

meet**chew**there

Low-Fi Prototyping and Pilot Usability Testing



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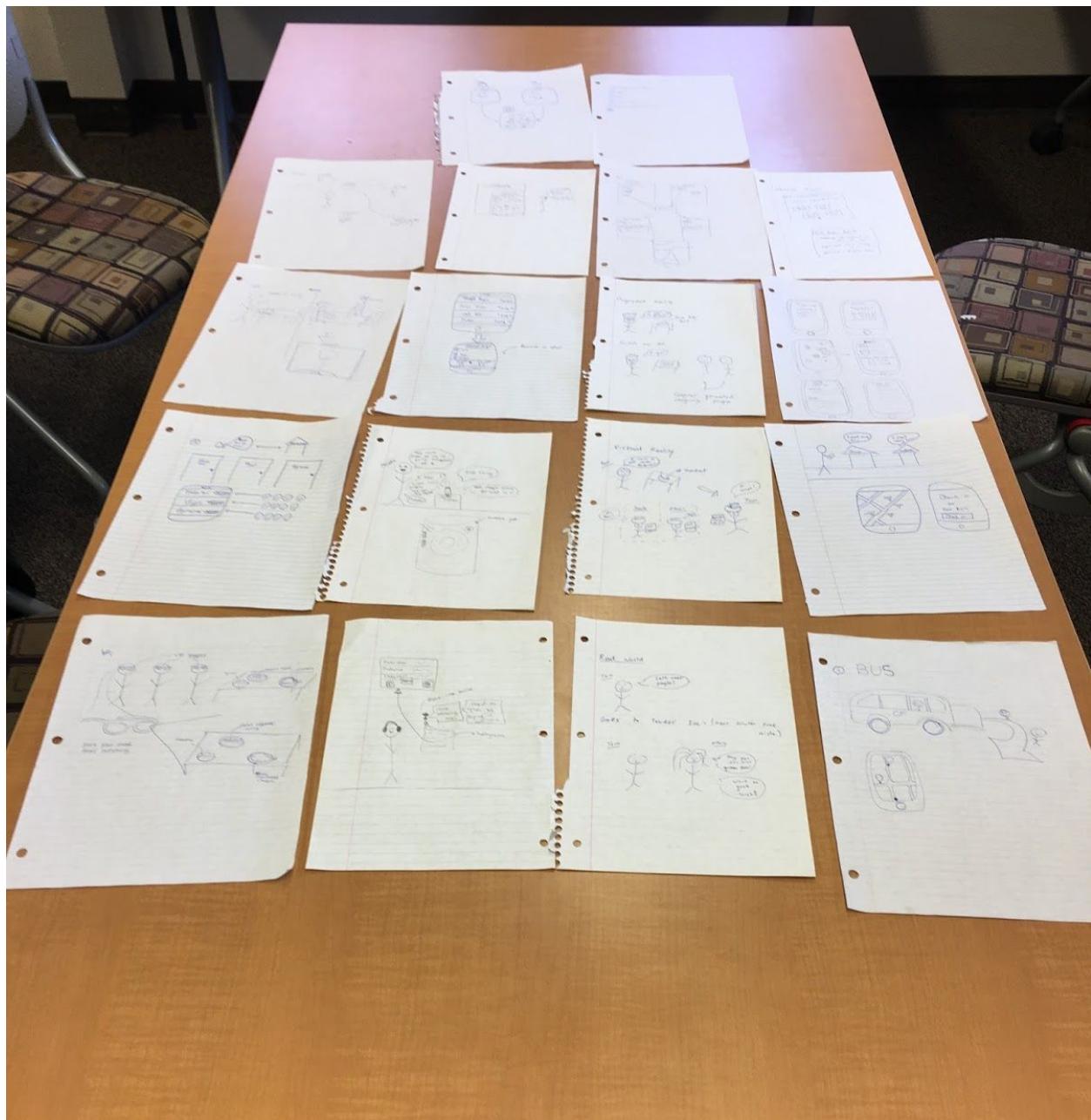
I. INTRODUCTION

We want to meet**chew**there and **feed your social cravings**. Socializing over meals can be complicated for people with dietary restrictions. These people are extremely conscious of where and what they eat, and they will do almost **anything** to avoid eating in social and uncontrolled settings. Some eat a full meal before going out to a meal with friends and others conveniently arrive after everyone has eaten. But many give up, ignore all such invitations, and isolate themselves from the world.

meet**chew**there redefines social eating for those affected by dietary restrictions by building trusted communities of geographically proximate people with common restrictions and provides a safe space to create, host, and join social events centered around food so that now the only choice to make is who to eat with!

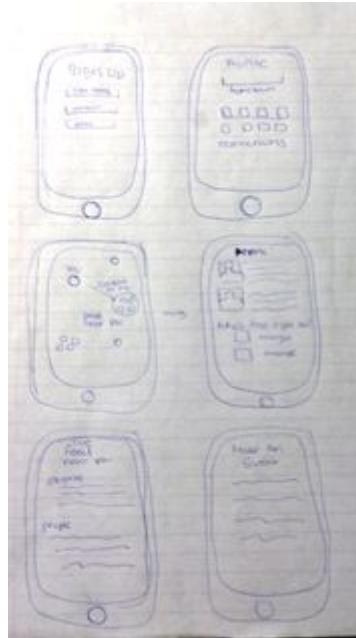
II. SKETCHES and DESIGN SELECTION

We considered many implementation modalities for meet**chew**there:

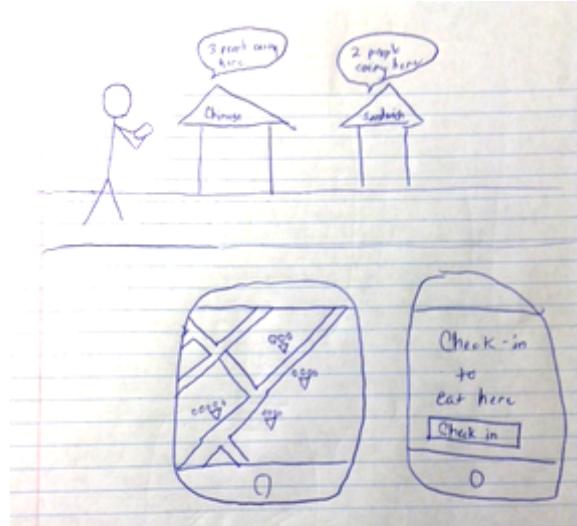


Some were practical...

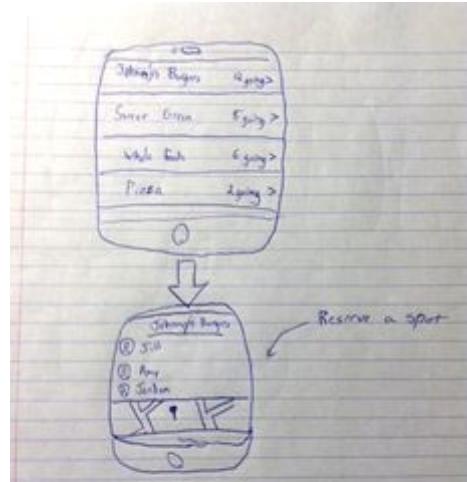
1. Mobile solutions focused on geographic proximity:



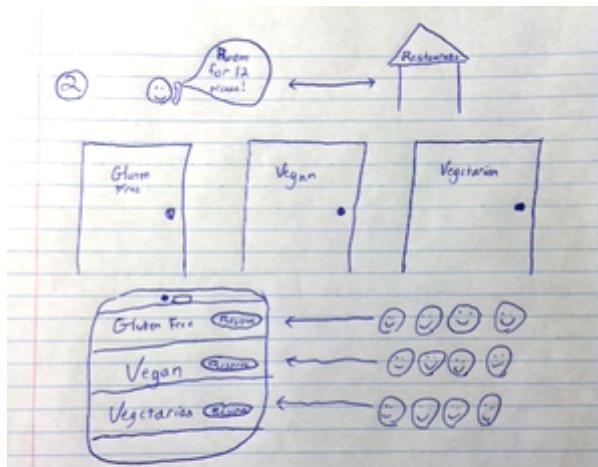
Provides a heat map of individuals and groups near your current location who share your restriction(s) as well as a chat functionality to join, connect and organize events with these groups



Pokemon-Go-like interface which provides an interactive map which shows the location of users who are currently at a restaurant and looking for company

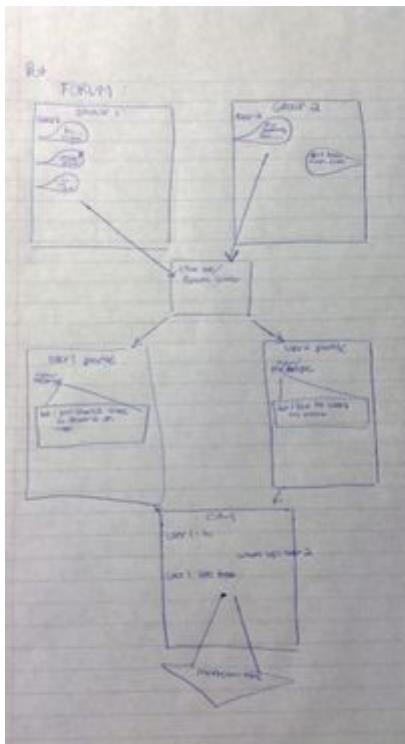


This dinner party planner allows users post their eating out plans and hop onto other users plans. Search results are filtered by proximity and diet.

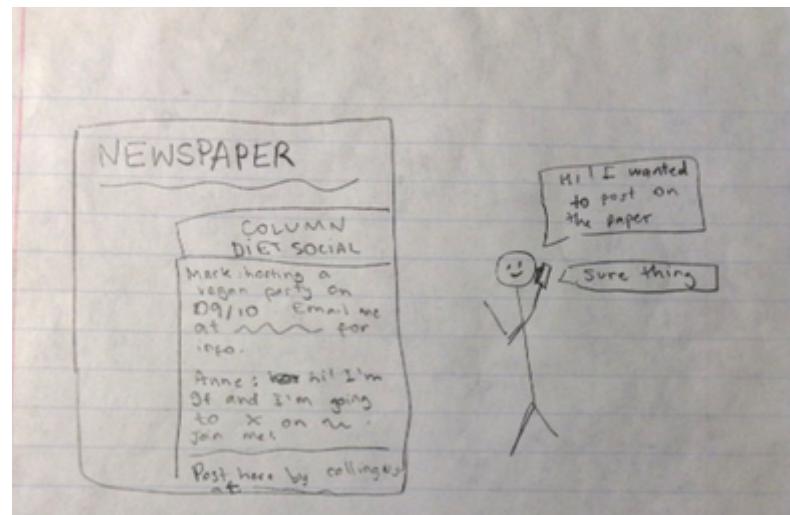


Users tentatively book a self-contained diet safe space in a restaurant and if enough other users join, the event is confirmed. User are suggested and search for events to join based on diet restrictions and proximity.

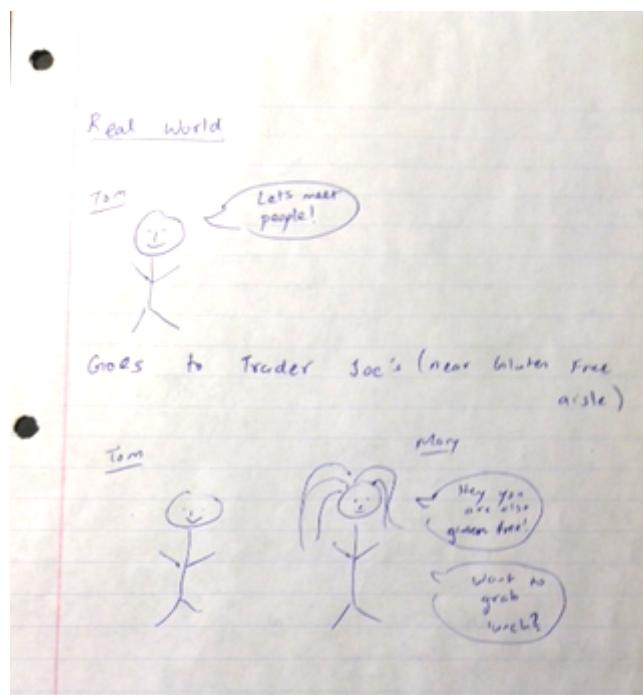
2. Chat based :



...even a little too practical...



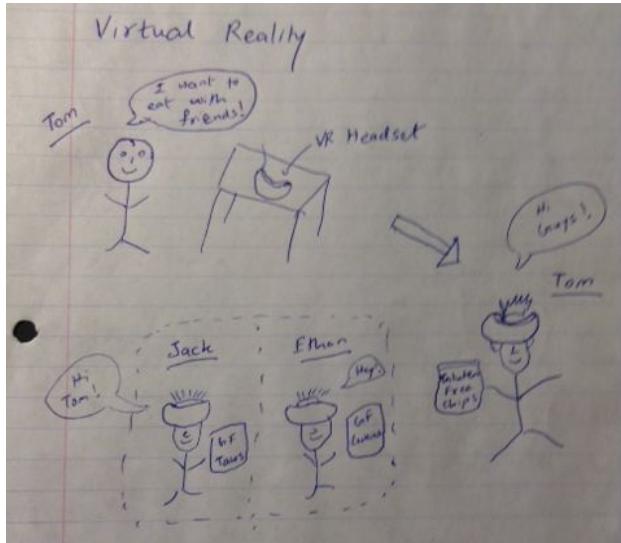
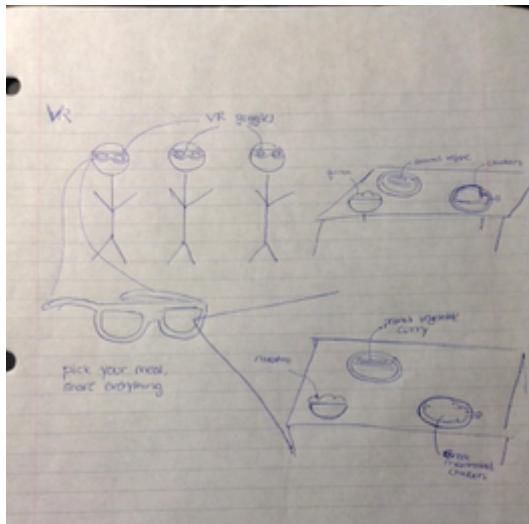
This "old-fashion" solution looks to design an easier and socially acceptable way to place newspaper ads both to find people like you and to create your own diet friendly food events



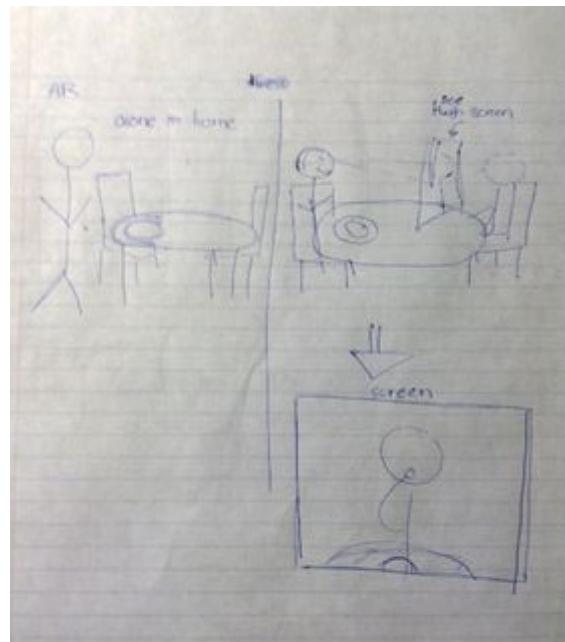
A second "old-fashion" solution explores the dynamics of going to a grocery store and finding people with your same restrictions based on the items in other shoppers' baskets and/or the aisles they locate spend their time.

While others were more futuristic...

5. AR/VR

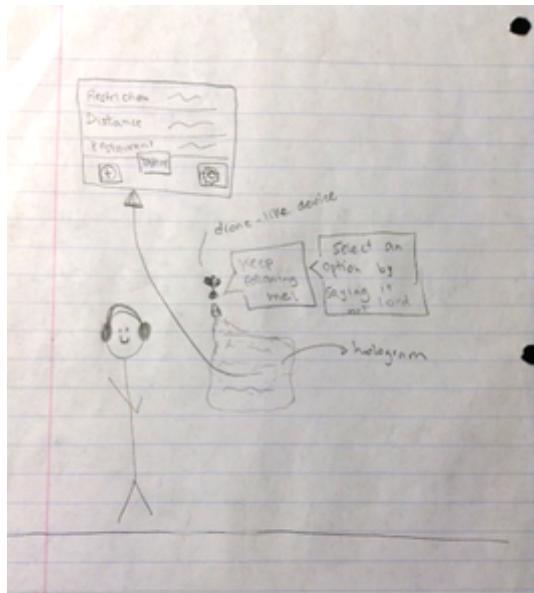


Half of the eating experience is visual. These virtual reality glasses allow users to eat adventurously together without the risk by rendering the food as more desirable/exotic dishes that are similar in taste, texture, and consistency to the actual diet safe dishes the user is consuming. The version on the left is designed for a group to believe they are sharing the same meal and the version on the right is designed for each diner to select different virtual meals.

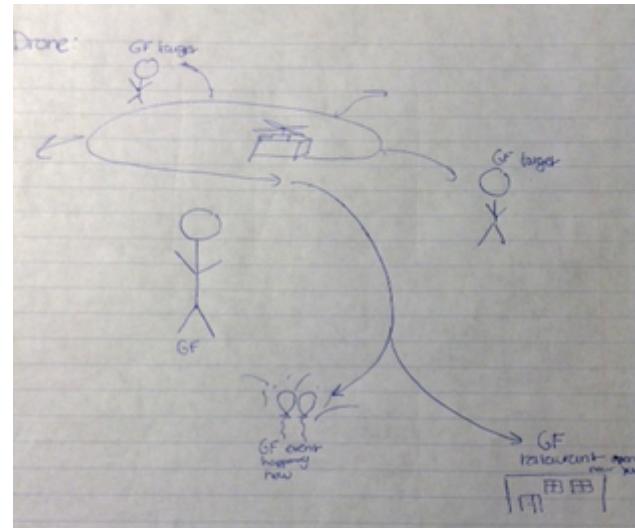


These augmented reality approaches overcome the challenge of finding similar people by providing the user with a dining companion. The user enters preferences and sets up a screen/projector

6. Drones

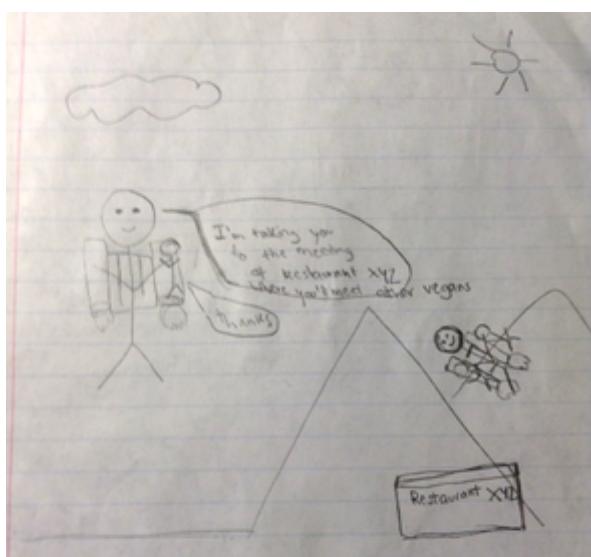


When prompted this drone solution is a ferryman who flies by your side and guides you to nearby restaurants, food events, and/or groups with your specific food restrictions. It is also equipped with speech and speech recognition capabilities to enhance the social experience.

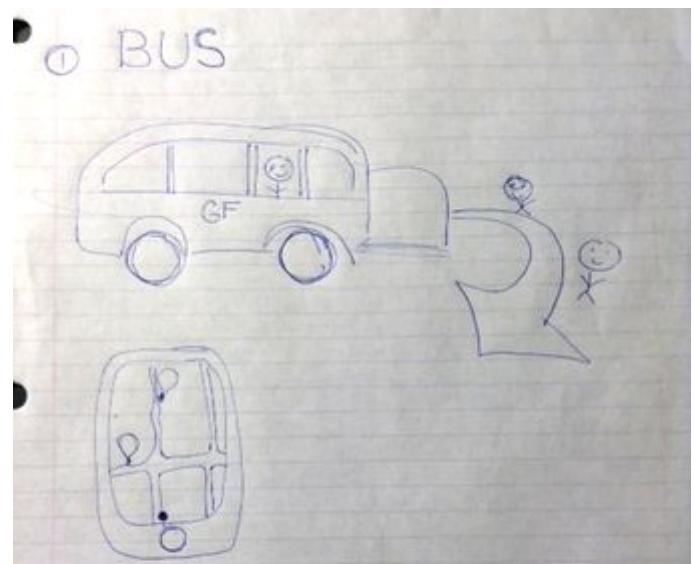


Conversely, this drone solution is a scout which, when prompted, surveys a perimeter within a user specified distance and reports back with a list sent via mobile application of nearby users with common restrictions, diet friendly events, and restaurant options.

....maybe even too “creative”...



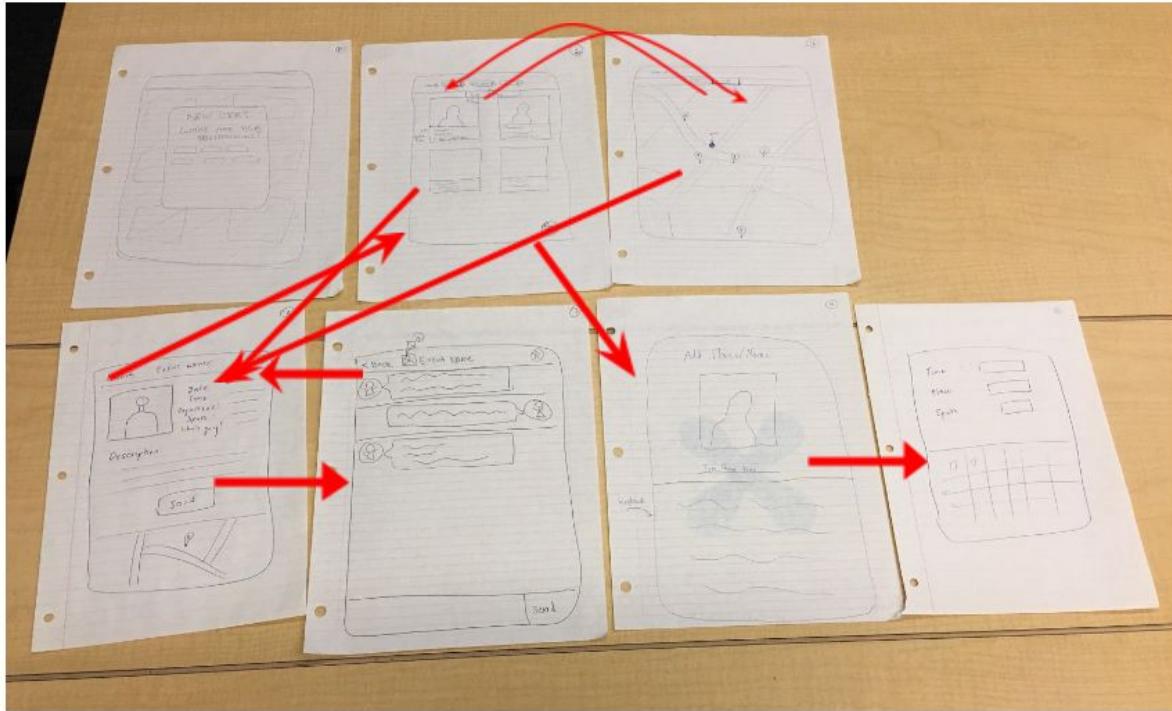
Users are brought together via jet pack...



The “magic bus” is here to take you to a breakfast, lunch, or dinner meetup with like restricted users. A user logs onto a mobile interface, checks if a bus catering to his restriction is on call and if so they drop a pin. A time estimate until pick-up is given, the bus then arrives as it is en-route to the final dining destination.

We then critically evaluated each sketch and upgraded our two best designs with the best features from each concept:

1) Location Based Mobile Application¹



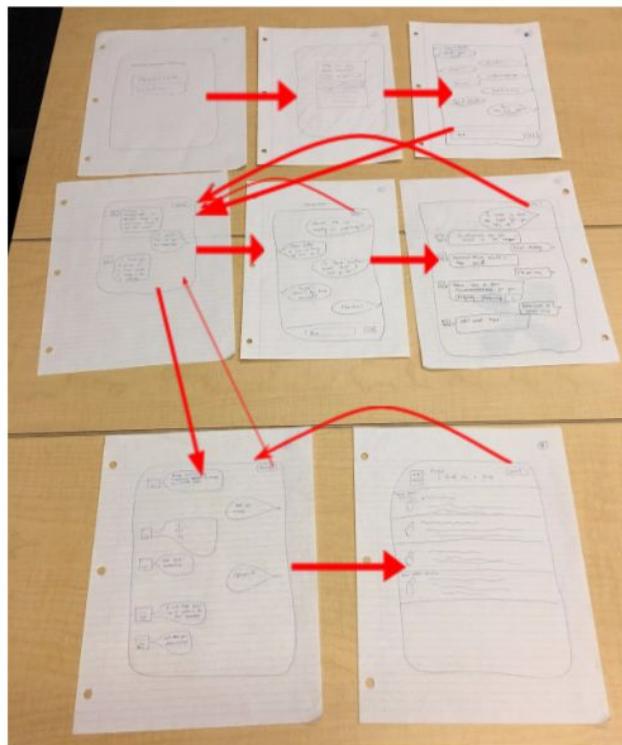
Key Functionalities:

- 1) Non-traditional homescreen. Application opens to a dietary restrictions selection screen after which the user is directed to the homepage. Users can switch between a list-view or map-view home screen (indicated by a tab bar at the top of the screen). The list view shows a news feed of upcoming events near the user's current location and the map-view shows nearby diet friendly events and restaurants denoted by dark and light pins, respectively.
- 2) Event/Group Search. Users can search for events with groups who share their dietary restrictions by either using the search bar that is featured at the top of the screen, by scrolling through the list view recommended events, or by exploring the map-view pins.
- 3) Event Details. Every event has a dedicated page. Users can learn more about a given event by visiting that event's page.

¹ See appendix for larger view of system

- 4) User-User Communication. Each event has a dedicated chat room for event members to communicate about the event. The chat room can be reached from the event's page once the user has joined that event.
- 5) Event Creation. Users can create and host their own event via the application by clicking the add event button on the homepage and then entering event specific details.

2) ChatBot²



Key Functionalities:

- 1) Lean UI. Entire application occurs in a single message feed run by a chatbot. The chatbot acts as the user's personal secretary and scheduler as it relates to food and dining by providing the user with advice and facilitating meals/events. Note that all interactions are typed as in a message feed.
- 2) Find Events and Groups. The user can ask the chatbot to find him/her an event for a specified time or time range. The chatbot will then cross reference the user's calendar with the plans of all other users in the system and provide a list of recommended events for the user to choose from.

² See appendix for larger view of system

- 3) Create and Host an Event. If the user expresses interest in creating an event, the chatbot acts as the event planner. Just as a professional event planner would do, the chatbot collects information about user preferences then provides suggestions for the final event. The chatbot also solicits and invites users with common restrictions.
- 4) User-User Communication. Once a user is committed to an event, he can ask the chatbot to put him/her in contact with the other users going to that event. The chatbot then opens a chat room between the event group members.

The template for our prototype was selected by conducting a storyboard head-to-head "design-off"

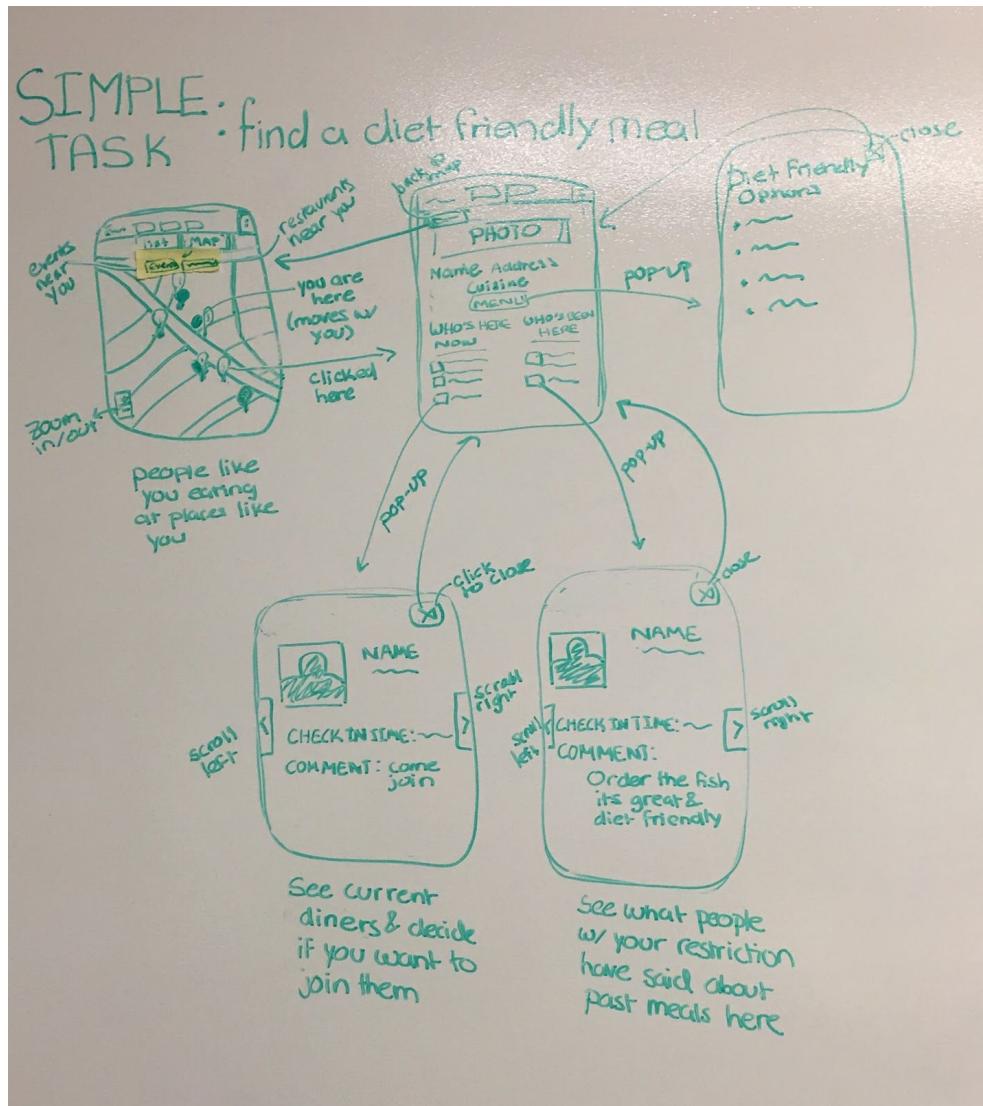
<u>Location Based Services</u>	<u>Chat Bot</u>
<u>Pros</u>	<u>Cons</u>
<ul style="list-style-type: none"> • proximity based recommendations • potential for sustained relationships • visually based & appealing • familiarity & comfort • different levels of commitment • appeals to wide audience • user feels in control & that they have choices 	<ul style="list-style-type: none"> • user has to search through content • have to be an ACTIVE planner • too many options? • depends on activity of other users • navigation based (lots of pages)
<u>Pros</u>	<u>Cons</u>
	<ul style="list-style-type: none"> - info specific to your needs - no thinking - feels personal - few features that can confuse the user - low commitment level
	<ul style="list-style-type: none"> - hard to build - not specific enough when asking for input - does not understand - little visual appeal - black box-y - not trusted by non-techies - not enough choice (user doesn't feel in control)

Ultimately, we chose the location based mobile interface (LBM) for several compelling reasons:

- 1) The ChatBot lacks a significant UI component which may detract from the aesthetics and user experience.
- 2) LBM provides more choices, thereby, giving our users more flexibility and a feeling of control
- 3) Developing users' trust is the key and the ChatBot, being a machine, may not engender sufficient or the same levels of trust that can be achieved through the interpersonal interactions supported by LBM.
- 4) LBM provides an opportunity for users to maintain relationships through the platform.

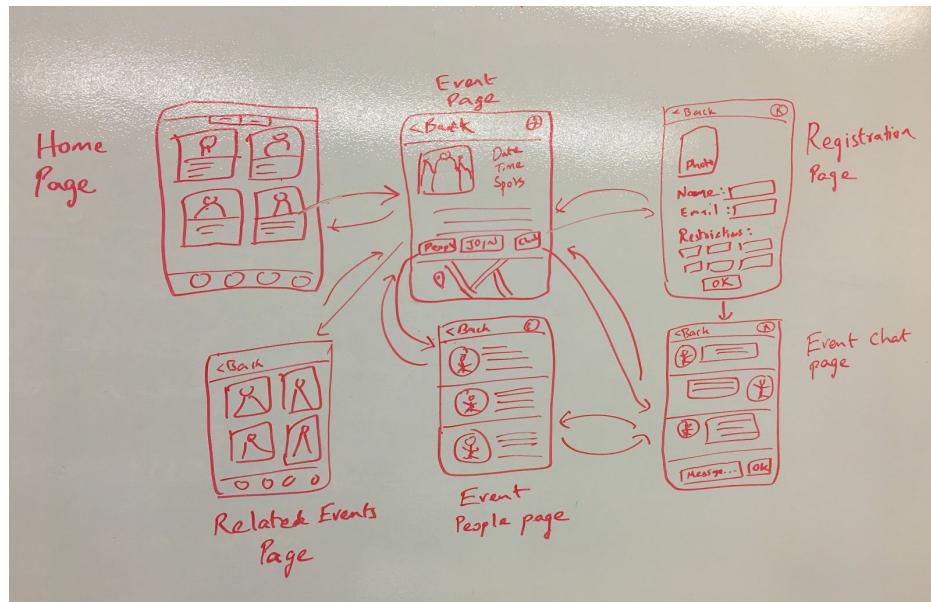
We then modeled three task flows of increasing complexity for the LBM::

1. Simple - find a geographically convenient and diet friendly meal



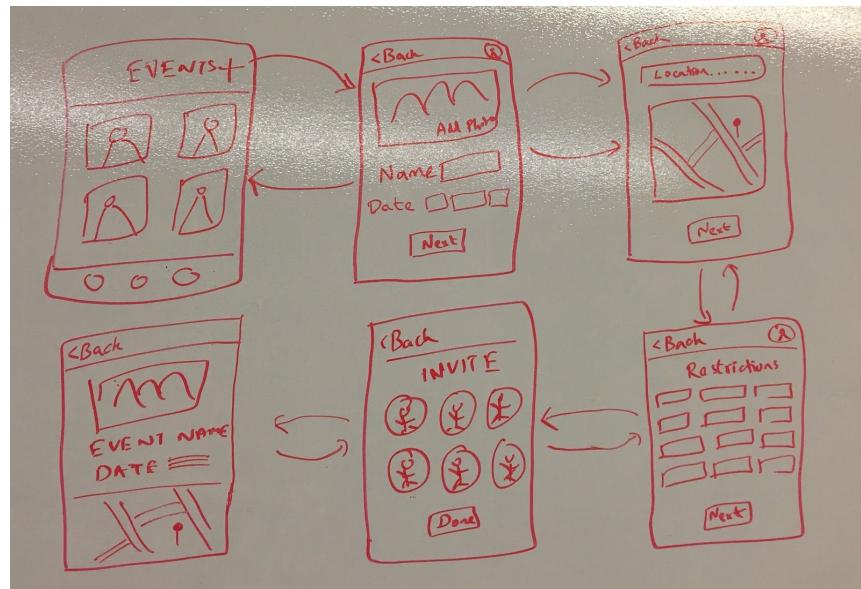
The user can use a map based interface to locate geographically proximate eateries. Clicking on a restaurant pin provides biographical details, including a link to diet friendly menu options. Users can also see which users are currently at the selected restaurant and a historical guest log with a review/comment forum.

2. Moderate - Share a meal with someone with your same dietary restriction(s).



The homepage of the app is a feed of upcoming events near you with a search bar across the top. Selecting an event provides event details, anticipated attendance, an event specific chat room, and a link to a related events page.

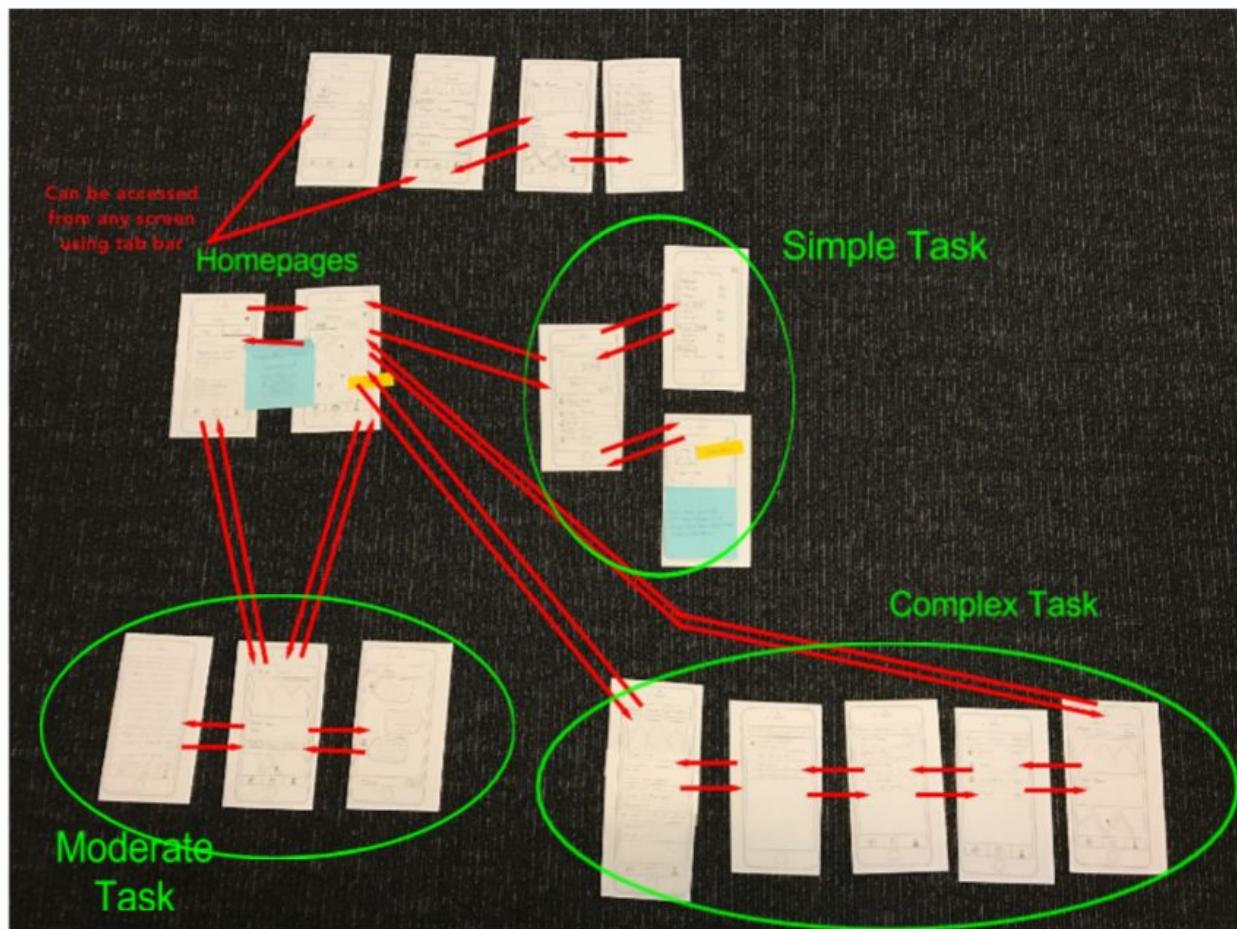
3. Complex - Host a food centered event for people with the same dietary restriction(s).



The user clicks the plus button to create an event and then follows a series of prompts to input event information and details.

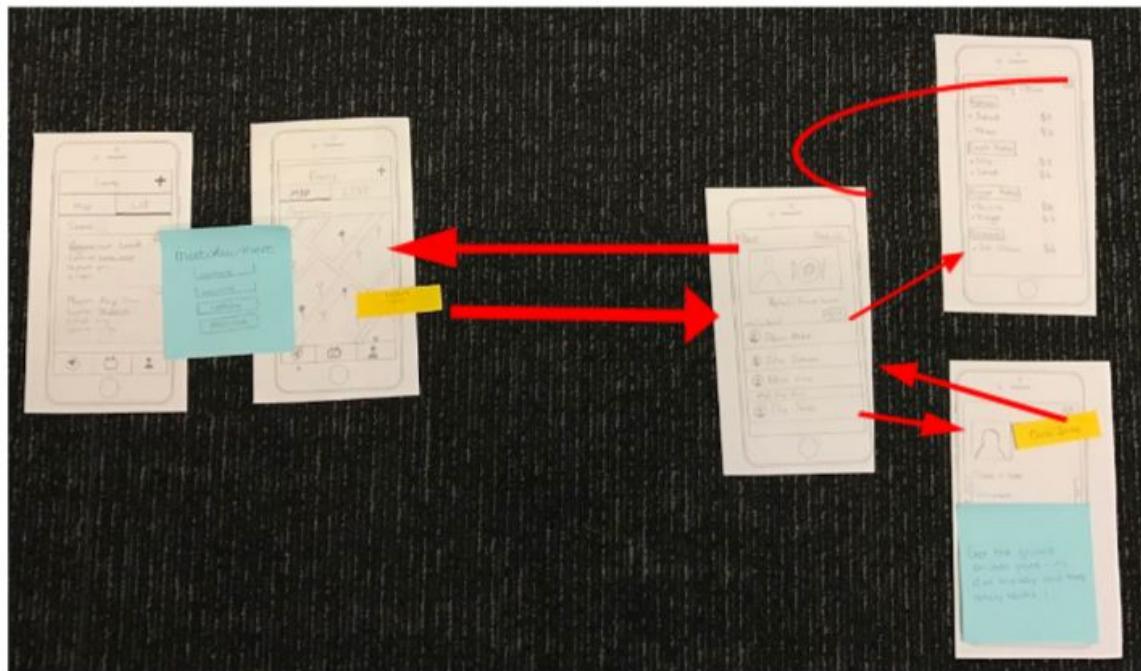
IV. PROTOTYPE³

Our prototype is composed of 17 mobile screens.

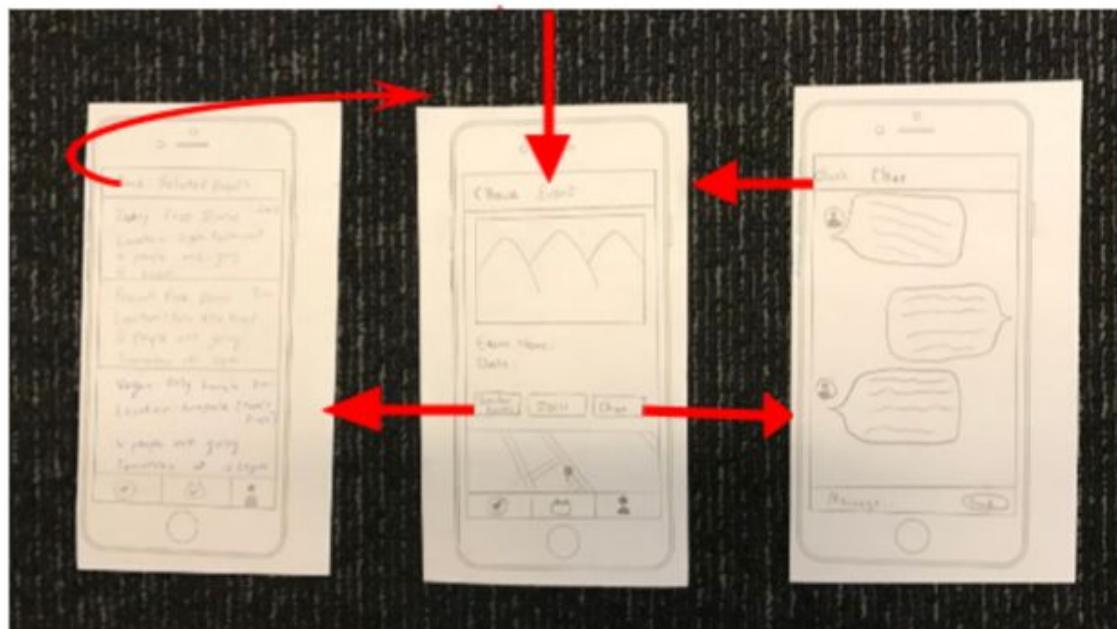


³ See Appendix For Larger/Clearer Photos

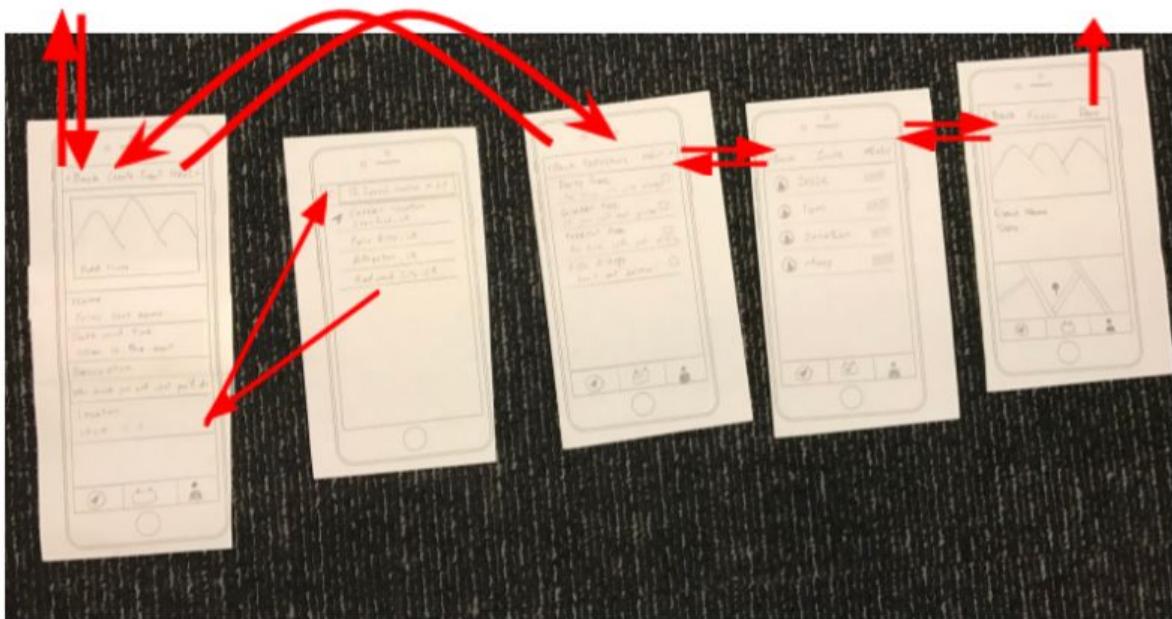
1) Simple Task



2) Moderate Task



3) Complex Task



V. METHODOLOGY

Participants:

Our product is designed for people with general dietary restrictions. However, our need-finding interviews revealed that our neediest population, and the people on whom we should focus our efforts, were people with severe food allergies and sensitivities.

We recruited test participants through three channels:

- 1) We contacted past interviewees and asked them to refer people they knew who fit our specific target population
- 2) We posted a solicitation on Nextdoor.com:

A screenshot of a Nextdoor post titled "Prototype testing" by Jesse Candido from Stanford University. The post was made 2 days ago and reads: "Hi there! We are master and advanced undergraduate Stanford students working with the computer science department on a project that aims to improve the lives of people with food allergies/dietary restrictions. We currently have a prototype of a product that we are looking to test with potential users and get feedback. We really want to get our product right, so we would really appreciate just 20 minutes of someone's time to run through the demo. If you can help, email me at jcandido@stanford.edu . Thank you!" Below the post, it says "Shared with Stanford University + 21 nearby neighborhoods in General". A "REPLY · 2" button is visible. Below the main post, a comment from Allen is shown: "Allen thanked you". Another user, [REDACTED] from Ventura, responded: "I have dairy and caffeine sensitivity. Could I help?". Jesse replied: "Thank". A third user, [REDACTED] from California ave Easy, responded: "Hi Jesse, I'd love to help! I'll email you". Jesse replied: "Thank".

- 3) We visited Safeway on a Monday morning and Whole Foods on a Tuesday evening. We approached shoppers and briefly introduced ourselves and purpose. We asked shoppers who self identified as having a food allergy if they would like to test our prototype. Shoppers who agreed were asked to meet us at a table where we had setup the prototype when they were done shopping.

We tested our prototype on 3 participants, all without compensation⁴.

Participant 1	Participant 2	Participant 3
		
Age: early-60s Restrictions: gluten, dairy Recruitment: Whole Foods cereal aisle Social Level: Low Tech Savviness: Low	Age: late-20s Restrictions: dairy, vegetarian Recruitment: Whole Foods hot food section Social Level: High Tech Savviness: High	Age: late-50s Restrictions: dairy, caffeine Recruitment: Nextdoor.com solicitation Social Level: Low Tech IQ: Med-Low

Environment:

Participants 1 and 2 tested our prototype at Whole Foods at 7:30pm and 8:45pm, respectively. The prototype was assembled on one half of a large table in the store-front dining area.

Participant 3 tested our prototype in Study Room 149 of Lathrop Tech Lounge on a Wednesday at 10am. We were the only people in the room.

⁴ See appendix for sample consent form signed by all participants

In both settings, the participants sat on the side of the table across from the prototype and our team member who played the computer.

Tasks:

We asked our participants to accomplish three tasks of increasing complexity:

- 1) Simple: locate a diet friendly restaurant near their current location
- 2) Moderate: find and join an event with a group of people who share their restrictions
- 3) Complex: create and plan their own event centered around your dietary restriction(s)

Procedure:

Three team members were present for each of the tests:

- 1) Lindsey: Script Writer/Facilitator (all tests)
- 2) Clay: Videographer/Note-Taker (tests 1&2), Computer (test 3)
- 3) Senthil: Computer (tests 1&2)
- 4) Jesse: Videographer/Note-Taker (test 3)

After quick introductions, the facilitator gave a brief overview of the test, what the participant should expect, and advice for how to interact with the prototype. The computer placed the home screen in front of the participant to begin the test. For each task, the facilitator explained the purpose of the relevant feature and asked the participant to complete the associated task.⁵ Our interaction with the participants was limited to hints when the participant exhibited excessive frustration. The test was followed by a short debriefing session.

Test Measures:

- 1) Interest - We gauged participants interest in the overall product and the individual features by their level of engagement before, during, and after each task/test.
- 2) Scope - We evaluated the over-featurization of our product by observing if, when, and how participants were distracted and/or struggled during a particular task by measuring time to task completion and apparent frustration levels.

⁵ See appendix for full test script

- 3) Chat - We measured the desirability of user-to-user communication in our product by observing how and with what frequency participants engaged with the limited chat functionality.
- 4) Usability - We tested our UI assumptions for the design of the interface by noting how often participants were unsure how to navigate the prototype.

VI. RESULTS⁶

Task 1:

Within the map view, no participant realized that the different colored pins represented different types of content (restaurants and events). When a participant selected an event-pin, she became confused and struggled to complete the task. Also, no participant enlisted the help of the search bar. Once on the restaurant page, the participants only visited the page listing diet friendly menu options and, they often became frustrated when they attempted to click on the non-clickable menu options. They also were keen on seeing what other users had said after clicking on the visible user profiles they attempted to find additional profiles to see their comments about the restaurant.

Task 2:

No participant attempted to use the search bar to locate an event. Participants 1 and 3 were also intimidated to join groups composed of strangers, whereas participant 2 was receptive to this interaction. Finally, each participant entered the chat room and Participant 3 misused this functionality to message her friends to join the event rather than communicate with event group members.

Task 3:

All participants struggled to locate the “Add Event” button on the homepage. They navigated to the profile and/or events tab from which they expected to be able to create events and had difficulty returning to the home screen. Participants 1 and 3 also looked for a function to exclude strangers from their events. That being said, each participant readily invited every one of their suggested “friends”. They also provided excessive details in the event description.

⁶ See Appendix for Test Notes

VII. DISCUSSION

Although, our participants completed all three tasks, we plan to dramatically revise our application given the shared difficulties they experienced.

Task 1 was not intuitive for our participants and their struggle to complete this task indicates it may not fit the product. Specifically, all participants got distracted during the task, and attempted to connect with users who had eaten at a given restaurant or perform in depth menu research. We believe this is caused by over-featurization. We were concerned going into testing that our prototype may be trying to accomplish too many tasks, and restaurant location was the least related of our three key features. That being said, we plan to revise the restaurant search related features. Part of this revision includes the placement of the map-view on a later screen and better support of menu search features.

Although our prototype supported minimal chat functionality, our participants, in their quest to communicate with others, pretended to enter a chat even in the absence of a chat button. Given this observation, we want to update our designs to better support functionalities for user communication especially in locations where our participants seemed to expect chatting to be an option.

In addition, the “Add Events” button and search bar need to be more prominent and intuitive. We speculate that the search bar was not used because it was not noticed. Interestingly, no participant commented on the lack of a search functionality but we believe their experience would have been enhanced had they discovered this feature. We will address this issue by better framing of the search functionality upon opening and while navigating in the app. Further, since all participants went to their profile or events page to create an event we need to incorporate the “Add Events” button on these pages.

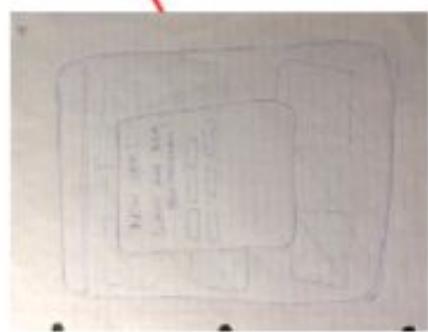
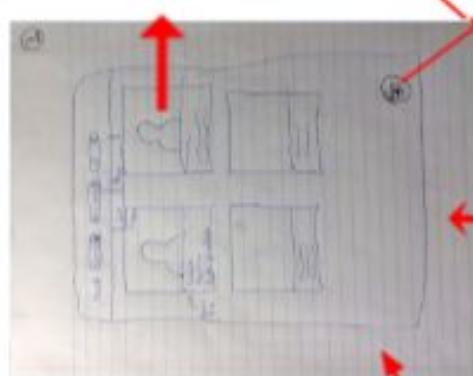
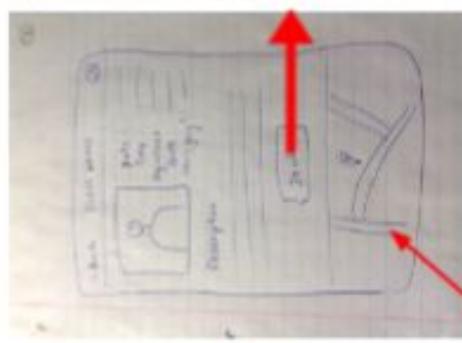
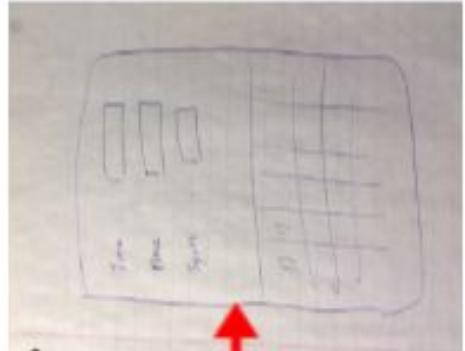
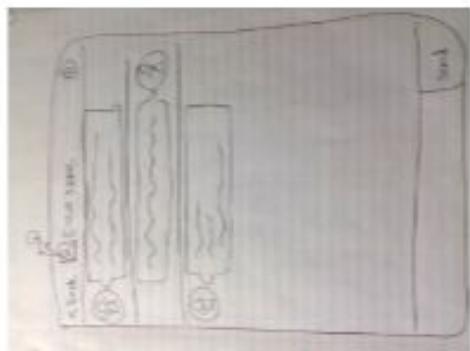
We also observed an unaccounted for desire to control the people with whom our participants would be interacting. Our participants wanted to know more about the people in a group/event they were joining as well as bring their own friends. Participants also wanted to control who attended their events. We plan to discuss designs to add public/private and attendance controls to events and groups.

Throughout the test, our participants never utilized the search bar and continued to be concerned that the events and restaurants they were viewing were not diet friendly. Their behavior indicates they did not fully understand the underlying design and

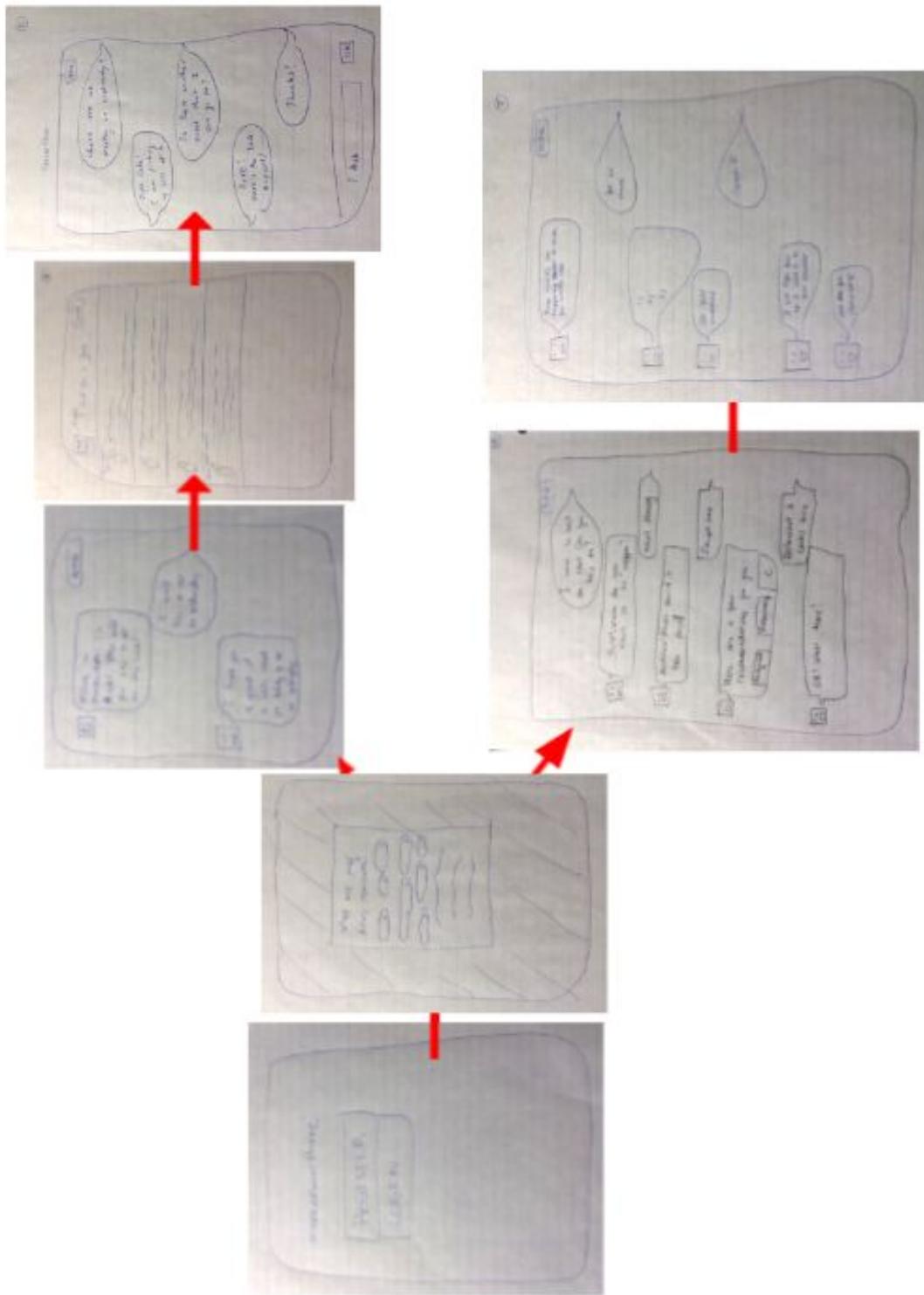
purpose of our product. We believe this was the result of a homepage that didn't present a traditional log-in/sign-up screen, or sufficiently frame the purpose of the product to create an intuitive experience and we plan to experiment with a more traditional opening for our product.

VIII. APPENDIX

LBM Larger View:



ChatBot Larger View:



Test Script

INTRODUCTION

Thank you for taking the time to demo our prototype. We are asking you to test a phone application called meetchewhere which aims to make social eating for people with food allergies possible and enjoyable. In this demo, we will ask you to perform a series of three tasks.

Is it alright with you if we take video recordings and photos of the testing process?

Do you have any last questions before we get started?

One last thing, please sign this consent form acknowledging that you have volunteered to participate in this test.

BACKGROUND INFORMATION

First we would like to gather a little information about you. What are your dietary restrictions/food allergies? How severe are they and how long have you had them? Do you own a mobile phone? How often do you use your phone and/or mobile apps? On a scale of low, medium, or high how social do you consider yourself?

DIRECTIONS

This paper prototype is a very early draft of our mobile application. Please interact with the prototype as if you were interacting with an actual application on your phone. One of us will be playing the role of the computer as you interact with the prototype. We will not be speaking during the test but all your actions are correct and helpful so please explore and play with the prototype just as you would any other application. Also, please think out loud as you are going through the demo – it is very helpful to us to know what you are thinking. One of our team members will demonstrate this for you now.

DEMO

Computer - take the paper screen that mimics the home screen page and place it on the table in front of the user

This is the home page. Hmum, it looks like a list of events. What if I click on map?

*Press the map view tab. Put map view screen on table.

Oh, now I see a map of the events. What happens if I click on one?

*clicks on dark colored pin. Put event sticky note on pin.

So this is one the events I saw on my list.

TASK #1

This application is centered around food that fits within your dietary restrictions. Please show us how you would find somewhere to eat near your current location that is also safe for your dietary restrictions.

TASK #2

Beyond finding a safe and convenient place to eat, our application allows you to find and join groups and events so that you can enjoy good safe food with people who have the same restrictions as you. Please show us how you would find and rsvp to an event of your choosing.

TASK #3

Finally, we hope you have enjoyed your meetups so far and they have inspired you to want to host your own gathering. For this purpose, our application allows you to be the organizer of an event. Please show us how you would use this feature to plan and host an event.

Consent Form

The *meetchewthere* application is being produced as part of the coursework for Computer Science course CS 147 at Stanford University. Participants in experimental evaluation of the application provide data that is used to evaluate and modify the interface of the *meetchewthere* application. Data will be collected by interview, observation and questionnaire. Participation in this experiment is voluntary. Participants may withdraw themselves and their data at any time without fear of consequences. Concerns about the experiment may be discussed with the researchers Lindsey Kostas, Senthil V, Clay Jones, or Jesse Candido, or with Professor James Landay, the instructor of CS 147:

James A. Landay
CS Department
Stanford University
650-498-8215
landay@cs.stanford.edu

Participant anonymity will be provided by the separate storage of names from data. Data will only be identified by participant number. No identifying information about the participants will be available to anyone except the student researchers and their supervisors/teaching staff.

I hereby acknowledge that I have been given an opportunity to ask questions about the nature of the experiment and my participation in it. I give my consent to have data collected on my behavior and opinions in relation to the *meetchewthere* experiment. I also give permission for images/video of me using the application to be used in presentations or publications as long as I am not personally identifiable in the images/video. I understand I may withdraw my permission at any time.

Name _____

Participant Number _____

Date _____

Signature _____

Witness name _____

Witness signature _____

Test Notes

PARTICIPANT 1

Location: Whole Foods – we found her in the cereal aisle looking very contemplative; she was doing the grocery shopping for her family by herself

Date/Time: Tuesday at 7:30 pm

Personal Info:

- Age: mid-60s
- Dietary Restrictions: Gluten intolerance and dairy allergy are the 2 main restriction, but she has others
- Not tech-savvy – doesn't have a smart phone
- Made explicit mention that she doesn't use any type of social media
- Did not describe herself as a social person

Test Notes:

- Was more excited to test the prototype when she thought it was about making grocery shopping easier than when she found out the true purpose of the app
- Struggled overall navigating through the app – didn't understand in the beginning that she could press on the paper screen and things would happen
- Really struggled to find the create an event button
- She needed a more instructive interface with obvious labels to help her know where to click
- Got very confused by the map view – wasn't sure what is was or how to interact with it
- Privacy was a concern for her – she wanted to be able to limit her events to just people she knew and if not that at least be able to kick people out of her events if they joined and then she decided she didn't like them
- Got caught up in the static content of the paper screens and struggled when the options didn't exactly match her special scenarios
- Tried to click on the restaurant menu options to see more info

Test Notes

PARTICIPANT 2

Location: Whole Foods – we found her in the hot food section and approached her in the vitamin/skin care aisle; she was with her boyfriend and they were picking up dinner which they planned to eat at the in-store dining area

Date/Time: Tuesday at 8:45pm

Personal Info:

- Age: late-20s
- Dietary Restrictions: Vegetarian but eats fish and eggs, allergic to milk
- Tech savvy – owns a smart phone and is an active mobile app user
- Described herself as social

Test Notes:

- Overall navigated through prototype with relative ease, although she did struggle finding the add events button (tried to find on profile and events page)
- Was especially excited about inviting her friends to her event
- Tried to click on the menu options to order that item – didn't understand that the menu just gave a list of diet friendly options at that location
- Asked if the product was like a tinder but for food

Test Notes

PARTICIPANT 3

Location: recruited from Nextdoor.com, test performed in Lathrop Tech Lounge study room 149
Date/Time: Wednesday 10am

Personal Info:

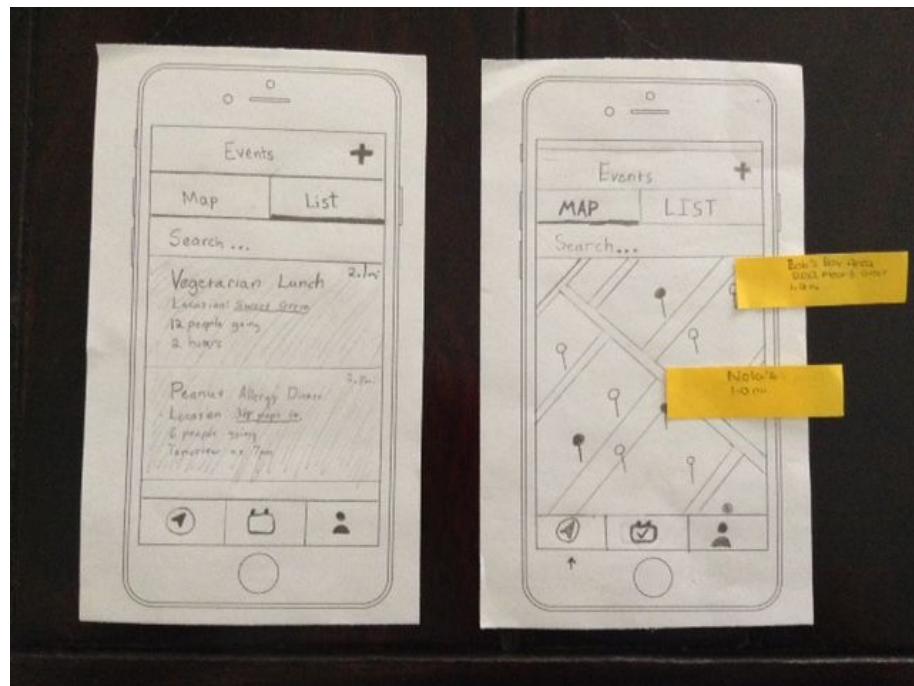
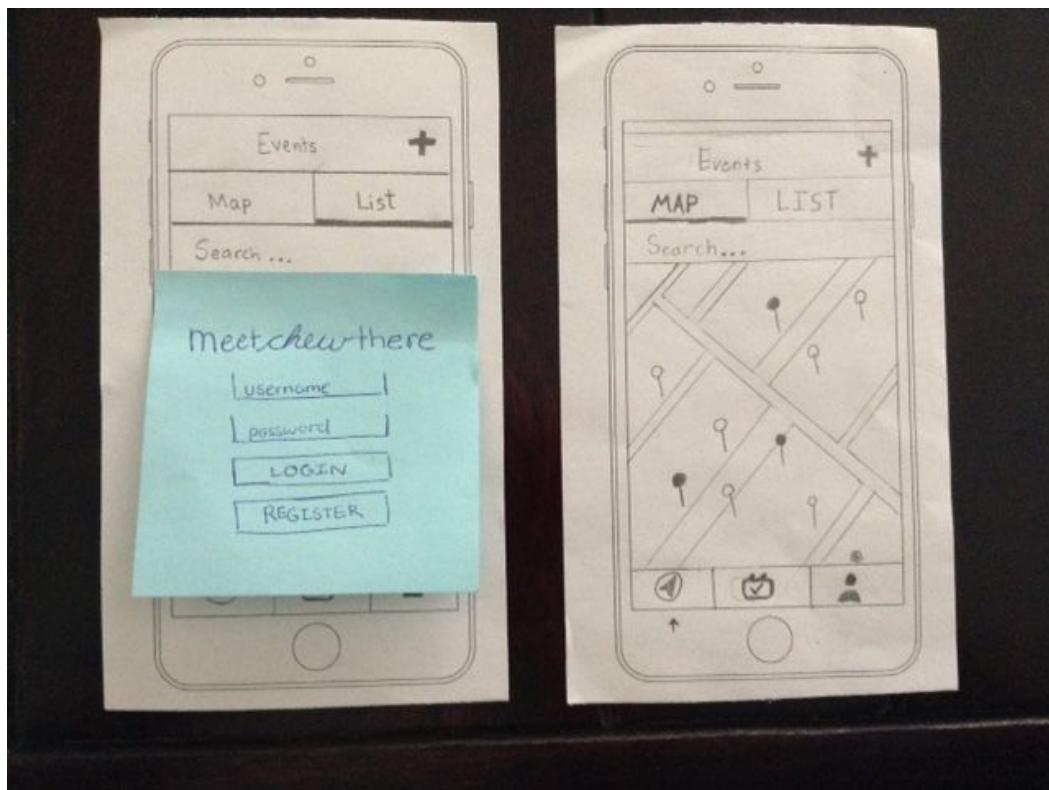
- Age: late-50s
- Dietary Restrictions: allergic to dairy and caffeine, also constantly brought up her Vegan daughter and her sister who has more food allergies than herself
- Not tech savvy – owns a smart phone but described herself as not being very good at navigating through screens
- Described herself as social but not really looking to meet new people – she is content with her daughter, sister, and small group of friends

Test Info:

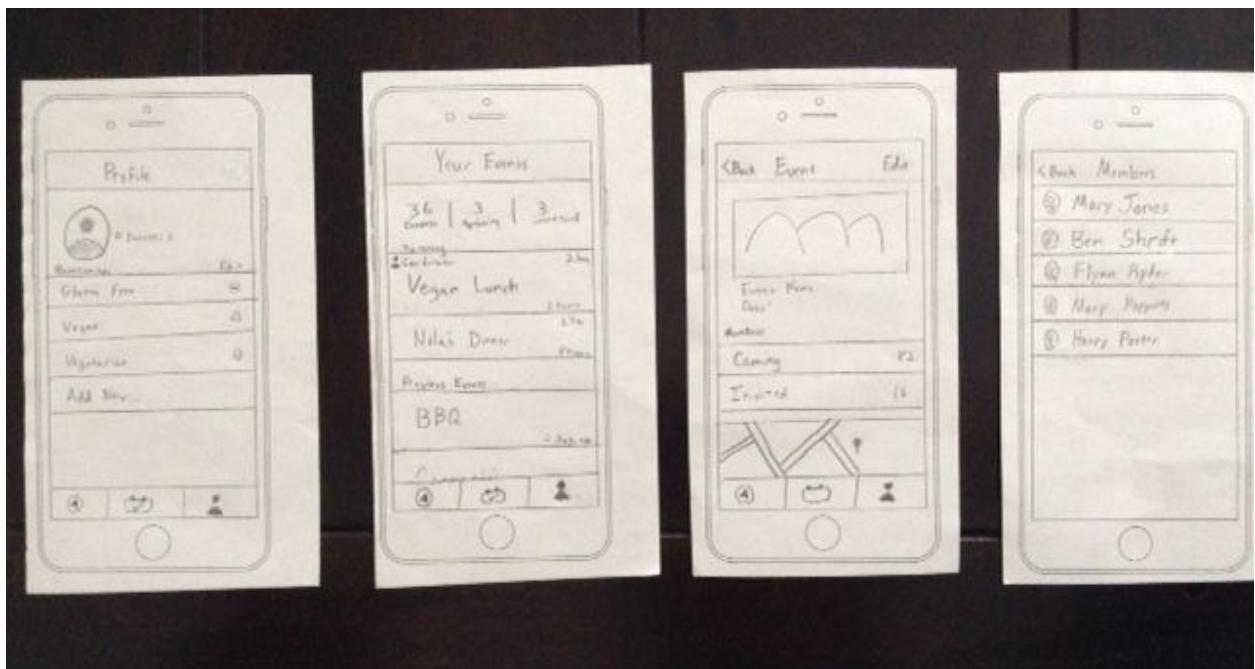
- Consistently mentioned how she would do each task with her daughter
- Struggled to find the add events button – wanted to do it from her profile or the events page
- Very much wanted to read all the comments people had about a given restaurant before deciding
- Enjoyed the idea of attending a cooking class/group cooking type event
- Did not like the idea of hosting an event in her home that would be open to strangers to come but would do it for her friends
- Consistently enhanced the chat functionality even when it didn't exist – for every task she pretended to type a message to her daughter to invite her to join even when no chat or keyboard option was available

Prototype Photos

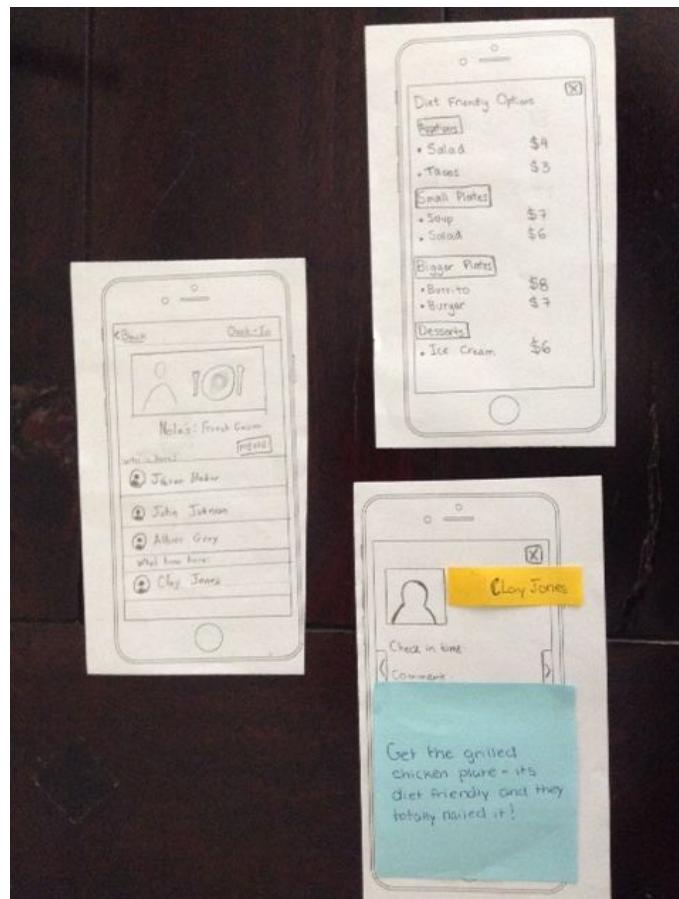
Homepages



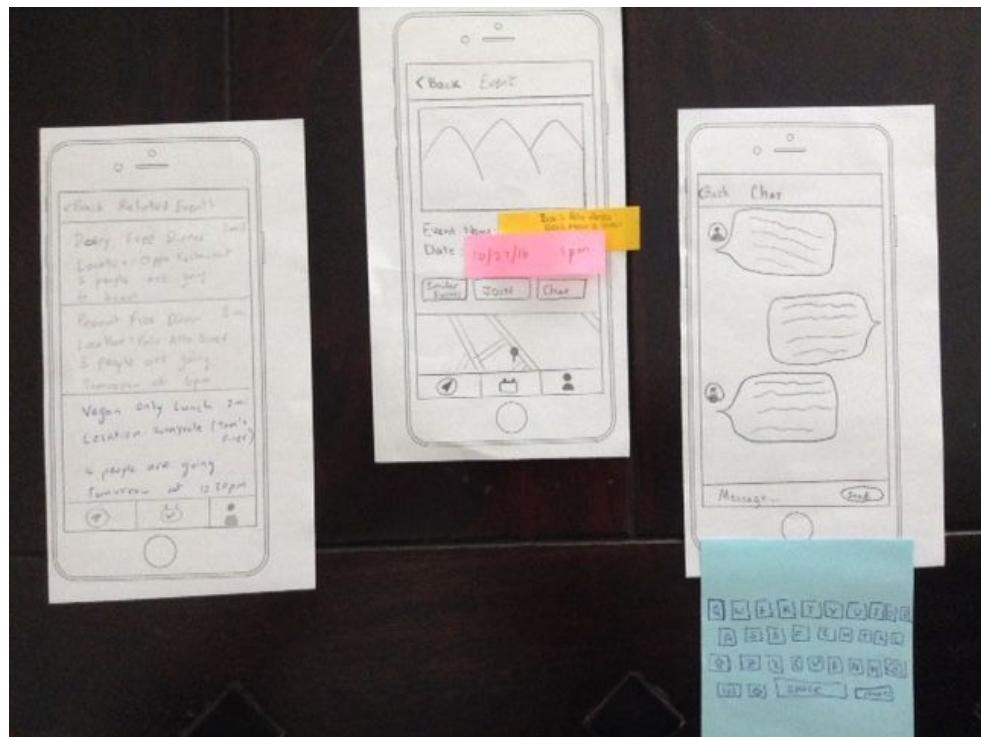
User Profile Pages



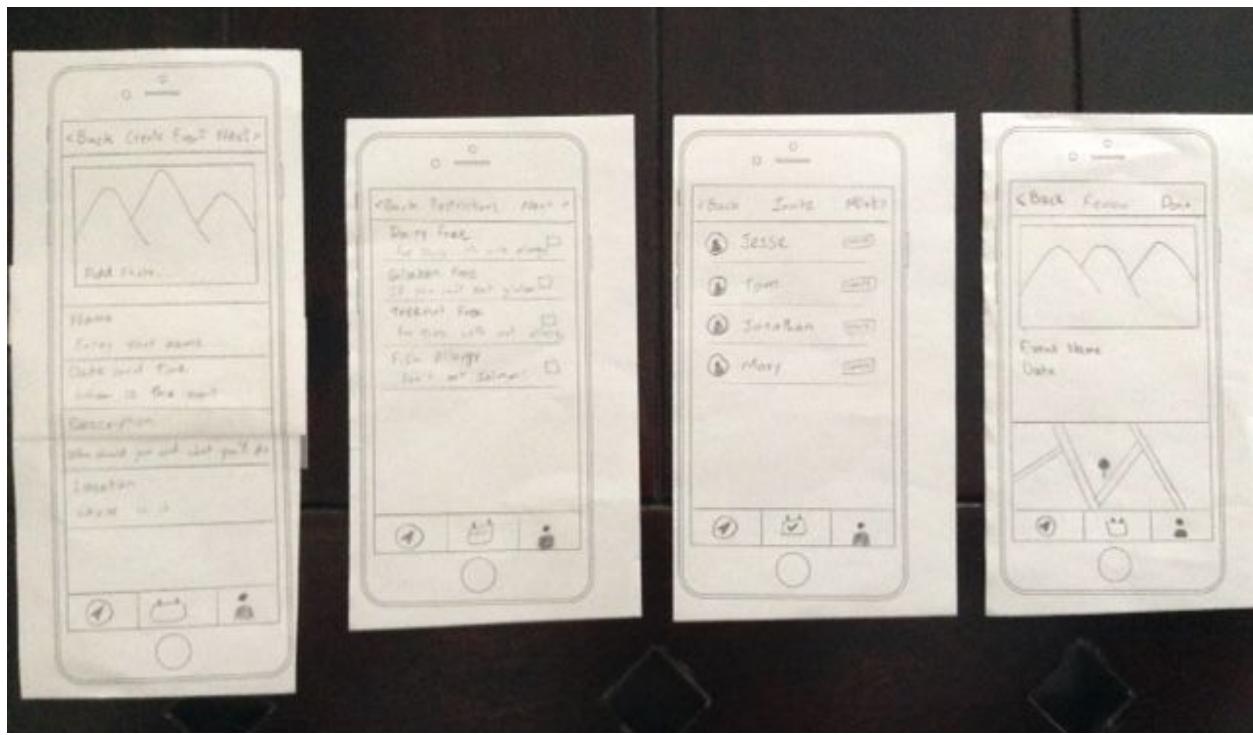
Task 1 - Find A Diet Friendly Meal



Task 2 - Join an Event/Group



Task 3 - Create an Event



Google Drive Original Files

https://drive.google.com/drive/folders/0BxJlDOj_jG-WM2t6bGR3YW5NcnM?usp=sharing