Deal Finder Deluxe

Cohesive Unit Unincorporated

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Table of Contents

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Team Roles - The specific objectives each team member had to accomplish.

Kevin Harrison
Multimedia Specialist, Editor

Tensei Nguyen
UI Designer, Prototype Developer, Editor

Charles Dodge
Project Manager, Technical Writer, Data Analyst, Editor

Jason Bensel
UI Designer, Prototype Developer, Technical Writer, Editor

Product Description - One sentence that describes what the product does, where to use is, and who it is for.

The Deal finder deluxe 9000 is a mobile web application designed for budget-conscious individuals or out-of-towners to easily locate drink and/or food specials nearby.

Concept Statement - Concise descriptive summary of the envisioned system or product stating an initial system vision or mandate; in short, it is a mission statement for the project.

The ***Deal Finder Deluxe 9000 (DFD 9000)*** web application provides an easy to use, collaborative list of restaurant discounts and events relative to the location of the budget-conscious, deal seeking patron; or those who may be unfamiliar with what the local area has to offer. It also provides an avenue for local business owners to update current food and beverage specials giving these businesses a quick and hassle free avenue for promoting their restaurant.

DFD 9000 focuses on a simple innovative design geared toward ease of use for the hungry restaurant seeking user, while promoting investment in local business which may have been overlooked otherwise. As it grows it will provide an abundance of patron reviews creating visibility and ratings for numerous restaurants all in one location.

Technical Summary - A more detailed description of what the envisioned product or system will do including information about how it will accomplish this.

The DFD 9000 will be a web application implemented with a JavaScript frontend, and a PHP-based backend relying on a relational database for persistent storage, and a in-memory data store to accelerate access to data. JSON will be utilized for communication between the frontend and backend.

When the user opens the application their location will be automatically detected using HTML5 geolocation API, or they will be able to enter their current location. If the user selects automatic detection the application will use a well known and trusted Google API which allows the web application to pinpoint the precise location of the user. Once a location is determined a map will populate a series of locations that currently have food or drink specials using json to retrieve the information from the database. There will be a login screen for super users that allows new locations and specials to existing locations to be added to the database. Users will be able to vote on deals, deals with more votes in less time will be marked as a “Hot” deal to let users know which deals are popular with others in the specified location. The web application regularly queries common locations and scrub websites for valid discount information. There will also be an option to use a scraper to pull any valid information from any available online content.

Contextual Inquiry - The process of collecting quantitative and qualitative data from outside sources to help form the design of a product.

To collect contextual inquiry data, we chose to perform a survey using a sample of convenience comprised mainly of GVSU students, family members, and friends. As a standard user, we found that other students, family, and friends would be a sufficient representation of the standard user. We observed the typical user’s actions to research a restaurant special, which frequently lead to a google or facebook search of the restaurant. This gave us insight into the normal routine of a user when deciding to find a location to dine or drink, which also provided us useful feedback in where these methods lack convenience for the user, where it could be improved, and how we should implement these improvements into our application.

Surveymonkey: 10 - question survey

SURVEY: https://www.surveymonkey.com/r/BZKN2S3
RESULTS: https://www.surveymonkey.com/results/SM-WZLVQWTX/

Baseline interview/survey questions(Understand the existing problem space)

- How do you usually find out information about restaurant deals?(maybe open ended question?)
    1. Word of mouth
    2. Google search
    3. Radio
    4. Television
- What is the biggest factor when deciding on which restaurant to choose?
- What would make it better? (in reference to previous)

- Are you interested in finding food/beverage specials? (if yes ask next)
- How often are you looking for food/beverage specials?
- How far are you willing to commute to dine/drink?
    1. Not at all.
    2. Minor walk
    3. Short drive
    4. Don't care, I'm just hungry and want some beer
- When are you typically scouting for a place to eat/drink?
- Do you use any current tools?

  (If No)
    1. If you had a mobile application that provides food and drink specials relative to your location, would you use it?

  (If yes)
    2. What do you like about it?
    3. What do you dislike about it?

Work Activity Notes- Notes derived from data collected during contextual inquiry.

The following patterns showed up as reasons and thoughts that individuals had when making considerations of how to locate and select venues for dining.

1. I don't want to travel far for food preferably anywhere within biking distance.
2. It's important that I see user reviews of the restaurant, it's a big factor when making my decision on where to eat.
3. I typically use google to find a decent place to eat, problem is, I usually spend more time than I would like looking for restaurants in the local area.
4. I'm tired of looking at each restaurant's individual website to find their menu/specials for the evening.
5. I would be more interested in searching for restaurant specials if it wasn't such a chore.
6. I'm willing to drive a short distance if the special is right.
7. I typically don't even bother looking for restaurant specials, it's too much hassle.
8. Don't really care where I eat as long as I can get a good deal.
9. The food I want
10. How good the food tastes
11. Cheap and low in quality.
12. Can I get there on my bike
13. Price
14. Drink Choices
15. Good food at a low cost
16. Vegetarian options
17. Depends on the scenario but generally prove to quality ratio.

18. Quality of food
19. Location
20. Good reviews
21. Location
22. The quality of the ingredients being cooked with
23. New Place
24. Good food

Work Roles- General types of people who will use of the application.

1. Users looking for deals
2. Business owners updating information
3. Administrator managing business accounts

User Classes - Description of the various groups of users who will be using the application.

1. Frequent Local user - generally a student between the ages of 16-33, knows the area, uses application all the time.
2. New Local user - Has heard about the app from a frequent local user and want to try it out. Between the ages of 35-65 and knows the area pretty well.
3. Traveling user - unfamiliar with the area, price may not be as important as the quality of food/establishment experience, needs to work in multiple locations.
4. Administrator - Knows the application inside and out, updates info for businesses, adds new businesses, maintains the application.
5. Business User - Business users are associated with restaurants, are able to provide and update information relevant to their business within the app, including promotions and discounts to users.

Personas - Fictional characters created to represent the different user types.

Tyler Durdentures

Local User

Aspiring anarchist leader

Figure 1. Tyler Durdentures

Tyler lives in the slums of the city and doesn't mind throwing down if the event ever arises. Any chance he can get to take money away from large corporations is a good day to him. He likes to start clubs in the city and is a real big picture kind of guy. Anarchists tend to not have a large income base, so Tyler just found out about Deal Finder Deluxe 9000 and is very interested because he has a lot of mouths to feed as he usually rolls with a large crew. Even though his intention is mass disorder and chaos, when it comes to food, he enjoys a nice, cheap, quiet, and orderly meal surrounded by all of his fellow anarchist followers.

John Linen

Traveling User

Frequent laundromat user

Figure 2. John Linen

John likes to make music and enjoys world travel. He's often in different cities for very short periods of time. While traveling John loves to eat local cuisine, but often finds it hard to choose which places to try, and is often short in local currency. John originally hails from Stratford-upon-Avon, in England, and attended the Oxford Brookes University in Oxford. He has travelled to India, Pakistan, Canada, and this is his first time in the United States, having flown into Gerald R. Ford International Airport from his previous adventures in London, Ontario. His favorite food is Hamburger, the real kind, not the American kind, which Linen refers to as a "Hamburger Sandwich". Even though Linen considers himself quite tech savvy, having owned two smartphones in the past, along with a computer, he praises applications that cater to ease of use.

Figure 3. Anne Frankfurter

Anne Frankfurter

Local User

Hot dog aficionado

Anne had a hard upbringing and due to this fact is always trying to find the best deals around. A frequent local user Anne has the application bookmarked on her phone for easy access. She knows all the best deals around when she sees them, and votes them up to help other users see them as well. Anne is particularly fond of the German born sausage the hot dog, especially when served in the American form of a chili dog. They can be hard to come by in her area, where more traditional sausage dishes rule the menu. Anne tracks every hot dog joint in her area, always on the lookout for a great hot dog deal, especially a hot chili dog deal. Anne is very vocal in her opinion and shares them whenever she feels the need to commend the restaurant when the Hot dogs are superb, or criticize when the Hot dogs fall short of expectations.

Figure 4. Leia Organic

Leia Organic

Business user

Aspiring politician

Leia was born into a rich family and has always had a clairvoyant intuition about her. She is the proud owner of The Millennium Falafel, her brother is the head chef of the family business and has an almost magical ability when it comes to cooking. Leia inherited the local business from her father, who was overcome with terrible breathing problem which lead him to pursue a life of politics. She is currently fighting a lawsuit to prevent the restaurant from being overtaken by a large chain restaurant, Empire's Burgers. Empire's Burgers currently has 10 restaurants

located all over town. To prevent the overtaking of this large chain, she is planning to pursue a life of politics, like her father. Unfortunately her views oppose that of her father's so she does not have his support. Throughout his political life he began to succumb to the Dark party who now has the support of Empire's Burgers. Leia needs a larger income to begin a campaign running on a Light party ticket. She is adamant about shopping local, so she will do anything she can to increase business and promote her views. To compete with this chain she utilizes the application because it provides an easy to use user interface that allows her to quickly provide new and exciting deals to drive revenue and increase the rapport with the local community.

Albus Dumbledear

Administrator

Computer wizard

Figure 5. Albus Dumbledear

Albus is a help desk extraordinaire. He has over 75 years of IT experience. He attained a degree from the University of Harvardwartz. After years of work in the field he returned to Harvardwartz as Dean. After finishing his tenure he decided to return to the IT field where he eventually landed the very prestigious job as *Head of Help Deskery* with Cohesive Unit Unincorporated. His passion and experience with the Help Desk makes him an invaluable asset to the company. He has a magical ability to help users with a wide variety of technical issues. His unparalleled communication skills, for when technical issues with users arise, make the entire interaction with the client a pure delight. Albus's uncanny ability to help users with registration, login, and technical issues is one of the main reasons for Deal Finder Deluxe 9000's success.

Scenarios - Sample situations personas could be in.

1. John Linen is in town for the weekend and wants to get a bite to eat before heading to his next destination. He forgot to exchange all his Old World bills for United Statesian dollars. All he has on him is the money he earned playing on the streets of downtown, and he would like to purchase some food items to fill his stomach. Linen decides to use DFD9000 to see what he can afford after some deals. Linen refuses to pay full price for those "Burger Sandwiches" the bloody Americans enjoy.

2. Tyler is out for the night with his crew and all of the sudden, they all get the hunger. There's only one problem. Collectively they only have enough money to feed 8 of the 10 people in their gang. Never leaving anyone behind, Tyler brings up the DFD9000 and finds a food location near them that currently has 50% off all pizzas. Since Tyler uses the app frequently, he only needed to open the app and click "Find me some deals!". From his initial use, Tyler had his location settings set to "Use my current location", and because of this, he doesn't need to really do any other work than remembering to open the app.

3. Leia just found out about a yearly weekend promotion from the large chain Empire's Burgers, "The Sith Special - Buy one get one burger free!" Luckily for her The Millennium Falafel is also a cantina, she needs to update her restaurant's specials to outmatch Empire's Burgers. She decides to go for a 2 for 1 Falafel special with a free Wookie-wango with every purchase (21 - years and older).

4. Anne wants to know if her favorite deal is available over at the quiet house, a small late nite diner that serves American food. She loves a good chili dog, but prices at foreign food places can get expensive. She keeps the chili dog deal saved in her favorite deals on her DFD9000 account so she can quickly check if the deal is active without searching the area for deals.

5. Albus needs to assist one of the business customers with updating her restaurant's information. Leia is attempting to distance herself and the reputation of her restaurant from her father's corrupt political acts. She calls the help desk where she speaks to Albus, he is then able to replace her father's name under the owner contact information with hers.

Task Analysis - Observing users to understand how they perform their tasks and achieve their intended goals.

Task 1: Search for Food Deal in Vicinity
Goal: Find cheap food
Trigger: Hunger and financial responsibility

User Intention	**System Responsibility**
Express intention to use app	Prompt user for login/register
Select login	Prompt user for desired location (with optional radius)
Select current location	Prompt user to choose Food or Drink
Requests Food	Searches area for food deals

	Display list to user
Select Deal	Display restaurant deal in detail
	Display deal redemption code or barcode
	Display map route from current destination to restaurant

Task 2: Search for Drink Deal in Vicinity
Goal: Find cheap drinks
Trigger: Thirst for adult beverages

User Intention	**System Responsibility**
Express intention to use app	Prompt user for login/register
Select login	Prompt user for desired location (with optional radius)
Select current location	Prompt user to choose Food or Drink
Request Drink	Searches area for drink deals
	Display list to user
Select Deal	Display restaurant deal in detail
	Display deal redemption code or barcode
	Display map route from current destination to restaurant

Task 3: Search for Food/Drink in Vicinity
Goal: Satisfy Food Item Craving Immediately Following Paycheck Redemption
Trigger: Food Item Craving Immediately Following Paycheck Redemption

User Intention	**System Responsibility**
Express intention to use app	Prompt user for login/register
Skip login	Prompt user for desired location(with optional radius)
Select current location	Prompt user for food or drink (or both)
Request Food and Drink	Search area for food and drink deals
	Display list to user

Select deal	Display restaurant deal in detail
Close selected deal	Display list to user
Select deal	Display restaurant deal in detail
	Display deal redemption code
	Display map route from current location to destination

Task 4: Search for Food/Drink Deal in Specified Location
Goal: Purchase Food Items with Distant Cohorts on Trip
Trigger: Pre-planning trip meals in detail

User Intention	**System Responsibility**
Express intention to use app	Prompt user for login/register
Select login	Prompt user for desired location (with optional radius)
Select desired location	Prompt user for food or drink (or both)
Request Food and Drink	Search area for food and drink deals
	Display list to user
Select deal	Display restaurant deal in detail
Select save	Saves restaurant deal/location/info
	Display list to user
Select deal	Display restaurant deal in detail
Select save	Saves restaurant deal/location/info
	Display list to user

Task 5: User Registration
Goal: User successfully registers to use application
Trigger: User tired of spending too much when going out to eat

User Intention	**System Responsibility**
Express intention to use app	Prompt user for login/register
Select register	Prompt user for new account credentials

	Create account
	Prompt user to look for deals

Task 6: Business User Registration
Goal: Create new business account
Trigger: User selects business login/registration

User Intention	**System Responsibility**
Express intent to use app	Prompt for business login/registration
Select register	Display registration form
Fill out registration form	Prompt to confirm details
Confirm details	Display confirmation message with details about business owner verification
Wait for verification	Send business details to system admin for verification

Task 7: Issue New Deal
Goal: Add deal for restaurant
Trigger: Business account user selects add deal

User Intention	**System Responsibility**
Business user expresses intent to use app	Prompt business user for login/register
Select login	Prompt for business account credentials
Enter credentials	Confirm credentials
	Display business account
Select manage deals	Display current deals
Select issue new deal	
Enter deal information	
Select save deal	Prompt for confirmation
Select confirm	Save new deal

Task 8: Revoke or Cancel Deal
Goal: Remove existing deal for business

Trigger: Business user selects delete deal

User Intention	**System Responsibility**
Business user expresses intent to use app	Prompt business user for login/register
Select login	Prompt for business account credentials
Enter credentials	Confirm credentials
	Display business account
Select manage deals	Display current deals
Select existing deal	Display deal details
Select delete	Prompt for confirmation
Select confirm	Delete deal

Task 9: Promote Deal
Goal: Get better deal visibility
Trigger: Business user selects promot deal

User Intention	**System Responsibility**
Business user expresses intent to use app	Prompt business user for login/register
Select login	Prompt for business account credentials
Enter credentials	Confirm credentials
	Display business account
Select manage deals	Display current deals
Select existing deal	Display deal details
Select promote deal	Prompt for payment
Enter payment information	
Select promote deal	Take payment
	Add deal promotion to promotion list

Task 10: Report Expired or False Deal
Goal: Have expired or false deal removed
Trigger: Find deal that is no longer valid or is falsely advertised

User Intention	System Responsibility
Express intent to report deal	Prompt for deal information
Enter deal information	Prompt for confirmation
Select confirm	Add deal to reported deals list

Task 11: Prune Reported Deals
Goal: Check and remove reported deals
Trigger: Select edit reported deals

User Intention	System Responsibility
Admin express intent to login	Prompt for admin credentials
Enter credentials	Verify credentials
	Display admin page
Select edit reported deals	Display reported deals list
Select deal to examine	Display report(s) and deal details
Select delete deal	Prompt for confirmation
Select confirm	Remove deal
	Send deal removal notice to business admin

Task 12: Save Deal for Later to User Profile
Goal: Saves restaurant information to user's account for later visibility
Trigger: User is planning a budgeted trip ahead of time

User Intention	System Responsibility
Express intention to use app	Prompt user for login/register
Select login	Prompt user for desired location (with optional radius)
Select current location	Prompt for food or drink
Request food and drink	Search area for food and drink deals
	Display list to user
Select deal	Display restaurant deal in detail

Select save deal	Prompt for deal save confirmation
Select confirm save deal	Save deal to users saved deals

Task 13: Update contact information
Goal: Update and remove old contact information
Trigger: Business owner has incorrect information listed when restaurant is populated

User Intention	**System Responsibility**
Express intention to use app	Prompt user for login/register
Enters administrators account	Direct user to admin UI
Enters account name of assistee	Display restaurant info in detail(with editable text fields)
Edits text field for contact info	
Select save	Save updated information
Select display as user	Display restaurant in user mode

Work Environments - Places the application would be used.

- On the bus
- On a plane
- In the streets
- In an office
- In the passenger seat of a car
- In a restaurant dining area

Typically a person would use the app anywhere there is an internet connection. As an application on a phone, the only limiting factor for a user to use it is internet access.

Ideation - Creative process of generating, developing, and communicating new ideas.

Studio Friday helped us produce a variety of logo's that provided us with a design direction and bank of possible alternatives. The in-class exercise lasted approximately thirty minutes. Our

group typically favors sarcasm, so it usually ends up being low stress environment that becomes very valuable and produces a high volume of creative ideas.

During our Conceptual design period, which lasted approximately an hour in a meeting room on the second floor of Mackinac, we drew a series of rapid white-board mock-ups that provided us with a visual representation of each screen, this encouraged more in depth discussions that contributed and essentially generated the overall flow of the application. This also provided us a common mental model for each member. This was a pivotal point in the design process for the group because it allowed each member to focus on refinement and minute details. This was a high energy, rapid process and was an extremely valuable step in the project's development.

The initial screen design process was meshed with the creation of the low fidelity prototypes. This process lasted approximately 2 - 3 hours and was significantly more structured than the previous design processes. The energy level was lower as each team member consulted with the team during the creation of every new screen design.

Logo / Icon - Image users will easily recognize.

Figure 6. Logo Design #1

Figure 7. Logo Design #2

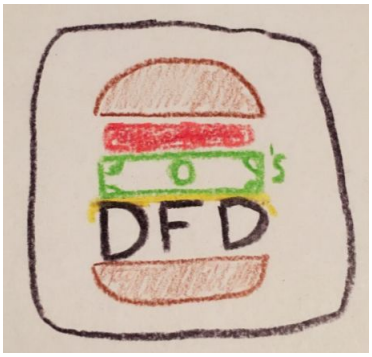


Figure 8. Logo Design #3

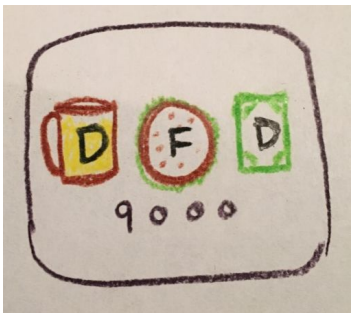


Figure 9. Logo Design #4

Figure 10. Logo Design #5

Figure 11. Logo Design #6

Figure 12. Logo Design #7

Figure 13. Logo Design #8

We decided to scrap our "final" cheeseburger design to incorporate and provide a more professional version. We believe this still allows our application to stand out and make it easy for people to locate the application on their device.

Conceptual Design

"Deal Finder Deluxe 9000 is like a personal assistant that gives you up-to-date information on food and drink specials at places you are going to be."

Low Fidelity Prototypes - Simple mockup for initial user testing.

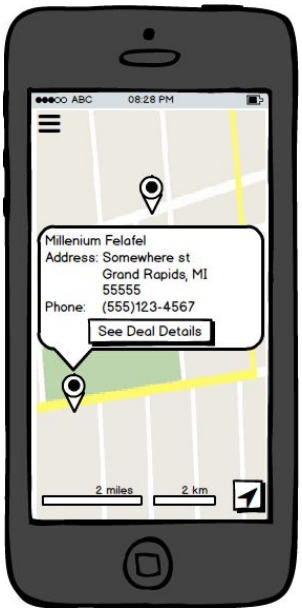


Figure 14. Map Detail

Strength: Provides restaurant information up front, including Name, Address, and Contact information

Weakness: Users typically don't want to see this information first. Forces users to another screen if they want to see the deals.

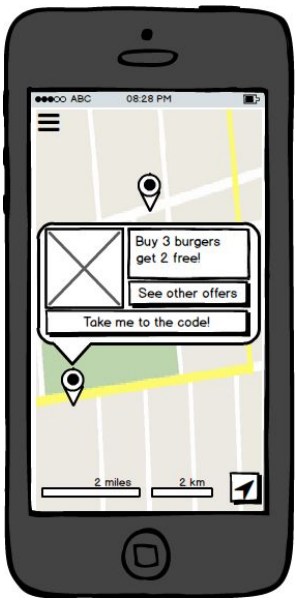


Figure 15. Map Detail

Strength: Gives a quick snapshot of a "hot deal" also allows users to skip directly to the QR code to claim the deal. Limits amount of pages the user is directed to.

Weakness: Vague on general restaurant information.

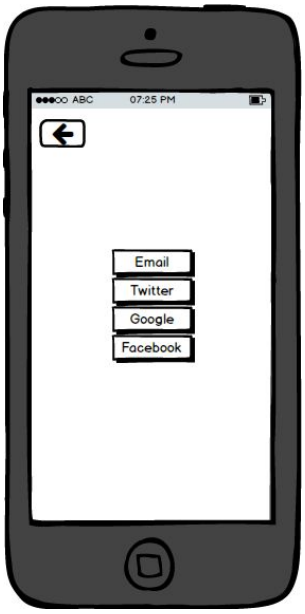


Figure 16. Register

Strength: Most applications provide social media login alternatives.

Weakness:

Figure 17. Login

Strength:

Weakness: The difference between Submit and Register is unclear.

Language used in this design layout was unclear as to the functionality of the form.

Design Guidelines - Standards from credible sources that maintain consistency with other known applications.

Google material design guidelines proved a significant resource for the initial low fidelity prototyping for Deal Finder Deluxe 9000.

- One of the guidelines was the usage of the 'Up' icon navigation pattern, which consists of a left pointing arrow or indicator that allows a user to go back from a given screen until they reach the main or home screen[2].
- Another important element drawn from material design is the navigation drawer pattern, which, according to the material design guidelines, suggests that it is a good alternative where "there is insufficient space to support tabs", such as on the map view[2].

Human Memory Limitations:

- We specifically kept the number of onscreen restaurant location markers to between 5 and 9 so that users would not become overwhelmed with the amount of information presented on the map screen. By keeping the cognitive load to a minimum our users will achieve task closure more often[1].

- This limited number would also help them retain what options were available even after opening up a specific location and going back to the map. Chunking the information helps the user reference the information more easily[1].

To avoid transaction completion slips we made sure people input all the required field data before being able to proceed to the next screen. We also provided information to the user about what was missing[1].

The type of location markers we use on the map cognitively afford people to press on them to receive more information about that location which is consistent with the commonly known google maps[1].

The map view follows Apple's Direction Manipulation design principle by allowing users to scroll the map, zoom in and out, and directly affect the view, with changing venue indicators providing clear and consistent feedback based on user control [3].

To follow Apple's consistency, our application implements familiar standards and paradigms by using system-provided interface elements, well-known icons, standard text styles, and uniform terminology. The app incorporates features and behaviors in ways people expect[3].

Deal Finder Deluxe implements a variation of Apple's First Launch Experience, by greeting initial users with an onboarding screen, and leaves app setup or customization for later on in the application for users who seek more control over their experience [3].

Settings in the application follow Google's settings standards. Controls that belong in settings should capture user preferences and be infrequently accessed. They should either affect most users or provide critical support to a minority of users[2].

Formative Evaluation - Tasks to examine the core part of our interaction design.

For formative evaluation we created a low fidelity prototype and mapped out the workflow of each screen to help us create representative tasks and questions to ask. Evaluation sessions were held during normal class hours for CIS 368 with student peers, and the professor used for participants. To start each session with a new participant one member of our group, the user surveyor, described the application as follows:

"This is the Deal Finder Deluxe 9000, it's an application to help you find food and drink specials near your current location."

The user surveyor then direct each participant to complete different tasks taken from the list below:

1. Register then find a deal
2. Find a deal then register
3. Find a deal
4. Register with social media and find a deal
5. Check a user review of a current location that has a deal
6. Sign in and change password
7. Check your profile
8. Change your password and give feedback
9. Find a deal and go back to deals map
10. Find a deal and go back to the home page

The main goal of most of these tasks was to find out how intuitive our application design was. Question 3 for example, aimed to see how easy it was for a new user to accomplish the end goal of the application with nothing but the opening description. Other tasks were designed to help us gather information about design choices including menue contents, labels, and icons. For example, question 8 was used to see where a user might expect the option to change their password is.

We followed up these tasks with several targeted questions that we had formed beforehand, and some that we came up with on the fly. The preformed questions are listed below:

1. Was this a simple task?
2. How could (Fill in something) be UI improved?
3. What do you think the home page is?
4. Was this an easy task?/Why?
5. Were there any surprises in performing this task?
6. What do you think the home page is?
7. What would you add to this app?
8. What difficulties did you have finding a review?
9. What did you like/dislike about the flow?

These questions were based on our expectations, and issues that we faced while designing our low fidelity prototype. We used them to find out what users thought about choices we were unsure of, like the location of the homepage. We also included more general open ended questions like question 7 that would allow participants to speak freely about anything that was on their mind after completing given tasks. To keep things simple, we did not create an extensive question list of questions opting instead to create a short list of opening questions which our user interaction researchers could expand upon based on participant answers, or create new questions based on observations.

UX Target Table

High Fidelity Prototype Features

For the high fidelity prototype, we used an online service called Proto.io. It is a paid service but can be used for free in the trial period. It works similarly to Balsamic used in the low fidelity prototypes, but had much more realistic assets that allowed us to make a real looking prototype in a fraction of the time.

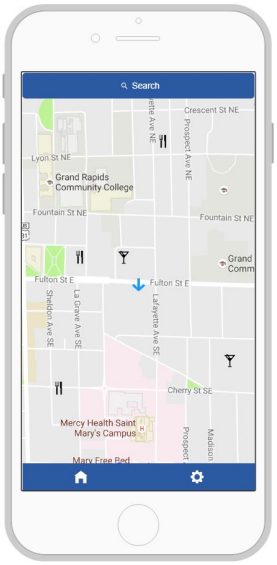


Figure 19. Home-page phase 3

Strength: Provides visual indication on restaurant types and a clear home and settings button.

Weakness: Icons require previous context of food establishments or previous food experience to comprehend.

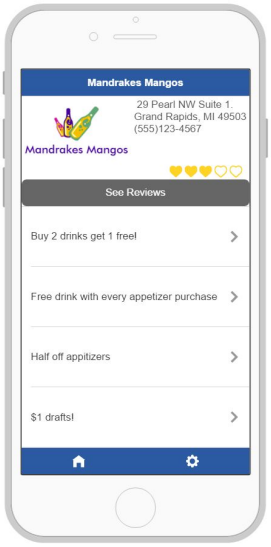


Figure 20. Deals page phase 3

Strength: Provides a more information regarding the restaurant, large buttons for easy navigation.

Weakness: Not immediately clear to a user as how to access a deal.

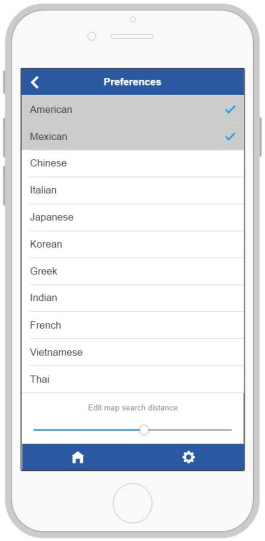


Figure 21. Preferences page phase 3

Strength: Provides a means for users to customize their experience to locate venues of importance on a user-centric level.

Weakness: Preference filters are not obvious as to their intended function. It is not clear what is being filtered in the preferences.

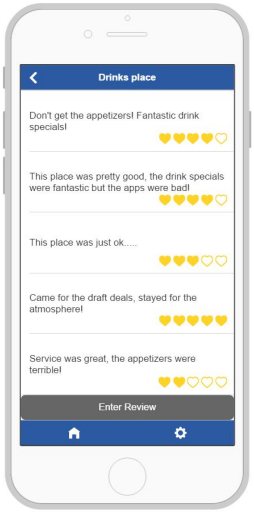


Figure 22. Review page phase 3

Strength: Brightly colored iconography draw attention to the rating for quick information.

Weakness: No information on the reviewer. Anonymity can lead to an inaccurate overall review of the restaurant.

Design Changes #1 - *Changes made after low fidelity user tests based on observations and feedback from formative evaluation.*

Our initial designs implemented a ‘preview’ functionality, that allowed users to access a subset of the application without registering a user account. Early prototype users found this frustrating

or misleading, with one case in particular where a user stated that he would consider uninstalling the application due to the subset preview. This was changed to require the creation of an account, or a login before giving access to the application. Rather than significant visual changes, this just resulted in the removal of flows from the design.

Figure 23. Home-page phase 1

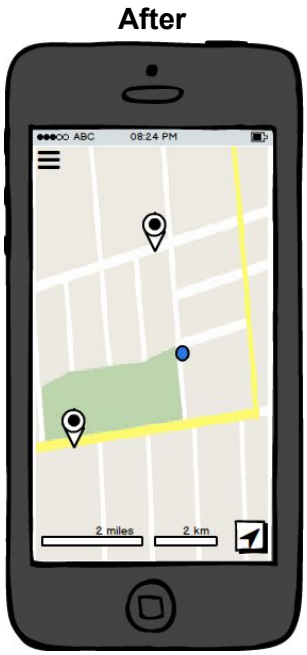


Figure 24. Home-page phase 2

Another point of annoyance for prototype users was the lack of a current location indicator, that would let the user know where they were on the map. This was rectified by adding an indicator for current location.

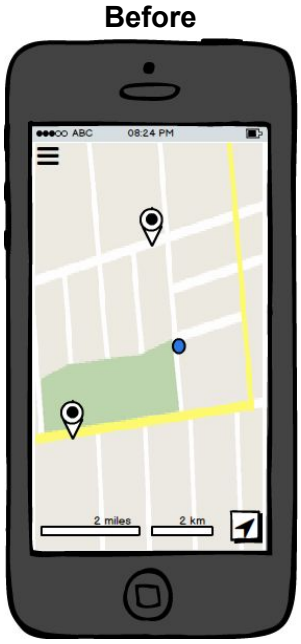


Figure 25. Home-page phase 2

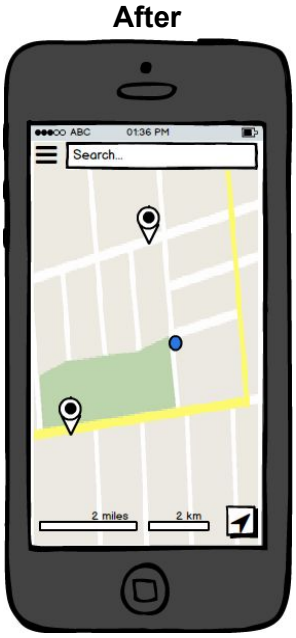


Figure 26. Home-page phase 3

Taking into account short term memory limitations, and increasing discoverability of food options in DFD, a search filter was added to DFD in order for users to seek out venues or food options that have not been promoted to them.

Evaluation Plan - *The steps needed to successfully complete our user research.*

Goal and Purpose - *Why we are doing this study.*

Our goal and purpose is to find out how users interact with our application. We would like to measure both experienced and new users ease of use, accuracy, and satisfaction. With benchmark tasks we hope to collect accurate quantitative and qualitative data by observing users ease of use and accuracy. A questionnaire will be used to gauge users level of satisfaction with the application.

Evaluation Team Roles - *The tasks of the evaluators hired to conduct the study.*

Three people will be needed for this evaluation. One person will be the facilitator and the prototype executor. Their responsibilities will include greeting participants and explaining the tasks that we would like them to complete. They will need to maintain a friendly presence throughout the evaluation. The other two team members focus will be collecting data by observing the participants complete the tasks presented by the prototype executor and recording errors the participants make while completing tasks and the time it takes to complete

tasks. They should also write down specific information they observed while watching the participants including struggles and successes. They will also need an audio recording device to to document what the participants say during their time there.

Participants - *The people we will use in our research. How many we obtain and how we obtain them.*

The participants of this evaluation will be mobile phone users that like to go out to eat, and/or drink. At least 10 participants should be recruited by going to a busy restaurant/bar area on a weekend night and asking people who are seen using smartphones if they would like to participate in a test for a new deal finding mobile app. Participants should come from a variety of age groups and smartphone usage categories (ie: heavy, light). In return for participation, participants will be offered early access to exclusive Deal Finder deals, and their favorite piece of Deal Finder rebranded candy.

Environment - *Place, equipment and software used to complete evaluation.*

A majority of the testing was conducted in the CIS 368 classroom. The equipment used was a personal android device to present the actual feel of using the application. The software for the prototype mobile application was written in android studio to create a semi-functioning app.

Procedures - *Steps an outside facilitator would follow to complete the evaluation.*

1. Read the welcome statement, located in the appendix, to the participant.

2. Present the participant with the consent form. Urge them to read the document thoroughly. Before continuing, make sure the participant initials each page and signs and dates at the end. Participants have the right to not sign the consent form, this will exclude them from any further participation.

3. Start recording and have the participant pick up the device the application is loaded on. You will now prompt them to verbally explain their thought process as you read through each benchmark task. Let the participant do this on their own, if they ask any questions specific to the task completion, explain that you have no knowledge of the system or how it works. The data collectors should record any errors they see or observe the participant verbally/nonverbally communicating.

4. If there is still time available, ask the participant to find a deal within the app, again speaking out loud about their experience. Let the participant do this on their own, and if asked any questions specific to the task completion, explain that you have no knowledge of the system or how it works. The data collectors should record any errors they see or observe the participant

verbally/nonverbally communicating. They should also record the amount of time it takes for the participant to complete the task.

5. If there is still time available, ask the participant to check out a restaurant review and then sign out, again speaking out loud about their experience. Let the participant do this on their own, and if asked any questions specific to the task completion, explain that you have no knowledge of the system or how it works. The data collectors should record any errors they see or observe the participant verbally/nonverbally communicating. They should also record the amount of time it takes for the participant to complete the task.

6. In the last 2 minutes you spend with the participant, present them with the survey that has been provided and ask them to fill it out.

7. Stop recording, thank the participant for their time and let them choose a piece of candy.

8. Repeat process with next participant until there are no more participants.

Data - *The information we are collecting to improve the user experience*

Data will be collected by having participants complete benchmark tasks to obtain objective quantitative data. We will be measuring the amount of time in seconds it takes participants to complete tasks using a stopwatch and the number of errors participants make while completing benchmark tasks. Errors will be counted in the context of misclicks, determined by observing if the participant returns to a previous screen to re-attempt an action. Things we will not count as user error include random acts of curiosity or exploration. Another thing we will discredit as an error is a new path the participant may find to complete a task.

A questionnaire will be given to participants at the end of their participation to collect subjective quantitative data. It consists of 10 questions that should enlighten us to how the user perceived the application while they were using it. We will compile the information and take the average of all data collected to find a mean value of our participant opinions.

Participant privacy will be protected by keeping the participants anonymous and using data in aggregate form.

Evaluation Results

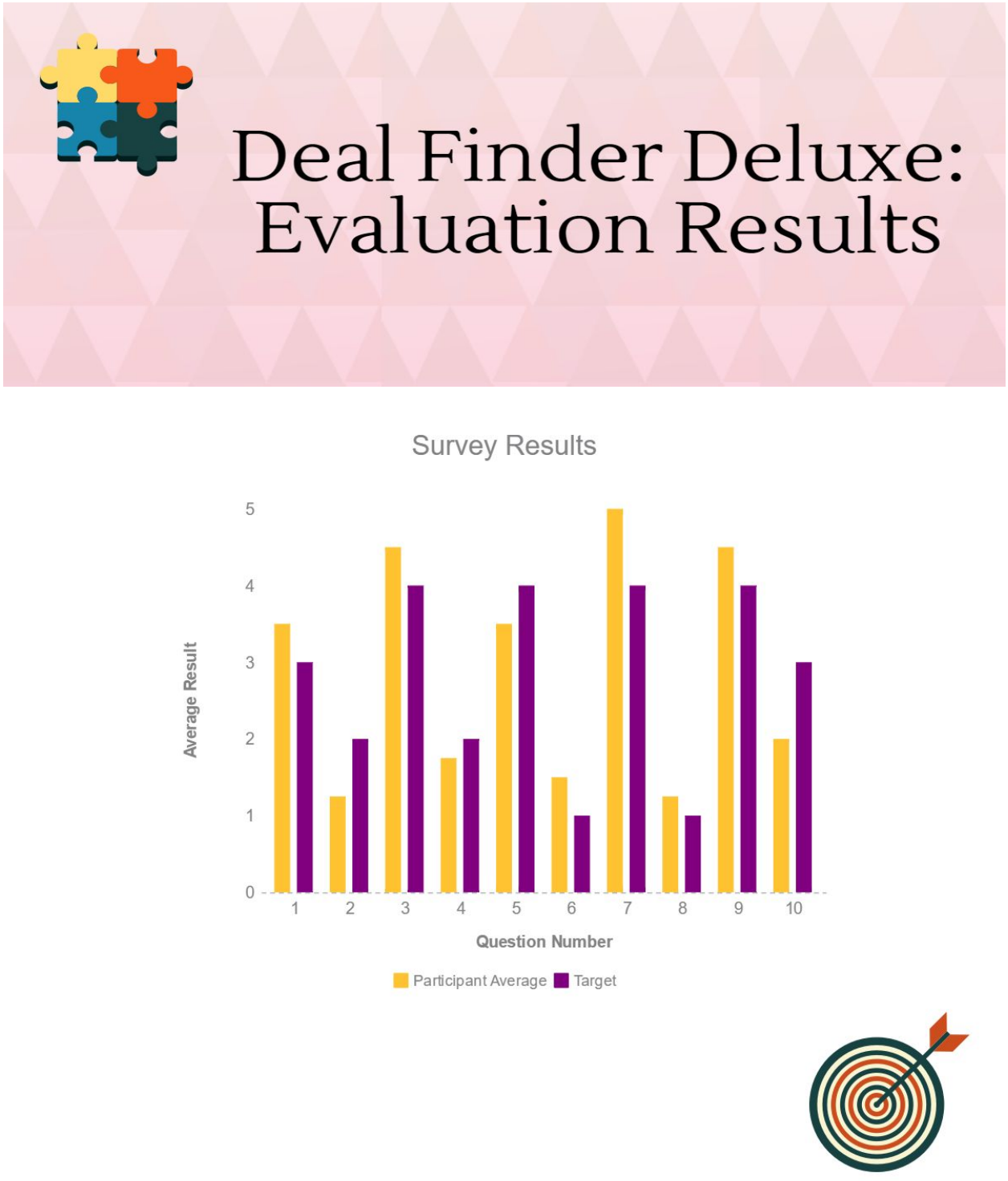
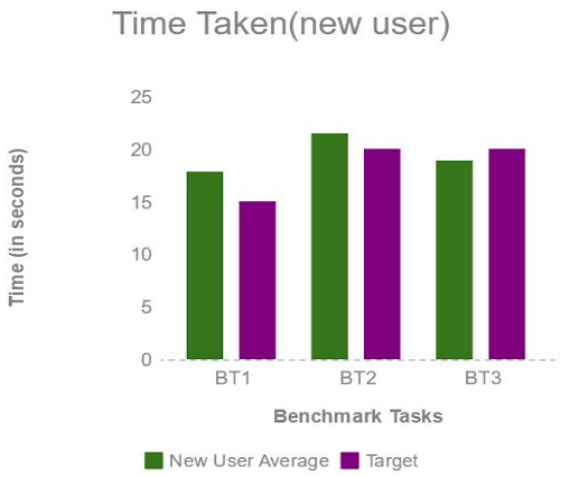


Figure 27. Survey Results



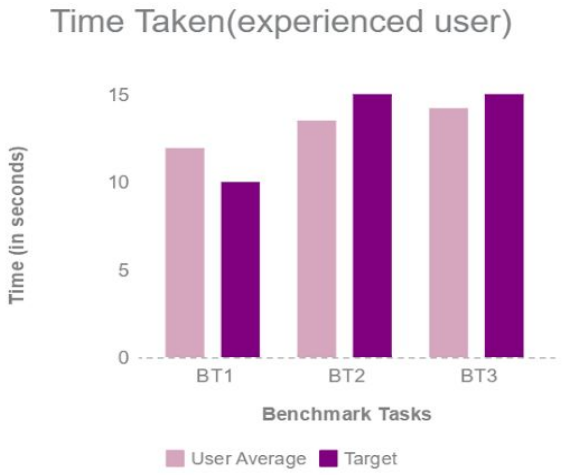


Figure 28. Benchmark Task Times

Figure 29. Benchmark Task Errors

We found that new participants, on average, spent more time and had more errors than experienced participants. For the first two benchmark tasks, new participants' average time ratings slightly exceeded our targets, but they steadily decreased and fell below target levels by

the third task. The same trend occurred with error rates which began to decrease as the participants used the application due to partially shared flows for the benchmark tasks. Unfortunately, the new participants were never able to collectively reach our target levels for errors made.

For participants with more technical experience, we found that fewer error were made compared to new participants, but on average, these participants took more time to complete successive tasks. Experiences participants often considered multiple routes to the completion of the task before deciding on one.

Describe interesting observations and what they might mean.

Design Changes #2

We used

Before

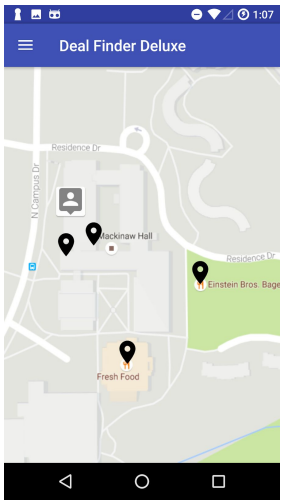


Figure 30. Home-page phase 4

After

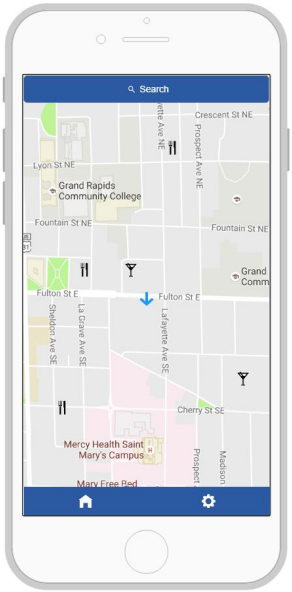


Figure 31. Home-page phase 5

The initial pin icons proved to be less intuitive that initial expected. In the final prototype we implemented images specific to the restaurant type. Typical android users understand the bottom three icons, but they are less intuitive for apple users, so we implemented the universal settings icon which changed from the hamburger menu in the top left of the screen.

Before

Figure 32. Home-page phase 2

After

Figure 33. Home-page phase 5

A sticking point for most users was allowing the user to immediately browse the application before making them register. This proved to be a less than desireable for most of the users when they decided on a deal that they wanted. Forcing users to login so they have full access to the application prevents this is issue.

Before

Figure 34. Home-page/Deal-page phase 2

After

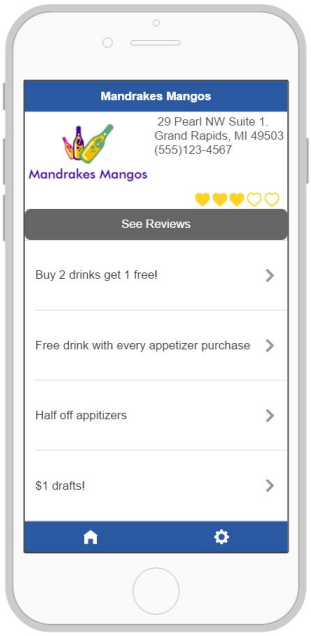


Figure 35. Deals-page phase 5

No pop-up for deals. Popups created an added layer between the user and pertinent information about the location they wanted to look at. Removing the popup takes the user straight to the restaurant deals page so they can see what is offered, while the number of clicks back to the map view remains the same.

Before

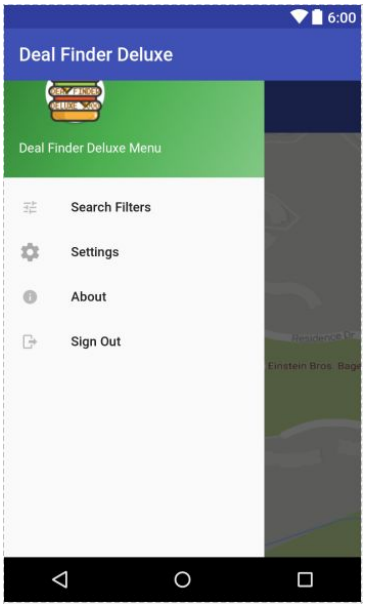


Figure 36. Settings-page phase 4

After

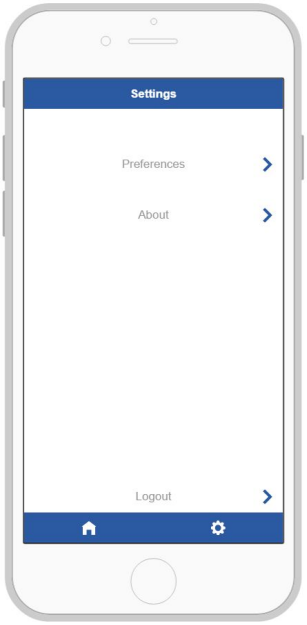


Figure 37. Settings-page phase 5

The slide out menu was removed to prevent the user from having to navigate to another screen before having to enter the settings menu. The new design also removes the Search Filters and settings menu and encapsulates everything under the settings page which is reached by pressing the settings(cog) icon in the lower right corner.

Before

Figure 38. Preferences-page phase 3

After

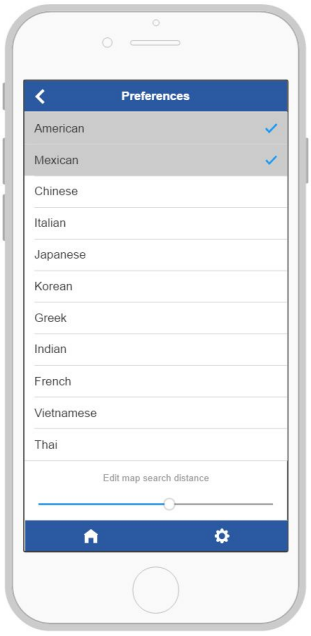


Figure 39. Preferences-page phase 5

The profile tab was renamed to prevent confusion when navigating the settings menu in the application. Profile was renamed to Preferences and a few new features were added, including a slider which provides desired search distance.

Conclusion

Through the Fall 2016 semester, we touched on many usability design topics as part of the CIS 368 lecture session, and personally experienced and applied many of those topics on a more practical level in the usability stories and in the term project as a group.

We learned that Donald Norman's principles of usability design, Consistency, Visibility, Affordance, Mapping, Feedback, and Constraints, often contributed towards user experience, but based on real world experiences, the concept of function over form often took precedence over the implementation of all the usability design principles in their entirety. We discovered that within practical application of the usability design principles, it did not always make sense to implement all design principles, especially where they inhibit functionality rather than enhancing the usability of the functionality.

Throughout designing Deal Finder Deluxe 9000, we determined that differing ideas and experiences grant useful insight and alternative perspectives on our design decisions, but also created difficulty in maintaining a cohesive project unit, with inconsequential system-centric decisions being a repeated source of incohesion. Over the design process of Deal Finder

Deluxe 9000, Cohesive Unit Unincorporated discovered the advantages and disadvantages of labor division. We found that dividing tasks among different unit members was effective in creating focus on a particular task, but induced problems in communicating and collaborating on cross-task content, or finding alternative and more effective means to complete a task or prevent other Cohesive Unit members from finding more effective tools to complete a task assigned to another member.

References

[1] Rex Hartson & Pradha Pyla, The UX Book: Process and Guidelines, Morgan Kaufmann Publishing, 2012.

[2] Google, Navigation - Patterns - Material Design Guidelines, https://material.google.com/patterns/navigation.html#navigation-patterns, visited 10/19/2016.

[3] Apple Computer, iOS Human Interface Guidelines, https://developer.apple.com/ios/human-interface-guidelines/, visited 10/19/2016.

Appendices

Appendix A

Team Expectations

Our team will have:

- A twenty-four hour turnaround on all forms of communication.
- We will communicate using e-mail, our time in class, and out of class meetings that we agreed should happen at least once a week.
- Our intent is to accomplish our goals ahead of schedule and keep procrastination out of our group dynamic.
- We will maintain a group Google Doc and a Git repository for asset sharing.
- If conflicts arise, we will have a group discussion to see if there is a functional way to handle the issue.
- Overall, we'd like to learn as much as possible while having a great time doing it.

Survey Results

- **Question 1: What is your age?**

Answer Choices	Responses	
17 or younger	**5.56%**	1
18-20	**0.00%**	0
21-29	**66.67%**	12
30-39	**22.22%**	4
40-49	**5.56%**	1
50-59	**0.00%**	0
60 or older	**0.00%**	0
Total		18

- **Question 2: Are you currently enrolled as a student?**

Answer Choices	Responses	
Yes, full time in graduate school	**5.56%**	1
Yes, part time in graduate school	**11.11%**	2
Yes, full time at a four year undergraduate college/university	**27.78%**	5
Yes, part time at a four year undergraduate college/university	**5.56%**	1
Yes, full time at a two year undergraduate college/university	**0.00%**	0
Yes, part time at a two year undergraduate college/university	**0.00%**	0
Yes, at a high school or equivalent	**5.56%**	1
No, I am not currently enrolled as a student	**44.44%**	8
Total		18

- **Question 3: What is the most important to you when choosing where to eat?**

The food I want
10/7/2016 4:39 PM

How good the food tastes
10/7/2016 4:37 PM

Cheap and low in quality.
10/7/2016 4:26 PM

Can I get there on my bike
10/7/2016 4:26 PM

Price
10/5/2016 1:23 PM

Drink Choices
10/3/2016 6:26 PM

Good food at a low cost
10/3/2016 9:32 AM

New Place
10/2/2016 9:49 AM

Good food
10/2/2016 9:45 AM

Vegetarian options
10/2/2016 8:05 PM

Depends on the scenario but generally prove to q
10/2/2016 5:59 PM

Quality of food
10/2/2016 5:21 PM

Location
10/2/2016 3:55 PM

Good reviews
10/2/2016 3:43 PM

location
10/2/2016 3:42 PM

The quality of the ingredents being cooked with
10/2/2016 9:59 AM

- **Question 4:How do you usually find information about food/beverage deals or promotions?**

Answer Choices	Responses	
Word of mouth	**43.75%**	7
Google Search	**56.25%**	9
Radio	**6.25%**	1
Television	**12.50%**	2
Other (please specify) Responses	**25.00%**	4
Someone does this for me. 10/7/2016 4:26 PM		
Companies website 10/3/2016 9:32 AM		
Social Media 10/2/2016 5:59 PM		
Flyers 10/2/2016 9:45 AM		

- **Question 5: Are you interested in finding food/beverage specials or discounts?**

Answer Choices	Responses	
Yes	**68.75%**	11
No	**31.25%**	5
Total		16

- **Question 6: How often are you looking for food/beverage specials?**

	Not at all	Sometimes	Often	Frequent	Total	Weighted Average
(no label)	**18.75%** 3	**56.25%** 9	**12.50%** 2	**12.50%** 2	16	2.19

- **Question 7: How far away you travel willing for food and drink?**

Answer Choices	Responses	
Not at all.	**12.50%**	2
Minor Walk.	**6.25%**	1
Short Drive	**50.00%**	8
Distance is not important.	**31.25%**	5
Total		16

- **Question 8: Do you currently use any apps to help decide what or where to eat?**

Answer Choices	Responses	
Yes	**43.75%**	7
No	**56.25%**	9
Total		16

- **Question 9: If yes, what do you like about it? If no, why not?**

I don't trust the internet
10/7/2016 4:39 PM

I didn't know there were any apps that could help me find deals.
10/7/2016 4:37 PM

It is simply too much work.
10/7/2016 4:26 PM

Yelp
10/7/2016 4:26 PM

Ease of use
10/3/2016 6:26 PM

Nothing is really avialable
10/3/2016 9:32 AM

Rating by committee, insider info, dress code information
10/2/2016 8:05 PM

Pretty inclusive lists of restaurants
10/2/2016 5:59 PM

Seeing reviews other people have left, pictures of the menu, price ranges and hours.
10/2/2016 3:43 PM

ease of use
10/2/2016 3:42 PM

yulp
10/2/2016 9:49 AM

Appendix B

Previous Team Roles

(Phase 1)

Tensei Nguyen: Technical writer, Ideation

Charles Dodge: Technical writer, Project Manager

Kevin Harrison: Technical writer, Proof Reader

Jason Bensel: Technical Writer, Ideation

(Phase 2)

Kevin Harrison: Project Manager, User Researcher, Task Analysis, Persona Development

Tensei Nguyen: User Researcher, Team Motivator, Task Analysis, Persona Development

Charles Dodge: User Researcher, Scenario Writer, Technical Writer, Persona Development

Jason Bensel: Scenario Writer, Technical Writer, Editor, Persona Development

(Phase 3)

Kevin Harrison: User Interaction Researcher, UI Design Support, User Surveyor

Tensei Nguyen: Project Manager, UI Designer, User Interaction Researcher

Charles Dodge: Prototype Developer, Formatter, Technical Writer, UI Designer, UI Researcher

Jason Bensel: UI Designer, Technical Writer, Editor, User Surveyor

(Phase 4)

Jason Bensel: Project manager, Technical Writer, Editor, User Surveyor

Charles Dodge: User Surveyor, Formatter, Technical Writer, Prototype Collaborator

Kevin Harrison: UI Designer, UI Programmer, User Surveyor

Tensei Nguyen: UI Designer, UI Programmer, Programming UI and App components in Android Studio.

Appendix C

Welcome statement

“Hello, and welcome to Deal Finder Deluxe 9000 User Research. As a potential valued customer, we are looking to provide you with a simple mobile web application that is a one-stop-shop for the budget-conscious individual looking for food and drink specials within the vicinity. During this testing you will: explore the application, complete assigned tasks, and fill out a short survey. By completing this testing you are helping us assess potential areas where we can improve our application to fit your needs.”

Appendix D

TITLE OF STUDY
Deal Finder Deluxe 9000 User Research

PRINCIPAL REASEARCHER
Charles Dodge
User Experience
1 Campus Drive, Allendale, MI
(616) 867-5309
dodgech@dfd9000.com
PURPOSE OF STUDY

You are being asked to take part in a research study. Before you decide to participate in this study, it is important that you understand why the research is being done and what it will involve. Please read the following information carefully. Please ask the researcher if there is anything that is not clear or if you need more information.
The purpose of this study is to gain a better understanding how people interact with the application, Deal Finder Deluxe 9000, and improve its usability based on the data we collect.

As a participant, you can withdraw anytime, for any reason, or for no reason at all.

STUDY PROCEDURES

1. Welcome statement
2. Consent Form
3. Task 1 - Change the filter in the application to select Mexican food.
4. Task 2 - Find a deal within the app
5. Task 3 - Check out restaurant review and then sign out
6. Survey – 10 short questions with a 1-5 rating scale

In one session, you will be spending approximately 8-10 minutes completing tasks and filling out a survey, if you choose to do so.
When competing tasks within the application, you may be recorded with an audio recording device for closer analysis at a later time.

RISKS

There are no foreseeable risks to you or your belongings during your participation. You may decline to answer any or all questions and you may terminate your involvement at any time if you choose.

BENEFITS

It is reasonable to expect the following benefits from this research: Improving an application that will provide a quick and efficient way of finding a restaurant deal. However, there is no guarantee that you will personally experience benefits from participating in this study. Others may benefit in the future from the information we find in this study.

CONFIDENTIALITY

For the purposes of this research study, your comments will not be anonymous. Every effort will be made by the researcher to preserve your confidentiality including the following:

· Assigning code names/numbers for participants that will be used on all research notes and documents

· Keeping notes, interview transcriptions, and any other identifying participant information in a locked file cabinet in the personal possession of the researcher.

Your responses to the survey will be anonymous. Please do not write any identifying information on your survey.

If an audio clip needs to be used from the recording for any other purpose, you will be contacted, in writing, to gain additional approval.

Participant data will be kept confidential except in cases where the researcher is legally obligated to report specific incidents. These incidents include, but may not be limited to, incidents of abuse and suicide risk.

COMPENSATION

You will be compensated with a confectionary item and our deepest appreciation.

CONTACT INFORMATION

If you have questions at any time about this study, or you experience adverse effects as the result of participating in this study, you may contact the researcher whose contact information is provided on the first page. If you have questions regarding your rights as a research participant, or if problems arise which you do not feel you can discuss with the Primary Investigator, please contact the Institutional Review Board at (865) 354-3000, ext. 4822.

VOLUNTARY PARTICIPATION

Your participation in this study is voluntary. It is up to you to decide whether or not to take part in this study. If you decide to take part in this study, you will be asked to sign a consent form. After you sign the consent form, you are still free to withdraw at any time and without giving a reason. Withdrawing from this study will not affect the relationship you have, if any, with the researcher. If you withdraw from the study before data collection is completed, your data will be returned to you or destroyed.

CONSENT

I have read and I understand the provided information and have had the opportunity to ask questions. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving a reason and without cost. I understand that I will be given a copy of this consent form. I voluntarily agree to take part in this study.

Participant's signature _____ Date _____

Researcher's signature _____ Date _____