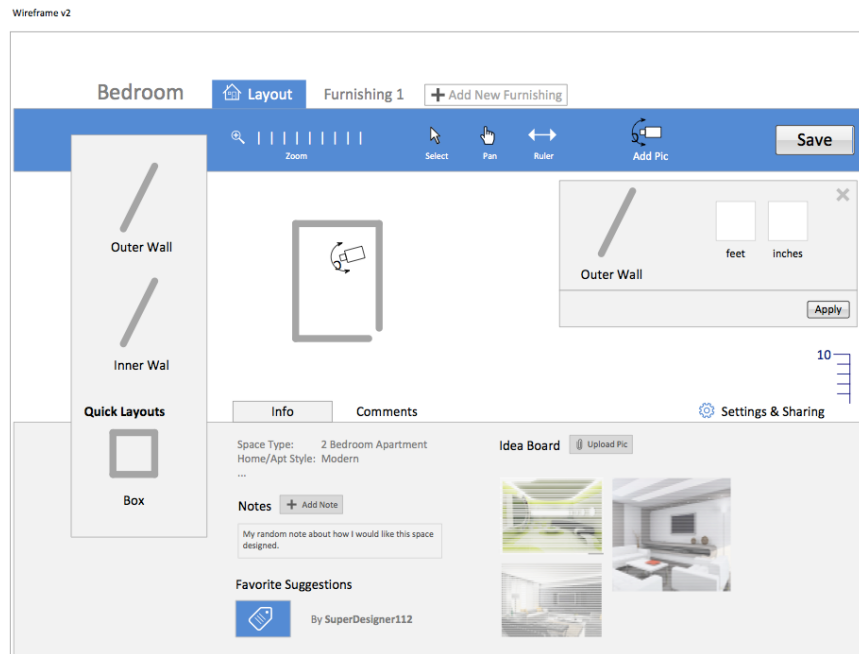
Figure 10 –

Iteration 3: Keynote interactive prototype included a dashboard where users can manage multiple floor plans and furniture layouts
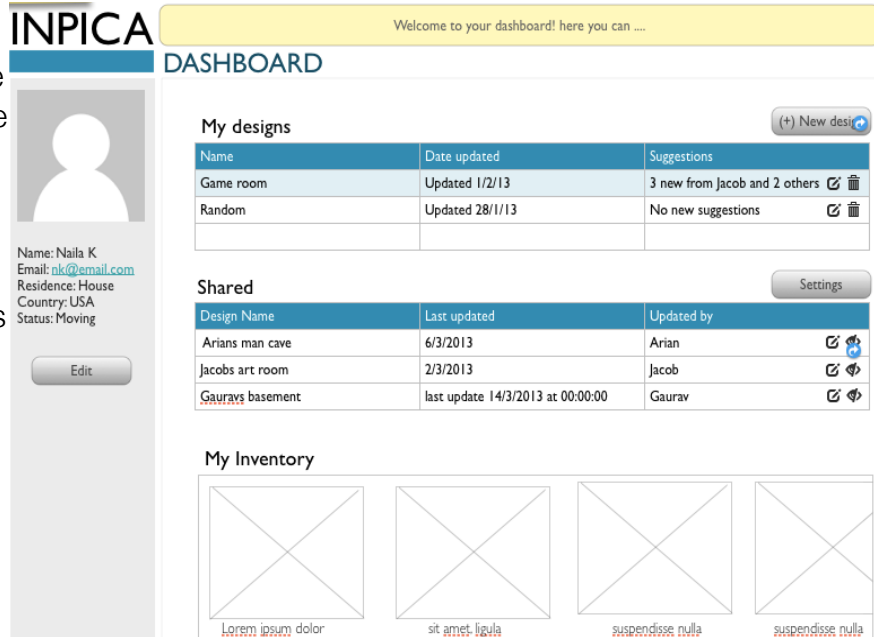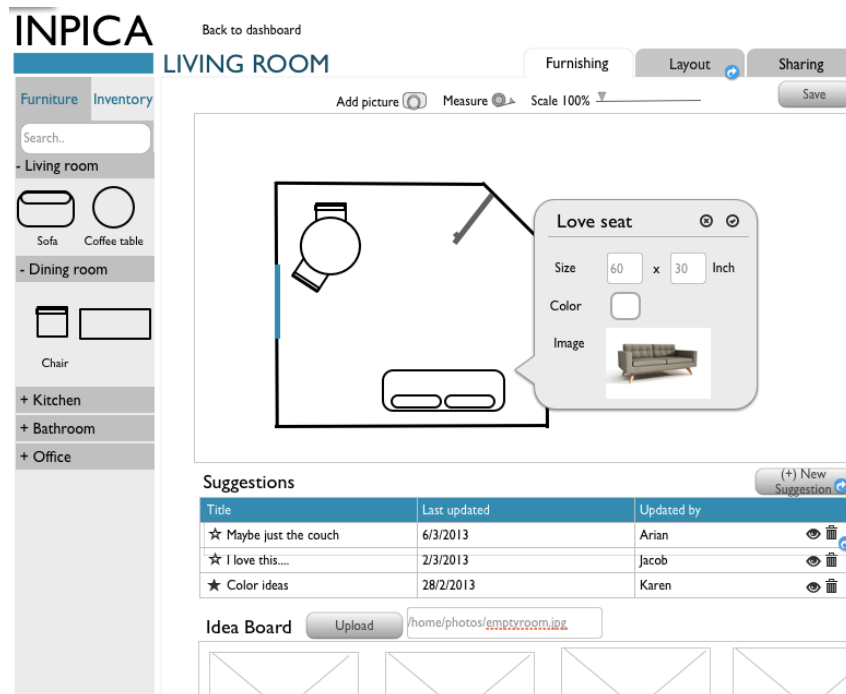

Figure 11 – The prototype included more refined features for the 2D modeling tool and its collaborative capabilities.
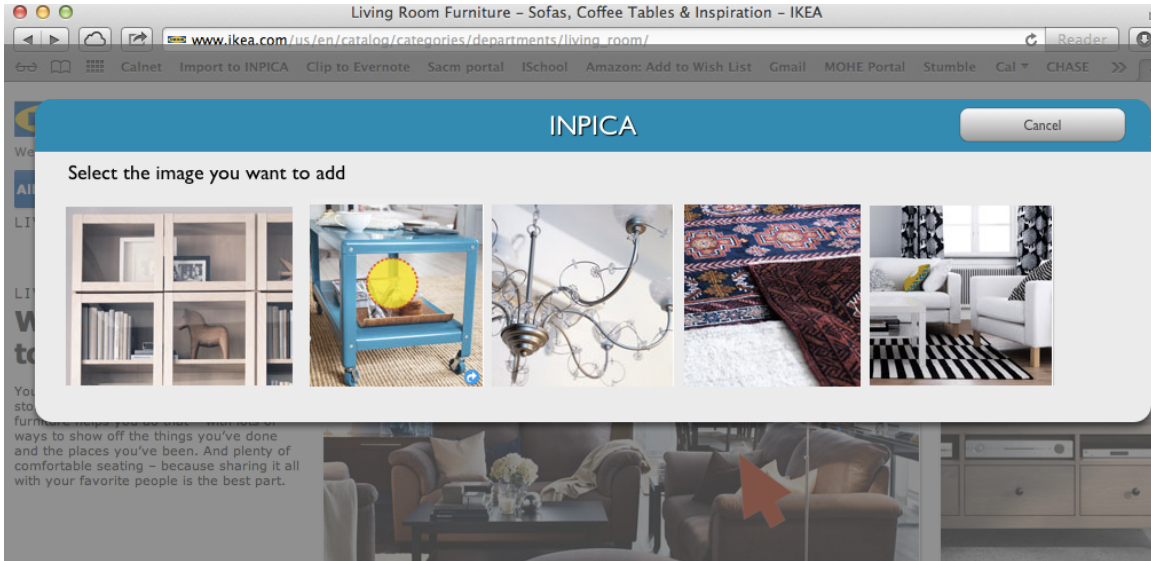
Figure 12 – At this stage, an additional bookmarklet feature was added in order to allow users to collect images while browsing home décor sites. Images are then linked to a symbol to represent it on the floorplan.
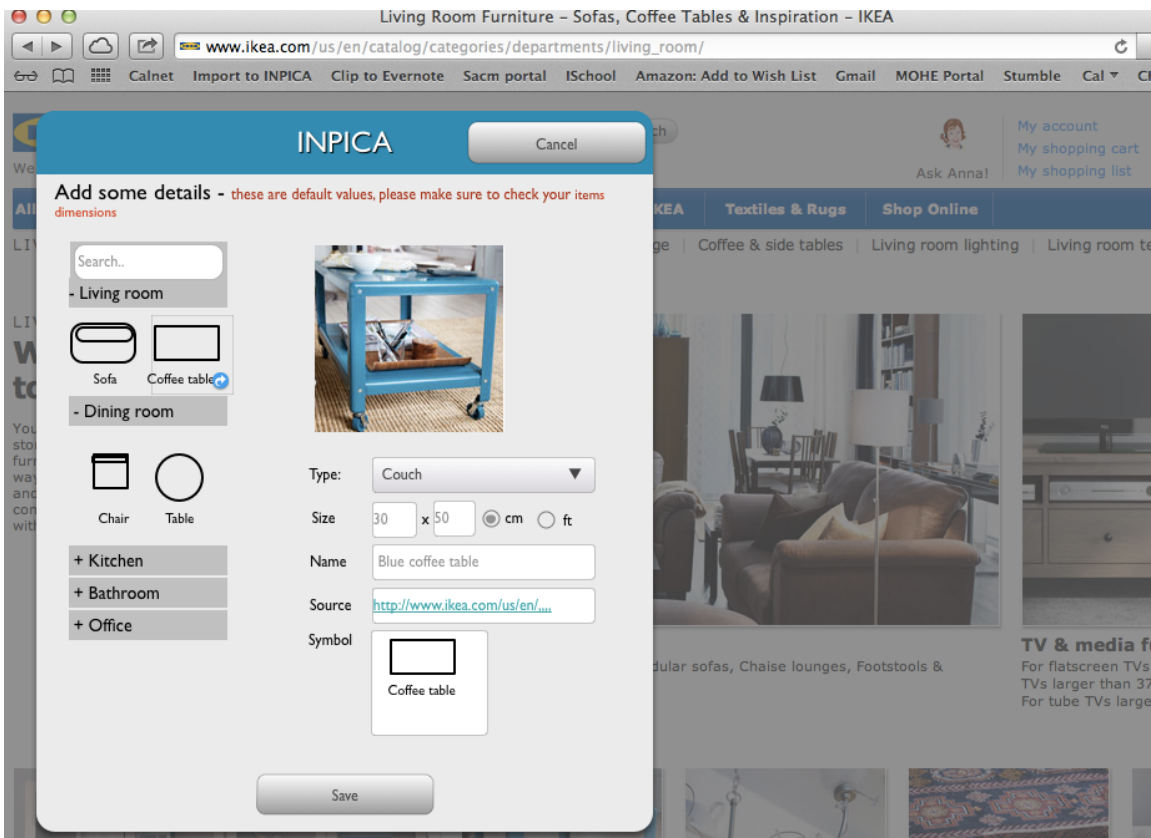

Figure 13 – Metadata is added to the image that is captured via bookmarklet.

e. Usability Testing and Iteration

User testing was conducted with the Keynote interactive prototype. The mockup provided test subjects with a limited ability to try out different functions and navigation flows. We used a pre-prepared testing protocol to insure that users perform tasks that actually work in the prototype, while asking them to explain their thought process at the same time.[9]

As subjects tackled the tasks they were asked to do, the tester closely observed things like moments of confusion, number of mistakes made, and amount of time it took to complete a task. A note taker who silently observed the entire process documented observations. Some common issues that were revised as a result of user testing included terminology adjustments (labels), changes to UI elements such as hide and show symbols, as well as fixes to address confusion with navigation. Once a round of user tests was completed, we refined out prototype then tested again until the team agreed the solution was ready for final development.
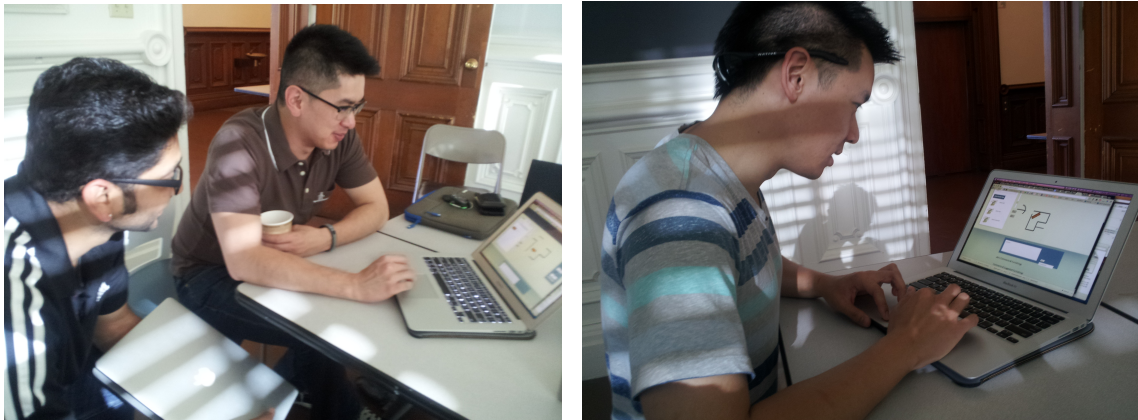

Figure 14 – Usability testing conducted with the Keynote interactive prototype.

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[9] See Appendix D – Usability Test Protocol for the questions asked

7.Technical Design

a. Technology Stack

Frontend

Inpica's frontend architecture uses a variety of common JavaScript libraries throughout the site such as jQuery and underscore.js to simplify the manipulation of DOM elements in the HTML document. The section of the site where users interact with and build both floorplan layouts and furnishings uses a custom library built on top of the Raphael SVG JavaScript library. The interaction facilitated by this custom library includes:

- Accurately tracking object dimensions and positions in relation to their placement on the canvas

- Zooming in and out of the canvas while maintaining accurate aspect ratios and dimensions in relation the zoom level

- Tracking canvas state such as which furnishing is being viewed, changes a user makes to a furnishings state and identifying objects in focus

- Automatically saving changes to object placement via AJAX when a user builds a floorplan layout, which removes the need for a "Save Button"

- A custom JSON representation of each object on the canvas and the ability for the canvas to both import objects in via and export objects out to the custom JSON representation

- Separation of layout objects (i.e. walls, doors, maps, etc.) from furnishing objects (i.e. generic and/or pinned furniture pieces) in order to independently save each furnishing as a layer on top of a given layout

The Raphael JavaScript library was chosen due to its small footprint and powerful methods for manipulating SVG objects at an elementary level.

AJAX is used throughout the site to reduce the need for full page reloads, resulting in a better browsing experience for the user. In addition, AJAX is heavily used in the floorplan section of the site to transfer data back and forth between the server and the client in order to save the state of a users' canvas without the need for them to refresh the page.

Backend & Hosting

The primary technologies used in the Inpica backend are the Django Python web framework to manage HTTP requests and MySQL to act as the database server. Django was chosen primarily due to its MVC request handling paradigm and its' use of Python as the programming language, which was familiar to the team. In addition, Djangos' powerful object relational mapper (ORM) significantly eased the interaction with the MySQL server and reduced the need to write manual SQL commands.

Inpica is hosted on an Amazon Web Services (AWS) virtual EC2 instance. AWS was chosen due to its quick start process, scalability, bandwidth speed, security and price.

b. Bookmarklet (Patent Pending)

A Bookmarklet is an anchor tag (<a> hyperlink) that, when clicked, runs a specified JavaScript code as opposed to linking to a separate webpage. Users can store Bookmarklets in their browsers "Bookmarks Folder" (also known as "Favorites"). When a user visits any website, they are able to click on any of their Bookmarklets in their browsers Bookmarks Folder, which would then execute the JavaScript code in context of the particular webpage in scope of the browsers window.

The goal of the Inpica bookmarklet is to allow users to "pin" furniture pieces from any furniture website into their Inpica furniture inventory without the need to enter in a username or password. By "pin," we mean that relevant information from the external furniture website (i.e. furniture type, dimensions, image(s), title, price, etc.) is extracted from the HTML document and used to generate a furniture record in the Inpica database linked to the appropriate user for which the bookmarklet belongs to. This furniture record is an alternative representation of that same furniture object. The user would then be able to place that furniture object onto any of their floorplans.

Each bookmarklet is unique. Users are allowed to generate any number of bookmarklets, each of which includes a reference to the bookmarklet owners' id (the user who generated the bookmarklet) and a unique shared secret string used to authenticate and validate the bookmarklet. Each shared secret meets the version 4 UUID specs specified in RFC 4122 but can also be any other globally unique identifying string that can guarantee uniqueness across space and time. In addition, bookmarklet owners can set a variety of control criteria for each bookmarklet, such as how many "pins" each bookmarklet is allowed, which domains a bookmarklet can pin from, bookmarklet expiration dates, additional password checks required by each pin, which organizational category (i.e. bucket) the pinned furniture can be

dropped into, etc. Users are free to distribute each bookmarklet to other users, including those who are not members of Inpica. The distribution channels include generating a unique bookmarklet distribution webpage which other members can visit to obtain the bookmarklet. The bookmarklet owner can email a link to the bookmarklet distribution webpage or simply type in the email of the user(s) and have Inpica auto-generate an email containing a link to the bookmarklet distribution webpage.

When a user clicks on the Inpica bookmarklet, the bookmarklet appends a "<script>" tag to the body of the webpage in the browsers scope. The source ("src") of the script tag is a unique Inpica URL which contains the bookmarklet owners' id and the shared secret. The "src" uses the SSL protocol (HTTPS), which masks the shared secret within the URL string in the TCP/IP communication channel between the users' browser and the Inpica servers. Upon receipt of this script request, the Inpica servers validate the bookmarklet by checking the id and shared secret provided in the URL. Once validated, the Inpica server generates a custom JavaScript file which contains the bookmarklet owners' id, the shared secret and other control criteria for which the bookmarklet owner has specified in their bookmarklet account management. The bookmarklet JavaScript code extracts relevant furniture information from the site and appends an <iframe> tag to the webpage with an SSL protocol "src" URL to Inpica's servers containing (1) the bookmarklet owners' id, (2) the shared secret, and (3) GET variables containing the extracted data from the webpage. Inpica's servers perform another authentication check and return an HTML document containing forms populated with the data pulled from the GET variables in the <iframe> "src" URL. Users are then allowed to customize any information in relation to the furniture piece they are about to "pin" and can then click "Save" in order to trigger an AJAX call to securely transmit through an SSL encrypted channel (1) the bookmarklet owners' id, (2) the shared secret, and the (3) the furniture data from the forms. Prior to saving the data to the database, Inpica's servers perform a final authentication check of the owners' id and the bookmarklets' shared secret along with a check of the control criteria of the bookmarklet set by the bookmarklet owner.

Bookmarklet owners are free to alter control criteria and/or invalidate any bookmarklet at any time through the bookmarklet management section in their dashboard. They may also track which furniture pieces were tagged by whichever bookmarklets.

8. Final Design

Below are screenshots of the final product that we produced.

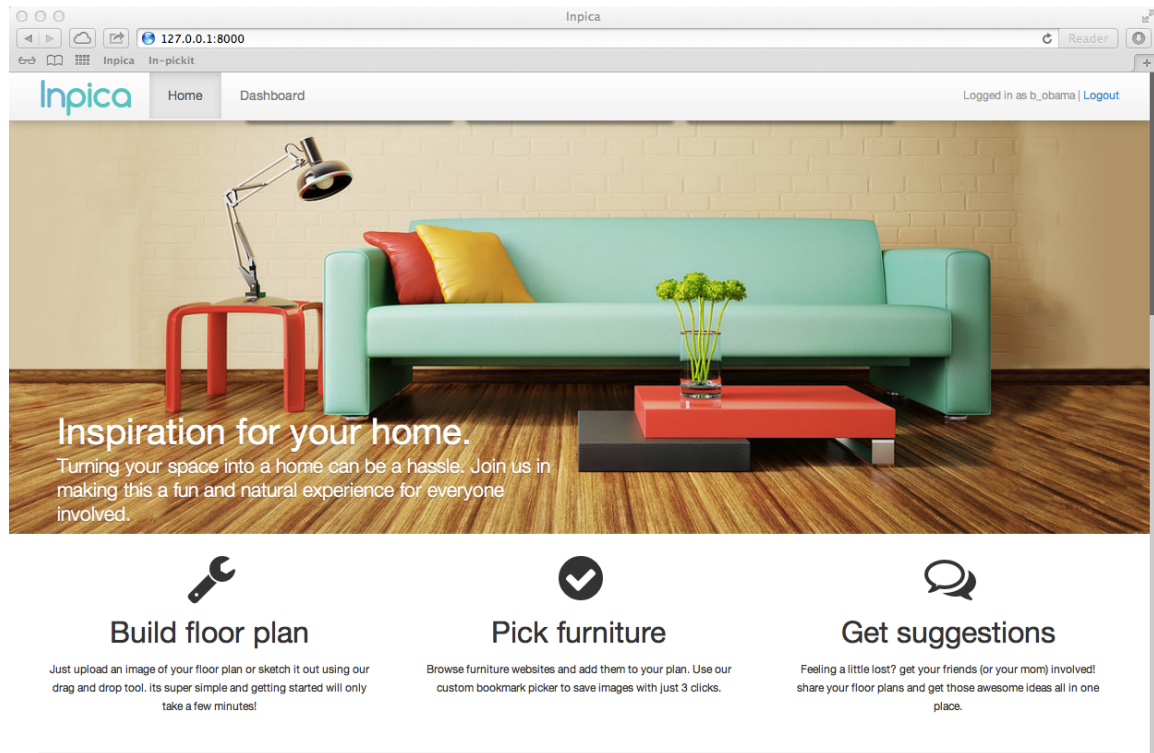A user first arrives at Inpica through inpica.com.

Figure 15 – Inpica Home Page

Users can create an account or start work on a floor plan. The account process is captured in the next two screen shots.
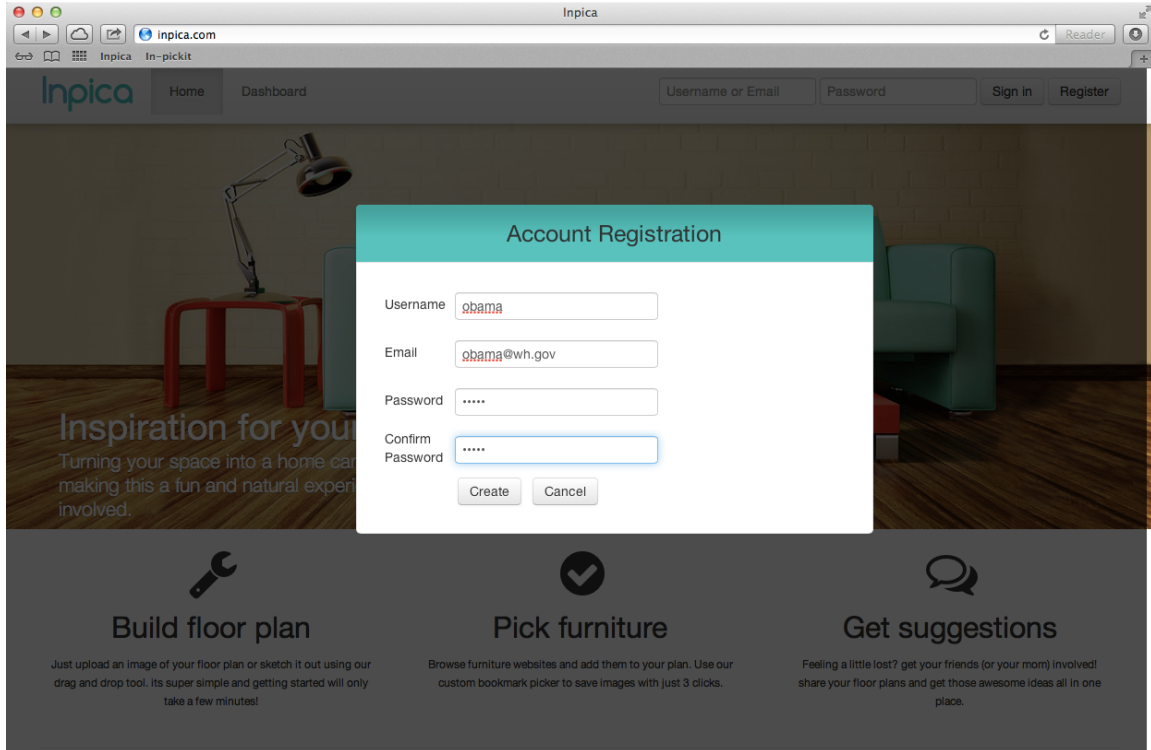
Figure 16 – Inpica Account Registration Page

The small amount of information required for an account setup is followed by the screen shot in figure 17 confirming that the user's account was created.
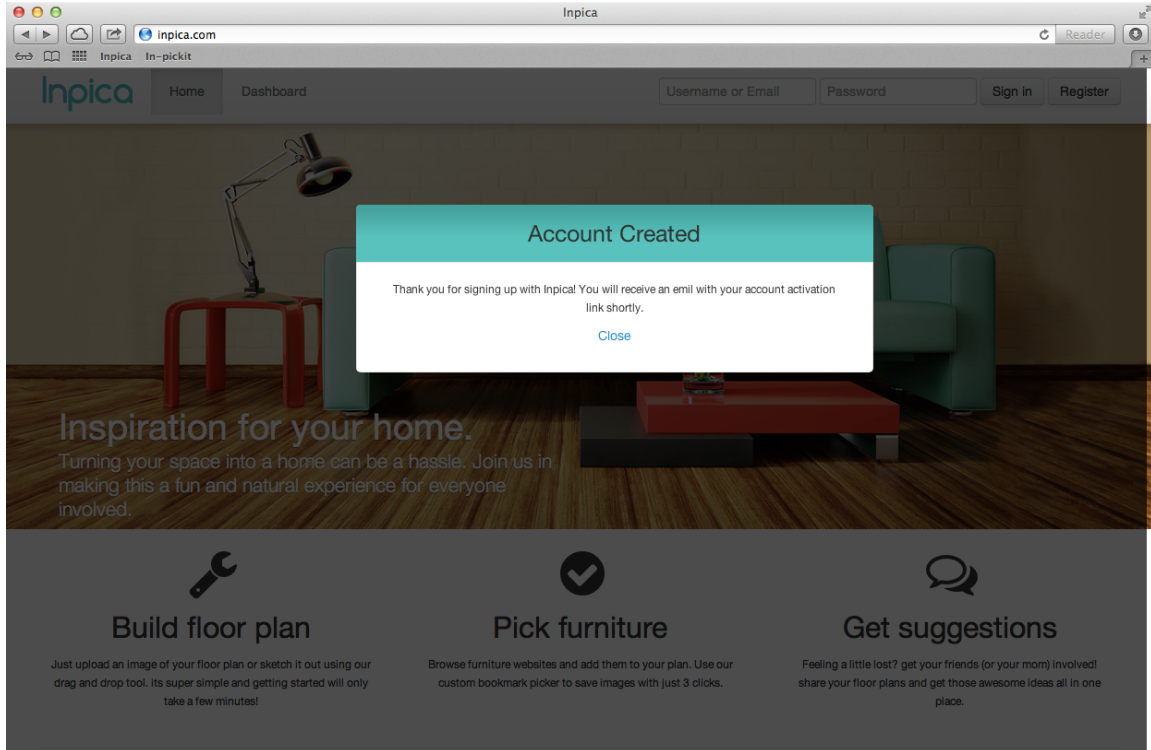
Figure 17 – Inpica Account Created Page

User b_obama can then proceed to his dashboard to investigate his floor plans, furniture and the comments that others have left on his plans. The dashboard can be seen in figure 18. Also note, the Inpick-it bookmarklet is available to the user through the dashboard.

Figure 18 – Inpica Dashboard

From the dashboard we go to the floor plan builder seen in figure 19. This page allows a user to build a floor plan, to scale, and with furniture that they can personalize with images. Comments are available to user b_obama and to with the people he shares the floor plan. You can see the comments section in figure 20.

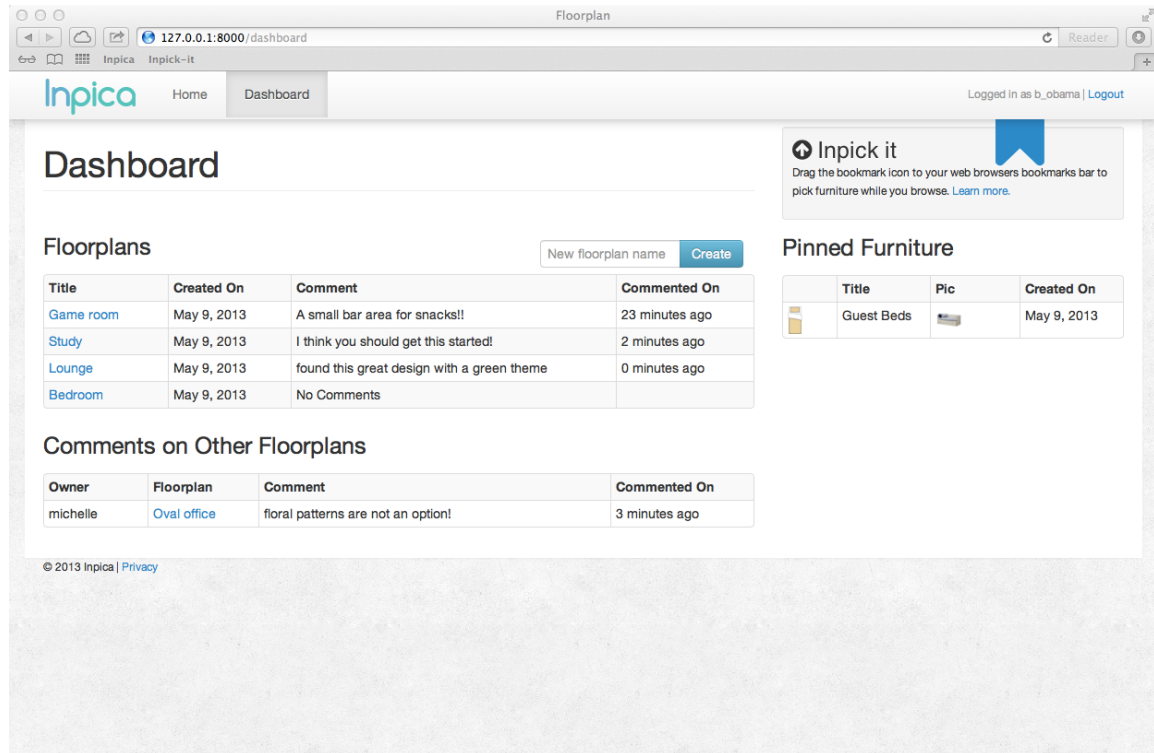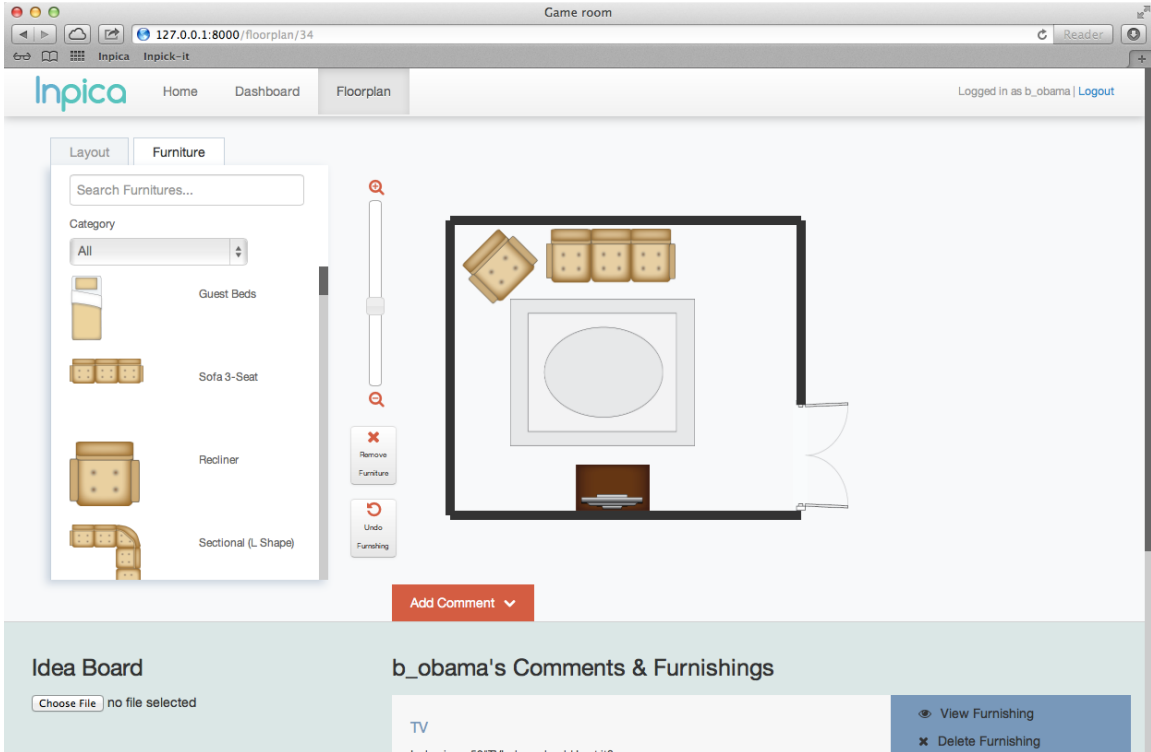Figure 19 – Inpica Floor Plan Builder
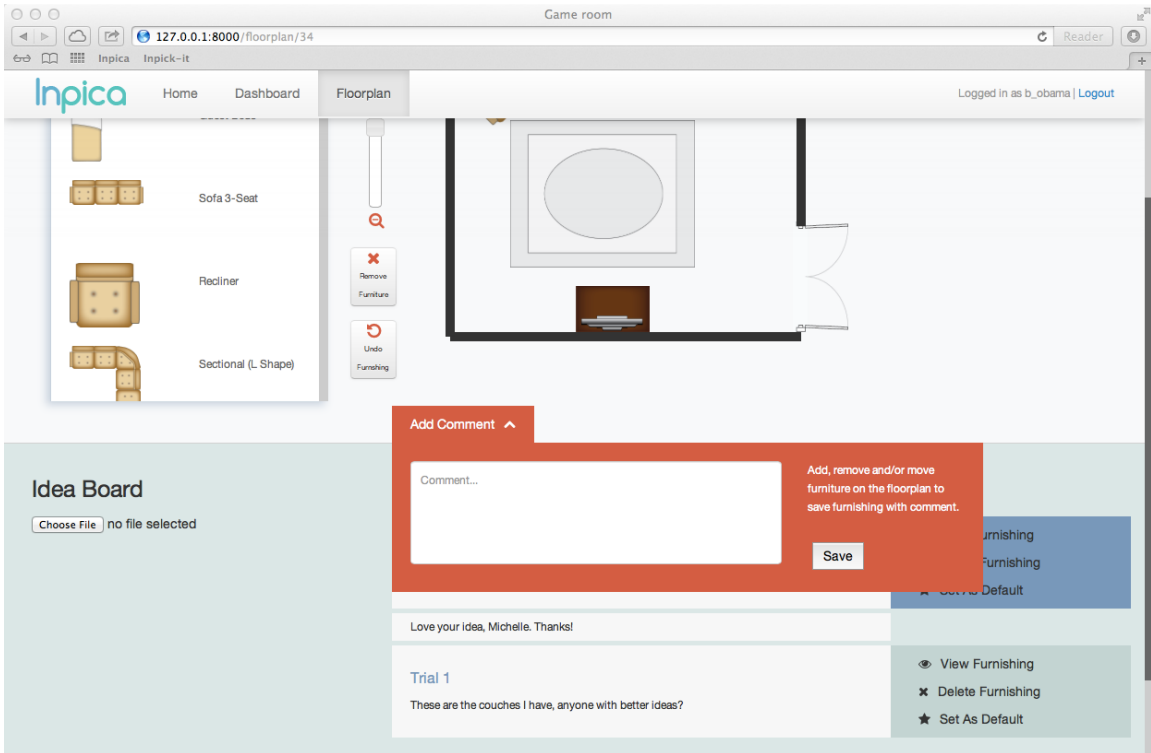
Figure 20 – Inpica Comment Section

Another feature of Inpica is the bookmarklet. Added to b_obama's browser from the dashboard (fig 21), he can visit other websites and add furniture content to their account at Inpica, all while at the other site.

The browser allows the user to select from the pictures on the site (fig 21). The selected pictures as well as relevant data on the site are then sent to Inpica for processing and a second form is presented to the user to complete the process (fig 22). In the second form, the user confirms information scraped from the site or edits as needed.

Figure 21 – Inpica Bookmarklet Picture Selection

Figure 22– Inpica Bookmarklet Furniture Builder

9. Future Implications:

Inpica has touched on various pointers which going forward can have interesting applications. Some of them being:

Bookmarklets:

- Idea:
  Distributing bookmarks to different users who can share links/resources to a single repository in an unobtrusive (without requiring the user to login) yet in a secure way. The repository belongs to the person who creates and distributes the bookmark and he has full control over the behavior of the bookmarklet.
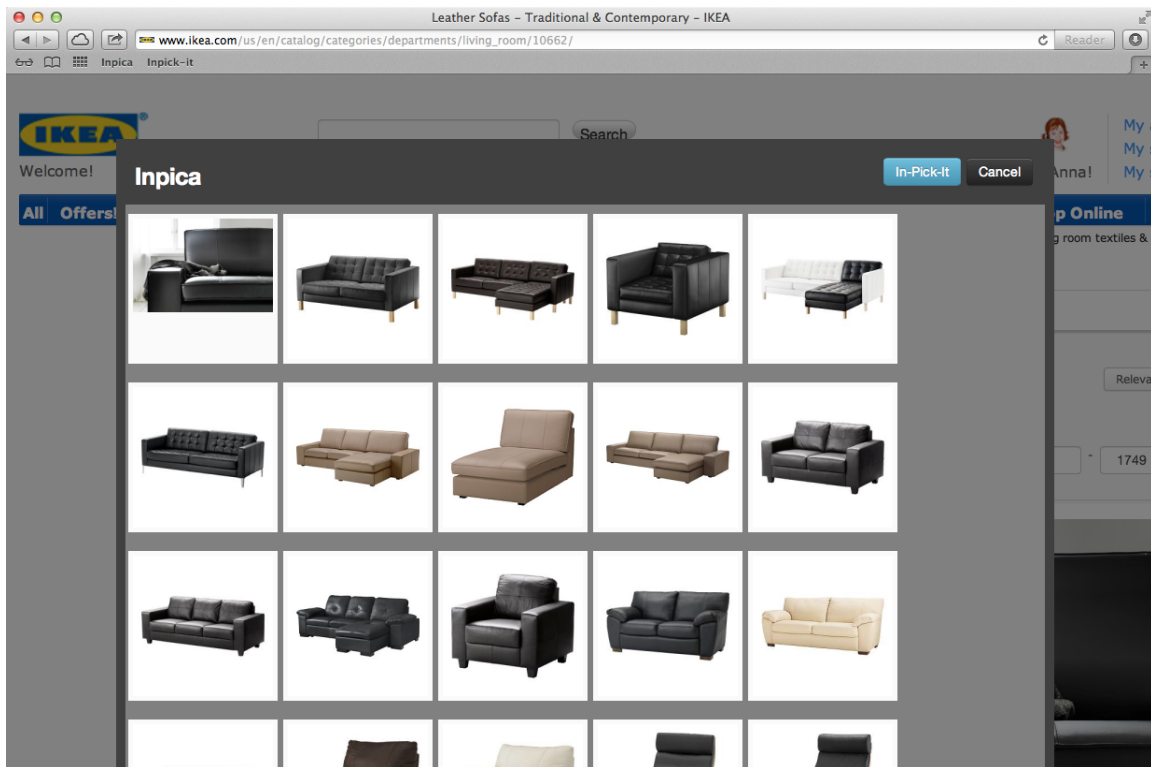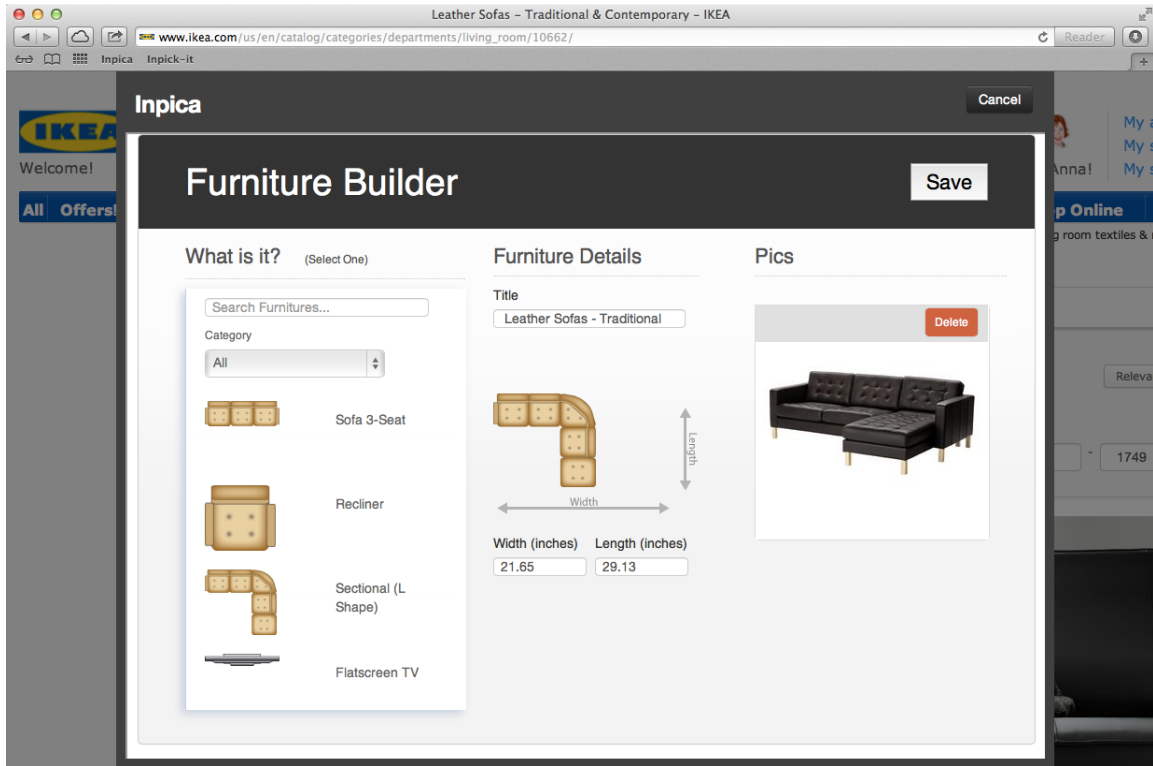
- Application:
  This concept can be extended to research applications where users can share all the resources they stumble across for a particular topic to a single repository without having the contributors to login each time they stumble across an interesting topic. It can even be extended to social applications, where users strive to collect resources for a common need/event such as photographs from parties. One specific example could be events on Facebook. The users from Facebook upload photos to their respective accounts. Thus the event captures are spread all throughout Facebook. Using the bookmarklets, these images can be captured at one place. It can even allow non-Facebook users to upload photographs to this same repository.

Furnishings:

- Idea:
  Having the users to change the furnishings and saving them as comments, saves a different version of the parent object, without actually changing the latest version modified by the owner of the parent object.

- Applications:
  This concept of next-generation comments can actually be extended to various applications like photo sharing. Instead of text comments, Users can voice their comments through picture uploads without interfering with the theme of the discussion.

The product Inpica as a whole can be extended to a full-fledged furniture-advertising tool wherein Furniture shops can advertise their furniture and offer deals that the homeowners can use to furnish their homes. With the knowledge of existing layout, Furniture shops can suggest unique items to the storeowners.

Furniture stores can even conduct competitions by making users come up with a best design template using a limited set of furniture. This can foster innovation as well as brand the furniture stores through this channel.

Appendix A – Interview Questions

<u>Designers</u>

1. Tell me about your work, what motivated you to peruse a career in interior design?

2. How does a typical project work (start to end)?

3. Do you always work with the client face to face or sometime use photos and email/ phone? Can you talk about which way do you prefer?

4. How do you mock up designs now (tools / software0? Do they want opinions of their work?

5. How collaborative is the process? Do you often take others opinions about your work?

6. Are you or your colleagues protective of your / their designs? In school is it mostly a solo process or a group effort?

7. How do you search for furniture? Do you need a database or just look around? Do you have relationships with certain stores?

8. Do you keep a portfolio of your work? Is it digital or paper based? Why?

9. What are some of the frustrations you face when working with a client or generally while working on a project?

10. What do you thing of the pricing schemas used today? (75-200 an hour / contract/ …) . do you think its too expensive? Too cheap?

11. How would you feel about a product that lets people recommend designs to others for free?

12. What's the interest of interior designers in this sort of product: show the concept sketch and get initial feedback / impressions:

    a. This is a tool that is mean to collaboratively provide people with options on how to design their home. Is this something you may find interesting/ useful?

    b. What are your thoughts on the concept? Likes / dislikes/ suggestions

13. Thanks!

Users

1. Tell me about the last time you moved/ remodeled your home.

    a. When was it?

    b. Why did you move/ remodel ?

    c. Did anyone help you?

    d. Did you use any software/ sketching tools?

    e. How long did it take?

    f. How did you go about designing / purchasing furniture ?

    g. Best/ worst part about the experience ?

2. Would you have considered getting some expert advice (interior designer?)

3. What matters more to you: cost or aesthetics in remodeling/designing the room? Why?

4. Who would you go to for feedback/ help ? why?

5. Do you prefer quick and easy or longer term design efforts?

6. How much does the style of the whole house impact how the room should be laid out?

7. What does a user who is uploading photos, what are they looking for? Tons of opinions? do this in a week? Very easy and efficient to operate?

8. If your friends didn't accept your suggestions, would you be hurt?

9. How would you feel about making your floor plan public so you can get suggestions? (no location shared)

10. What's the of a user in this sort of product: show the concept sketch and get initial feedback / impressions:

Appendix B – Survey Questions

Interior Decoration Interest Survey

Thank you for participating in our survey. This survey should take 5-10 minutes to complete.

We are a group of students at UC Berkeley who are interested in developing an online tool for interior decoration. Our goal is to better understand how people go about designing and decorating their interior spaces.

Your participation is very much appreciated.

* Required

Question 1 *

How skilled do consider yourself at interior decorating?

1 2 3 4 5

Unskilled   Skilled

Question 2 *

How much do you like decorating/designing your personal space?

Strongly Dislike

Dislike

Like

Strongly Like

No opinion

Question 3 *

What inspires your interest in decorating your space? (check all that apply)

When I'm moving

Personal interest in design

I need something new/my things are old

I'm not really interested

Other:

Question 4 *

When redesigning or moving, how detailed of a floor plan do you make?

> Very detailed (measurements and furniture proxies)
>
> Detailed (basic measurements)
>
> Not detailed (just some sketches)
>
> I don't make a floor plan

Question 5 *

When decorating, how important are the following as a source of inspiration?

If 'Other Source' was rated as important or very important, please note the source

Question 6 *

What tools do you use to plan how to decorate your interior space?

> Web browsing
>
> Paper products/ sketches
>
> Autodesk Homestyler
>
> Other digital layout tool
>
> Intuition (no product used)
>
> Other:

Question 7 *

How likely are you to help the following people with your design advice?

	Very Unlikely	Unlikely	Not Applicable	Likely	Very Likely
Anyone who asks					
Family					
Close Friend					
Acquaintance/ Colleague					

Question 8 *

Given you are moving/re-designing your space, how likely are you to reach out to the following people for design advice?

	Very Unlikely	Unlikely	Not Applicable	Likely	Very Likely
Commercial Store Representative (Home Depot, Lowes, etc)					
Interior Design Blogger (not a friend)					
Family					
Close Friend					
Acquaintance/ Colleague					
Professional Interior Decorator					

Question 9 *

If you were moving/re-decorating your interior space tomorrow, who would contact first and why.

Demographic Information

What is your age?

What is your gender: Male/ Female

What is your current Relationship Status? Single/ Married/ Other:

What is your current occupation?

Housing Situation   Apartment, Solo

                          Apartment, with other people

                          House, Solo

                          House, with other people

                          Other:

Are you willing to be contacted for a brief follow up interview?

If so, please provide an email or phone number.This will be via phone, Skype or Google hangout.

Appendix C – Selected Interviews

Selected Interview 1 – (contact information has been removed):

From: Arian Shams

Date: Thu, Feb 7, 2013 at 10:29 PM

Subject: Re: ID Info

To: Rae Hagner

Hello Ms. Hagner,

Thank you for your insights. We understand and respect your point of view. I might not have correctly explained our idea or the problem space we are navigating. The system we are thinking about is not meant to be in any way a substitute for the work of a professional interior designer or interior architect. In fact, this system is probably nowhere near something that can be considered a design tool. For now, the user groups we are looking at are those who would like suggestions on primarily furnishings or coloring schemes that could improve their personal living spaces. After speaking with a couple architects and interior designers, we understand and appreciate to the best we can the work and effort that goes into the design process of a physical space. This tool is not meant as something that interior designers would use but as something the friends of those looking for furnishing suggestions would use to help another friend who would like to entertain ideas for very basic rearrangements or additions to a room. We don't even believe this is considered to be design but, rather, decoration suggestions. Therefore, yes, this is an amateur site for people to suggest decorations but it is not a design tool in any way. We also understand there is a lot of bad design in the world and that almost all spaces can be improved but quite honestly many people do not have the resources to work with professional interior designers as well. The reason we are seeking interviews from those who work as professional interior designers or are familiar with that field is not to belittle their work as to suggest that it can be delivered virtually, which we believe is not possible by any stretch, but to see if there is any part of the design process that can potentially be beneficial in the system we are currently looking at. Our idea is still in its infancy and can easily be morphed. We are gathering information from a variety of sources and looking to see if we can extract a viable value proposition. We would still very much like to get as many viewpoints as we can through interviews and questionnaires so that there is more substantiation to the direction that we eventually choose to go within this problem space. If you are

interested in helping out our team with an interview then we would be very appreciative but we also understand if you do not wish to participate. In either case, thank you for taking the time to look over our idea.

Best,

Arian

On Thu, Feb 7, 2013 at 12:05 PM, Rae Hagner wrote:

Frankly, Arian, this is exactly what we don't promote. Interior design today involves skills and knowing codes and much information. You should come and sit in some of our classes and try to understand that we want to teach about good design, good environments and promote safety and functionality. I think you'll be surprised at how much knowledge is required.

My initial reaction is that you are doing a disservice to the user and the profession by promoting such amateur use of digital tools. There's so much bad design around us and unfortunately, the average citizen is not aware of it because of all the mediocre stuff shown on TV and promoted by manufacturers whose main goal is to sell their products.

RAE HAGNER AIA, IIDA

Program Director

Interior Design & Interior Architecture

UC Berkeley Extension

Rae Hagner

From: Arian Shams
Sent: Thursday, February 07, 2013 1:03 AM
To: Rae Hagner
Subject: Re: ID Info

Hello Ms. Hagner,

Thank you so much for your reply. To give a brief breakdown of our project idea - My team (4 of us total - all graduate students from the School of Information) is working on a web based platform (a website for now) that allows users to electronically sketch a basic floor plan of a room or space that they would like to decorate and then invite other users to suggest furnishings and color schemes for their room or space. It can be considered as a type of crowd sourced interior designing tool. The trick is that this system is not intended to go into too much depth that interior designers may go into such as those designs that may need some form of construction. Instead, for now, we are looking at it being a simple tool that allows users to suggest and position interesting furnishing items that they find on the web. We are currently in the idea exploration phase so we are trying to reach out to those in the interior design field to see how we can steer our idea. We were hoping if we could possibly set up an interview with either yourself or any contacts you may have in the interior design world who would be interested in participating in a short interview (30-45 minutes) with our team. We would also be very interested in interviewing interior design students but would of course need your approval to ask any students in the ID extension courses if they would like to participate in our interviews. I hope I provided a somewhat clear idea of what our team is working on. Please let us know if you would like to participate in an interview or have any contacts that may be interested. We completely understand if you do not have the time as well. Thank you again for taking the time to correspond with us.

Best,

Arian

On Wed, Feb 6, 2013 at 3:31 PM, Rae Hagner wrote:

Hello Arian: Your email was sent to me as program director of the Interior Design & Interior Architecture Program at UCB Extension. I am most interested in what you are doing and would like to understand further what this information might or could be used for.

RAE HAGNER AIA, IIDA

Program Director

Interior Design & Interior Architecture

UC Berkeley Extension

Selected Interview 2:

Users

11. Tell me about the last time you moved/ remodeled your home.

    a. When was it?

        i. Every 3 months – moved 2 years ago—had to re-arrange .. really challenging for small space

        ii. Small spaces are hard .. trying to

    b. Why did you move/ remodel ?

        i. Things don't fir in the space

    c. Did anyone help you?

        i. Wouldv asked for help but none of my friends are into

    d. Did you use any software/ sketching tools?

        i. Would used SW but don't know what to use.. for now I just sketch

    e. How long did it take?

    f. How did you go about designing / purchasing furniture ?

        i. I use graigs list … wish there was an easy way to find pieces for my home..

        ii. If this and that .. watch list for Craig's list.. I use it for apartments that fir within certain criteria

        iii. The kind of this tahts always looking for stuff

    g. Best/ worst part about the experience ?

        i. Take a lot of time,. Measuring was not not very useful it still didn't fit

12. Would you have considered getting some expert advice (interior designer?)

    a. No – im a grad student

13. What matters more to you: cost or aesthetics in remodeling/designing the room? Why?

    a. Aesthetics .. if I bring something into my home I want it to be sentimental or functional .. no ikea and standard stuff

14. Who would you go to for feedback/ help ? why?

   a. Yea I asked … always good to get a second opinion.. depending on the person you ask.. my moms best friend was interior designer … she found her niche although I didn't think she had a great style ..

15. Do you prefer quick and easy or longer term design efforts?

   a. Id rather take my time. I god rid of everything when I left LA but now Im spending more money so im focused on quality more

16. How much does the style of the whole house impact how the room should be laid out?

   a. Yea I like bldgs. That are between the wars. It matters more and more to me as I get older

17. What does a user who is uploading photos, what are they looking for? Tons of opinions? do this in a week? Very easy and efficient to operate?

   a.

18. ->Focus should be easy to begin with

19. If your friends didn't accept your suggestions, would you be hurt?

20. How would you feel about making your floor plan public so you can get suggestions? (no location shared)

   a. If its crowd scourced no—expert yes.. friends and family I wou.ld askl

   b. People who who had good feedback from other clients – reputation

21. What's the of a user in this sort of product: show the concept sketch and get initial feedback / impressions:

   a. This is a tool that is mean to collaboratively provide people with options on how to design their home. Is this something you may find interesting/ useful?

   b. What are your thoughts on the concept? Likes / dislikes/ suggestions

   c. Link to Pintrest board? Facebook? …

   I wouldn't want to waste peoples time ..

   I would probably do it myself, then share for extra options

   Pictures I would not open to the public .. privacy issues..

   I would love it if it was in the same domain as interest.. if could search by space or similar tags like apartment size

Appendix D – Usability Test Protocol

<u>Pre-User Test Questions:</u>

Name:

Age:

Occupation:

Do you own a computer? what kind?

When was the last time you moved/ redecorated?

Have you ever used a computer / web application to redecorate or design your home?

If you have, what have you used?

If you have not, why haven't you tried this experience?

For school, I'm working with a group that is designing an application that helps people design spaces and get advice from others. It's called Inpica. We're still figuring out some design issues and I would really love your help with attempting to complete some tasks on a prototype that we've developed for it.

Don't worry about offending me, my other group members actually did most of the designing so please feel free to speak your mind.

The prototype I have here will just be pulled up on my computer, and it's basically just a string of pictures that are connected to act as if they were a real application. Some links may work, some links may not. The most helpful thing here would be if you could just talk out loud while you're walking through this - the more you can talk to me about why you're doing what your'e doing and what you think is going on, the more helpful you'll be.

Do you have any questions before we start?

User Test Protocol:

1) <u>Landing page:</u> Say you launch the website, and this is the first page that you get. What do you think you're looking at?

What would be the first thing that you would do?

(They should want to "try now", not 'register' since they don't know what the site can do)

(direct user to "try now" and have them talk through what they would do/are doing and why)

2) <u>Layout page:</u> what do you think this page is used for? What would you do next?

(they should want to create a floor plan- direct them to click the side tool panel to create walls)

What would you do after getting an idea of what the site can do? Are you intrigued enough to register as a member? Why or why not?

(direct them to save their work)

3) <u>Registration pop up:</u> What do you think this screen is telling you?

Pretend that you've filled out your information, and click "Register"

(Direct them to register, have them keep talking)

(Now they're at the dashboard screen)

4) <u>Dashboard:</u> now that you are a member, you have access to this dashboard. What do you think this is?

So this is your first time seeing this screen, what would you click on next?

(Don't have them do it though)

Can you tell me what you think would happen when you clicked "My designs"? What do you expect to see?

What about for "Suggestions"?

and "My inventory"?

and "edit profile"?

Now say you're redecorating your living room. And you don't have much experience and think your friends can help. What do you think you would do from this page?

5) Layout: (if need be, direct them to "New design" and enter the design name in the popup)

(Once the layout loads: what do you think the layout tab means)

Now say you want to build your room. how would you start

(once walls and doors are in place:)

What would you do next to start furnishing? What do you expect to happen if you clicked "furnishing"?

(direct to furnishing tab)

6) Furnishing tab: What do you think you can do in this tab? what do you think the suggestion section means? What about the idea board?

(Let them begin furnishing)

Say you wanted to save this version of your work. Where would you go for that?

(if fail, direct to 'new suggestion')

What do you think the little icons in 'new suggestion' mean?

Say you wanted to ask people for help / opinion with your layout. Where would you go for that?

(if fail, direct to sharing)

7) Sharing

(You could have them click on each one after they answered it to see if they were right and get their views on what they are saying or ask them to do some question related task after getting all their answers.)

(now ask them to get back to the main dashboard)

8) Book marklet: have you used a bookmarklet before- do you know what it does? say you want to collect some photos of furniture that you like in a similar way you would in pinterest.

(direct them to click the bookmarklet)

What do you think you should do next?

(direct them to select a photo, then add metadata including selecting a coffee table symbol and to save)

What do you think about this process? Where do you think the photos would be saved?

Optional: go back to the dashboard and check the inventory, sort from recent to inventory

Post-User Test Questions:

Do you have any general feedback about the experience you just had with this prototype?

Would you use in pica?

What are your concerns with the site?

Appendix E – Bibliography

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