Ecoceries
The Eco-friendly Grocery App

Team Members and Roles

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Problem and Solution Overview

As people lives begin to get busier and busier, they are forced to make trade-offs in how they live. One such trade-off concerns their health. Many people may not be informed of their options to lead healthier lives. Sustainable foods offer people ecologically sound products that are beneficial to both their health and the environment. However, information about sustainable foods is not easily accessible. With the growth of ubiquitous computing, a mobile application that would allow users to access information about where and what foods are available would serve to benefit consumers and the community around them. Products can differ drastically across various stores. A product that provides users with the option to make eco-friendly decisions about food would not only improve the health of many people, but also benefit the local and sustainable farms that make an effort in growing healthy, as well as environmentally-friendly, products.

To get a better understanding of the user needs in this area of focus, we conducted a contextual inquiry to gauge user habits. Based on the results that we collected, we developed three key tasks and scenarios. We developed details on the features and purpose that this app should serve.

The app would help users evaluate their current food purchases, learn about some better choices when it comes to grocery shopping, and find where the best places to buy eco-conscious foods are in their area.

Task Analysis Questions

Who is going to use the system?

The users of this system are health-conscious or health-curious consumers. They are concerned about the quality of their food and would like to eat sustainable food products without paying a fortune. They would like to make informed-decisions about what they eat and how that would affect their lives. These users must own a smartphone and be able to use a smartphone with little assistance.

What tasks do they now perform?

Generally, tasks that the users now perform concerning their grocery needs are manual processes. The only way the users can check on the availability of an item is by physically going to a grocery store and checking themselves. The information that they find on sustainable food products can vary depending location, time of the year, and their grocer of choice. The consumers themselves must take the responsibility of manually searching the information themselves through different mediums and sources. This information can change as time passes and be out-of-date. Even if the user wanted to search, for example, for a farmer's market, some farmer's markets may not have websites or other informational resources for shoppers to use.

Users can only search for items that are on sale at a particular location through advertisements that are mailed to their house. Again, this information varies across the board because not all grocers create advertisements on their food items.

Finding information about sustainable food products can be troublesome. Thus, due to lack of awareness some users may have given up because they do not see that the benefits outweigh the costs.

What tasks are desired?

Tasks that are desired include searching for sustainable produce within the community, comparing stores that carry sustainable produce, getting a list of sustainable groceries under the user's set budget, and having a review system where users can review stores.

How are the tasks learned?

For the most part, our app will be pretty intuitive. Buttons and text will be labeled clearly and with enough detail to help the user understand the functions available to them. One way of learning our app would be to just click around and explore features. However, for those who don't wish to take that route, we will include a picture tutorial of how a user may want to use the app. There will be a button to access this feature on the menu/home screen. The tutorial will consist of a sequence of pictures and text that show the user how to perform certain tasks, such as setting up an account, finding a store, finding items, etc. By clicking through and reading this tutorial, users will be able to learn and understand the main functions our application has to offer.

Where are the tasks performed?

The tasks are performed through the use of a smartphone, whenever they want to gain more information about certain stores that carry sustainable products or about local farms. For example, if Sally was on her way home from work and needed to stop by the grocery store, but wanted to know where she can get sustainable, good quality, reasonably priced produce, she could easily get on her phone to check what stores she needs to stop by. Because of its convenience, users can obtain information on-the-go on their own time when they choose. Users can compare the prices of a

particular food item or find an alternative. They can search through various locations for a particular item and decide on their preference.

What's the relationship between customer & data?

The users can interact with the data that they find, depending on what they choose. This will either be searching for a nearby store, searching for a certain sustainable product that they want to purchase, creating a grocery list based on their budget, or reading and giving reviews for stores. The basis of this app isn't to help users make decisions specifically, but rather, it is designed to help users make informed decisions about leading a healthier lifestyle.

What other tools does the customer have?

The app will include a picture tutorial which the user can use to better understand how our application works, and what features they have access to. This tool will help users become familiar with our app without having to initially explore the app on their own. Users can access the tutorial through a button on our menu screen. We feel that this tutorial would greatly affect the way people use our application because it will show users all of the main things they can do with the app, whereas clicking through and exploring our app on their own may cause users to overlook certain aspects that might actually be useful to them. One such feature may be creating an account and the benefits this provides to the user. By creating an account, users can choose to give our app access to their location, and through Google maps, it can give the user directions to nearby stores that carry the items they are looking for. In a sense, the account creation tool is also a tool that users have access to.

How do customers communicate with each other?

Customers have the ability to communicate with other users of this application through the use of a news feed to their choosing. Users can establish a profile that would contain information about themselves, such as their favorite place to shop, their favorite products during particular seasons, and their experiences at particular stores or vendors at farmer's markets, that they want to make viewable to the public. This information can update in real-time and allow users to tag specific food items and share specific tips with other users.

How often are the tasks performed?

This varies based on how often the user shops for groceries, and their needs. This can range from several times a week to once every couple weeks because the amount of food items a user purchases during each grocery trip can vary immensely depending on each individual user's preference and shopping habits. Some users may purchase items that are on sale, while others might purchase items on a need-basis.

What are the time constraints on the tasks?

The tasks are limited to the hours of the grocery stores and farmer's markets, especially when the user wants to use our barcode scanning function, where they can scan in the barcode of specific products to find stores that sell the same product around the area. Farmer's markets are generally held in the morning and early afternoons of weekends. Grocery stores have longer hours but most are closed by 11pm. Besides this barcode function, the other functionalities of our app can be used at any time.

What happens when things go wrong?

According to our current features, the following things could go wrong:

1) A product that they are looking for may not be in our database. In this case, the app will prompt the user to add the product to our database if they wished to do so, and if they purchase the product, they can add the store they bought it at and a review as well.

2) If the user is using a computer rather than a phone, it may not be able to detect where the user is and therefore prohibit the user from searching for nearby stores. In this case, the app can prompt for a zip code where the user is at, and look for stores in their vicinity from the zip code.

3) If the budget that the user enters is too low. The user may enter a budget that is too low for the app to provide them with a grocery list full of products that they need under the budget and, at the same time, is sustainable/good quality. If this happens, the app will show up with an error that prompts the user to increase their budget to allocate all the products that they want, or to reduce the products that they want.

4) The farmers may not be "technologically savvy" and may not be able to update their newsfeeds on their profiles. In this case, the farmers will not have newsfeeds and just have a little biography on their farm, which we can provide by gathering the information and inputting the data ourselves.

5) Some products may not have barcodes to scan. In this case, users can let us know and we can create a barcode for the product.

Revised Tasks

Upon reevaluating our tasks from the contextual inquiry, we decided to come with 3 new tasks that will highlight the capabilities of our application. We decided to focus these tasks on the way users actually interact with grocery items.

Checking Information on a Product (easy)

While grocery shopping, someone will want to know price and nutrition information on the product without searching through databases on the internet. The user might also wish to know how this product compares against products from other brands.

### Look for the Best Place to Buy a Product Based on User Reviews (medium)

People are often swayed in their purchasing habits based on reviews from others and the same hold true for grocery shopping habits. One might hear about a product through word-of-mouth from their family or friends. This task enables the user to have a centralized means of reading reviews of various

sellers of the product. This will be especially useful when shopping for produce since there is a fluctuation of quality based on where different grocery stores get their produce.

Find an Optimal Grocery List Based on the User's Weekly Grocery Budget (hard)

One primary reason people give against shopping for sustainable grocery is the perceived more expensive cost. This task allows users to get the best or healthy combination of groceries based on their financial capabilities.

Storyboards for Three Interface Designs

Design One
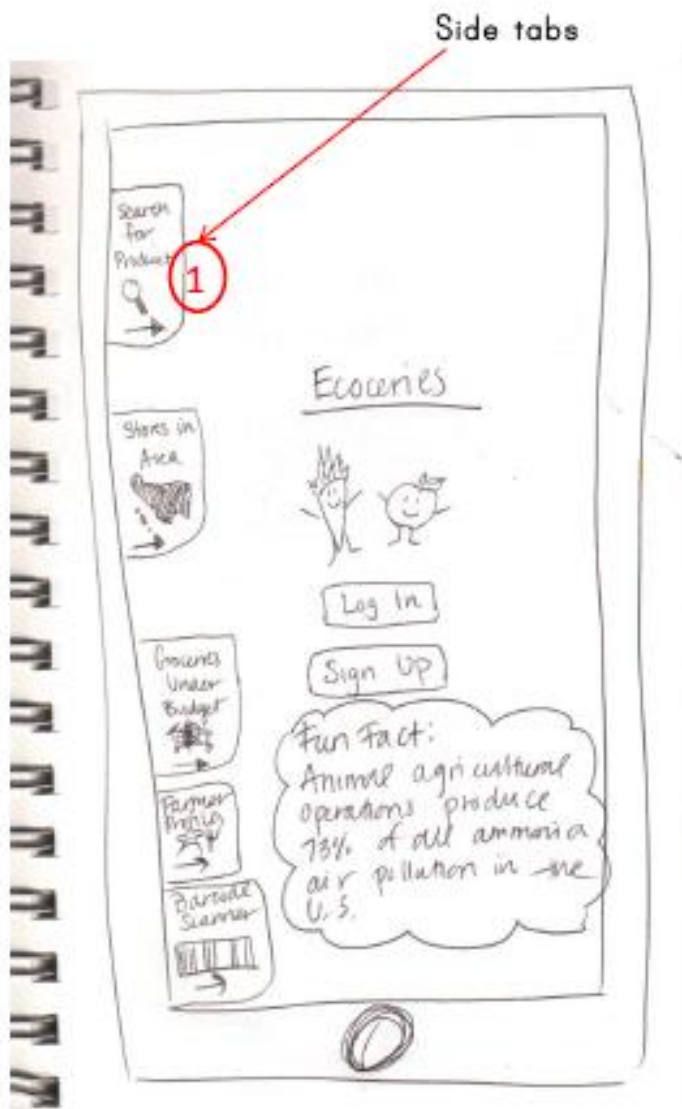
Side tabs

The landing page for design one. There are side tabs to the left that slide to the right when clicked upon to reveal the whole function. To the right of the screen, we have the log in and sign up buttons, as well as a little fun fact about sustainable foods that refreshes every time the user opens the app, so they can learn more about sustainability as they use the app. In this storyboard, the user will click the "Search for Product" tab to search for a certain product.

Once the user clicks the "Search for Product" tab, a search box comes up where they can type in the product they are looking for. Our database will make suggestions based on what we have in our database at the moment. In this case, the user is looking for "strawberry."
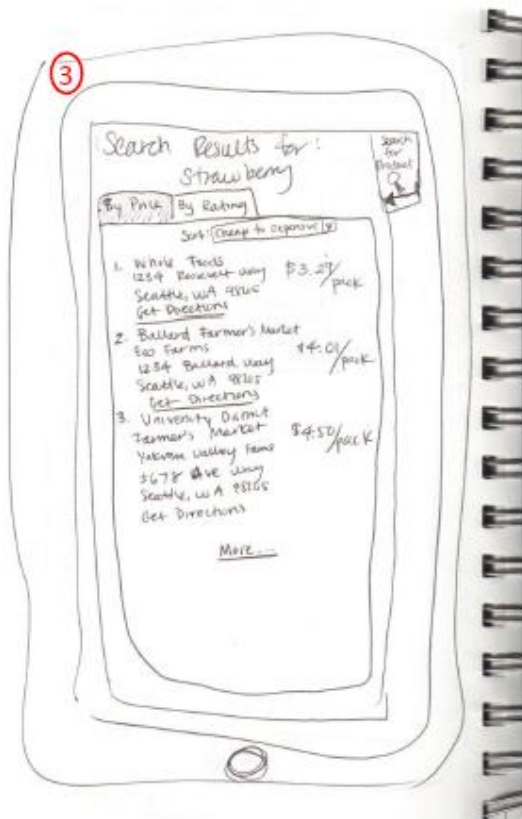

The user has searched for "strawberry", and the results are shown here. It shows a list of stores that sell this product, and lists them by price. The user has the freedom to choose whether they want to list from cheapest to expensive, or vice versa. In this screen, the user has chosen to view from cheapest to most expensive. The user can then get directions to their desired store if they needed directions.

Now the user has chosen to see their results by rating, by clicking on the "By Rating" tab at the top. This lists the stores that sell the product that the user searched for by user generated ratings. They are listed from highest rated to lowest rated. The user can choose to read the reviews by clicking the "See Reviews" link below the rating stars.

Design Two
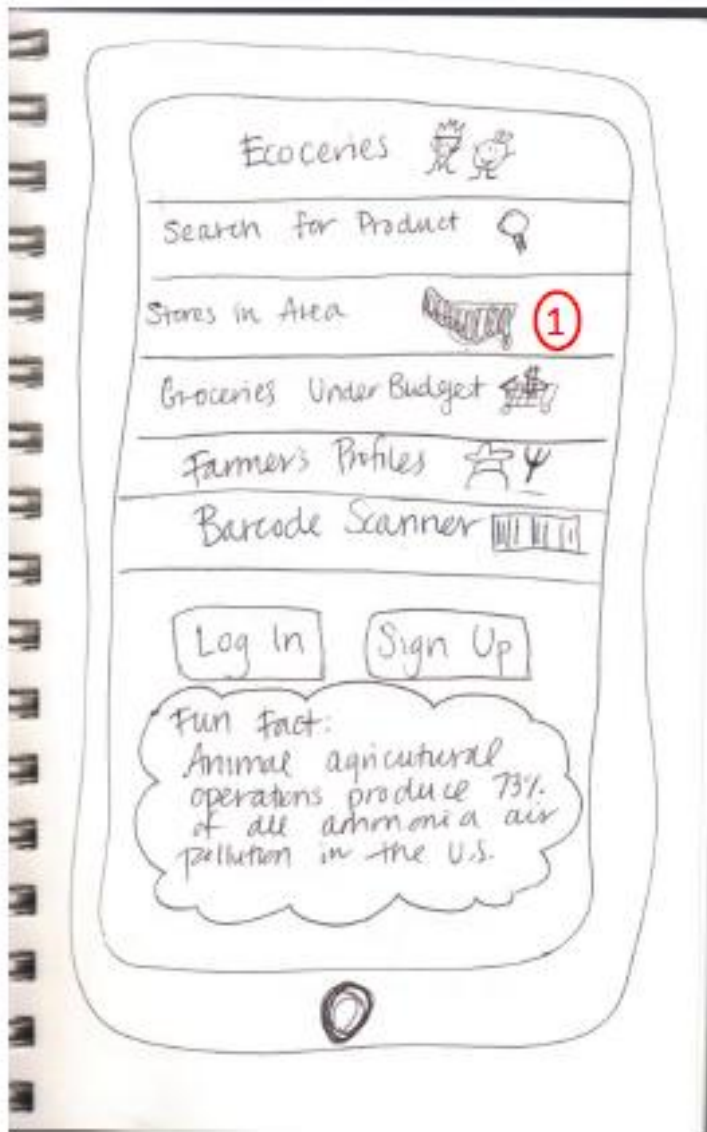
This is the landing page for the second design. This shows the functionalities of our app in a list, where the desired function will open like an accordion when clicked upon. The log in, sign up, and fun fact are the same as design one. In this case, our user wants to search for stores in their area.
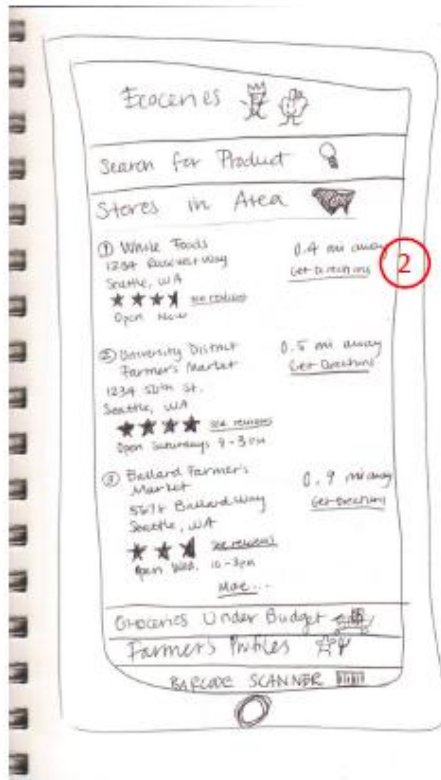
The user has clicked on "Stores in Area" and the tab has expanded, showing the full function. The app is running on a smartphone, which includes a GPS function in which it can detect where the user is at the moment. Using this function, the app can give a list of what stores are in their vicinity that sells sustainable products. Along with how far away each store is, it also shows its user generated ratings and directions. Now that the user has identified the closest store, they will get directions to the store.


The user has clicked on "Get Directions" for the closest store, and the app has now provided them with a map and directions to the store. The map will be an open source map that can be integrated with applications.

Design Three
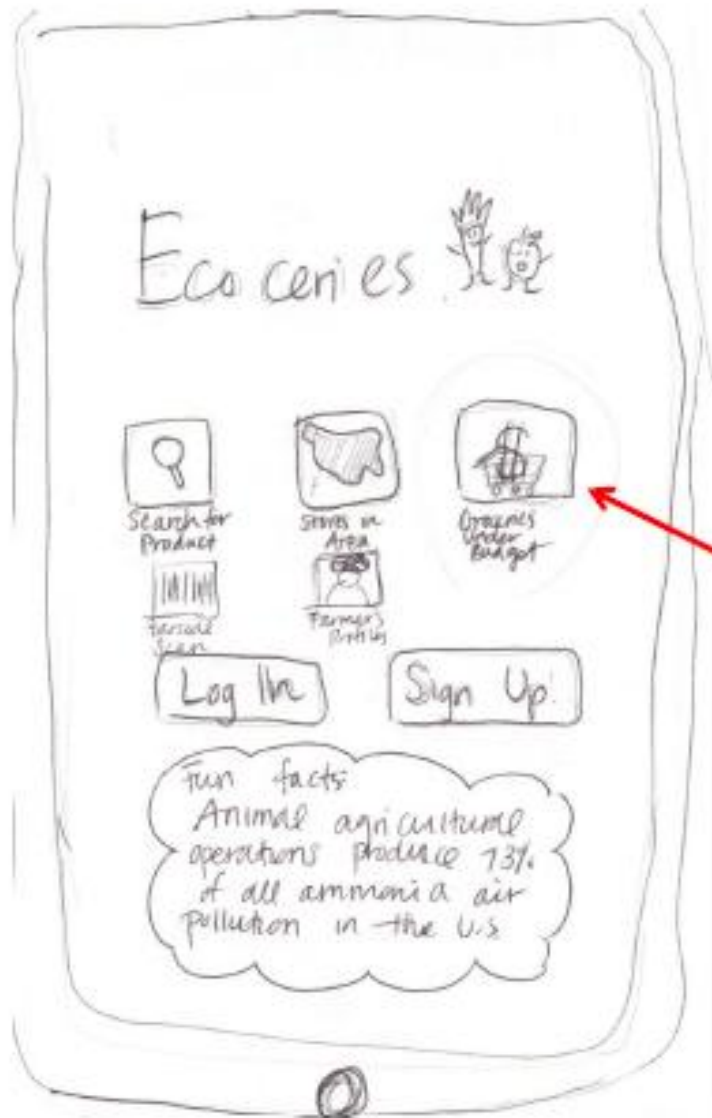
This is the landing page for design three. We have buttons here that represent each function. Log in, sign up, and fun facts are still the same as the previous designs. In this case, the user wants to create a grocery list that is under a certain budget.
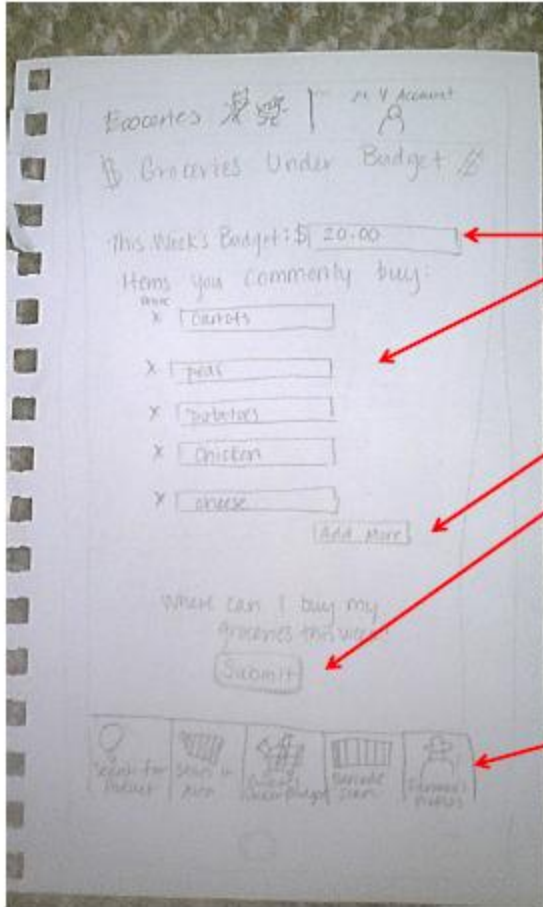
After the user has clicked on "Groceries Under Budget", a screen appears where users can input their budget, along with a list of grocery items that they would like to obtain. They can add more items if need be with the "Add More" button. When done, they can "Submit" their entries for the app to find the given products within the shopper's budget.

As you can see, the function buttons are now lined up on the bottom of the screen, for easy access to and from one function to another.

After the user has submitted their budget and grocery items, the app will provide them with stores around the area that sell these products. It will tell them what stores to go to to get certain products, so they can stay under their budget. There is also a "Revise" button at the top in case the user wants to revise their budget and items.

The user has chosen to look at what items Whole Foods has, so they have clicked on the "Whole Foods" bubble. In the bubble, it lists what items the store sells and at what price. Clicking on the store name will take them to directions on how to get to the store.

Selected Interface Design

Which Design & Reasoning for Choice

For our application design, we want to use the third design. We chose this design because out of the three landing pages, this design makes the most sense in terms of how easy it is for the user to find the functionalities that this app is capable of. It provides the user with the choices of functionalities front and center. In the second design, the tabs to the left are not the center of attention, but rather the "Sign Up" and "Log In" buttons are easier to spot. Though logging in can give the user the benefit of having a profile to share information with other users, it is not the main function. Our goal is to provide our users with information about the source of their food and where they can obtain these products. If the functions are not the center of the design, our design obviously fails to meet our goal. The third design presents the functions in a list format, where the buttons can expand like an accordion when clicked on. This design clutters the screen too much and may overwhelm the user with too much information. Our first design keeps a consistent look throughout the application, with the buttons at the bottom of every screen.

As with other designs, our choice also has platform constraints. Our design is limited to smartphones or tablets that have the ability to download and use mobile applications. Our application is designed to be used with touchscreen devices. This design would have the ability to adapt to various screen sizes and bandwidth because it is dependent on what features the user utilizes. This could vary from whether the user may require specific hardware such as a global positioning system (GPS) or a camera to complete their task.

Functionality Summary

Barcode Scanner - The user is able to scan the barcode of a product (similar to how someone would scan a QR code) and receive relevant information about that product. This includes price, price per unit, nutrition facts, and comparisons to products from other brands. The user will also receive recommendations to products that are similarly priced but have more nutritious value and other products that are commonly purchased with this product.

Search Functionality - The user enters the food item they would like to search for. If this is a common item, our application will auto-complete the search word/phrase. Our application will return grocery stores and farmer's markets that sell the searched item and rank the results by price and rating. The ratings will be determined by general eco-friendliness of the establishment and customer feedback on that specific product. Users can also filter their search and put restrictions for searching for items to purchase such as food allergies, food that are high or low in a particular vitamin, adhere to certain diets, etc. The user will also have the option to read customer reviews.

Stores in the Area - This function returns grocery stores and farmer's markets in the area based on the GPS location of the user. The results are ranked by distance from the user.

Groceries Under a Budget - A user is able to input a range for purchasing their food items and effectively find the best balance of quality and price that is most suitable for their lifestyle.

Follow a Farm - Users can learn more about the food that they eat through "following a farm." By doing so, they would get the opportunity to learn about what produce is in season and being grown at a given farm. This would be designed to allow the users to establish a relationship with the farms so that they can make judgments on their food choices. Users can see visual representations of crops through pictures, graphs of quality over time, etc.

Fun Facts - This feature gives users the chance to gain knowledge about sustainable food products through a facts feed on the app. Fun facts will serve to educate the users about the products that they have and inform them of opportunities they might not have explored.

User Profile - User profiles allow the user to personalize their preferences (food, location, etc.) and customize the way that the app monitors their purchasing habits. They can engage in a network or community of others to also utilize the app and learn from each other. The user profile enables users to write reviews and establish a presence in the eco-friendly eating community.

Interface Description

The home screen of the application allows the user to access all features with ease. This includes 5 large buttons that leads to the 5 main functions of our application. There are also a login button and a signup button on the home screen. It is not necessary for the user to create an account to access any of the other functionality, but if they choose to do so, they can store their products and grocery shopping locations. There is also a fun facts section on the home screen that is intended to grab the attention of the user and get them excited about shopping for sustainable groceries. On subsequent pages, the 5 main functions are constant tabs at the bottom of the screen with aligns with the typical design in other smartphone application. For more details on subsequent pages in our application, please refer to the appendix.

Three Scenarios Corresponding to Your Tasks

Scenario 1

An ideal situation would be one where Consumer A has to purchase produce to cook dinner for a few friends that she will have over tomorrow night to have squash and salmon. Because she is on a tight schedule, and she knows that her friends are healthy eaters, she wants to be able to find the nearest location to her work where she can purchase these items. By using the Ecoceries app, she can make informed decisions based on the information it provides such as the farmer profiles, prices, alternatives, the location of the item, and nutrition facts.

Scenario 2

On the other hand, there is Consumer B who does not know very much about sustainable food products but wants to consider eating healthier and living a better lifestyle. He's heard of the Ecoceries app through a friend of his and decides to give it a try. He sees that a few friends of his are posting that they purchased eco-friendly products at the local Farmer's market. Diving a little deeper, he learns that by purchasing these items he is encouraging local farming and helping his community emit less carbon emissions. There is a sustainability rating measured by the ability to track the energy used during the food's production. This is indicated next to the food item.

Scenario 3

Consumer C is a thrifty shopper who is interested in finding the best "bang for his buck." He wants to find a grocer who is reliable and consistent with the quality of their food products. Using the Ecoceries app, he is able to find a selection of fruit sold at Whole Foods to fit his needs. He goes to the store and uses the barcode scanner feature to check what locations he may find cheaper fruit. Based on the ratings it received, he feels like he can trust the fruit selection at Whole Foods and plans to continue to purchase food items from there.

These three consumers embody the possibilities of the tasks that we hope Ecoceries can accomplish.

Appendix

My Account Page
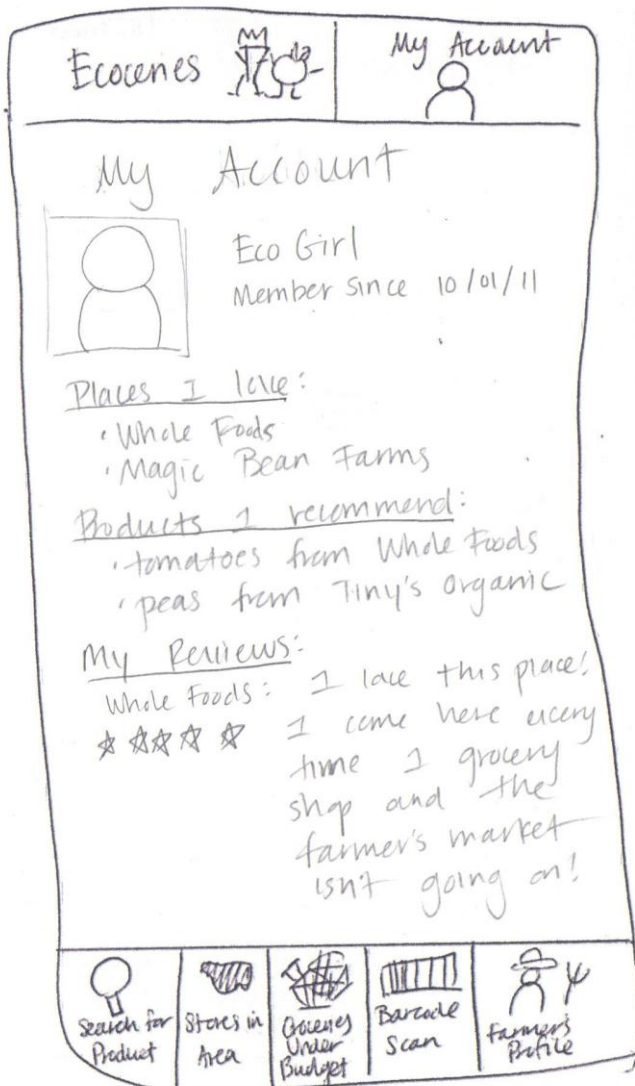
The My Account page features information about the user, such as user name, how long they have been a member of Ecoceries, places they like to buy their groceries, products the user would recommend to other users of the app, and any reviews the user has written. It also features a picture of the user if they wish to display one. The My Account page makes using our app more personal, and connects users with their grocery shopping in a whole new way.

Each view always shows the Ecoceries button and My Account button at the top of the screen. This allows the user to quickly and easily access the home menu or My Account screen. At the bottom, there is a toolbar that provides the user with buttons that will take them to Ecoceries main features. Users can switch the Search for Product, Stores in Area, Grocery Under Budget, Barcode Scan, or Farmer's Profile pages just by tapping the buttons available.
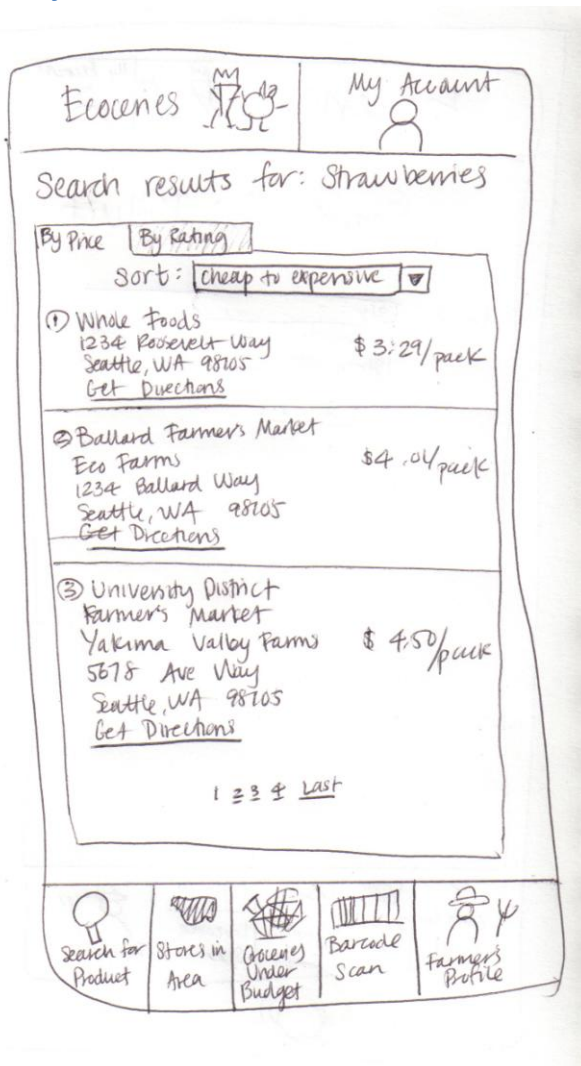
Initial Search
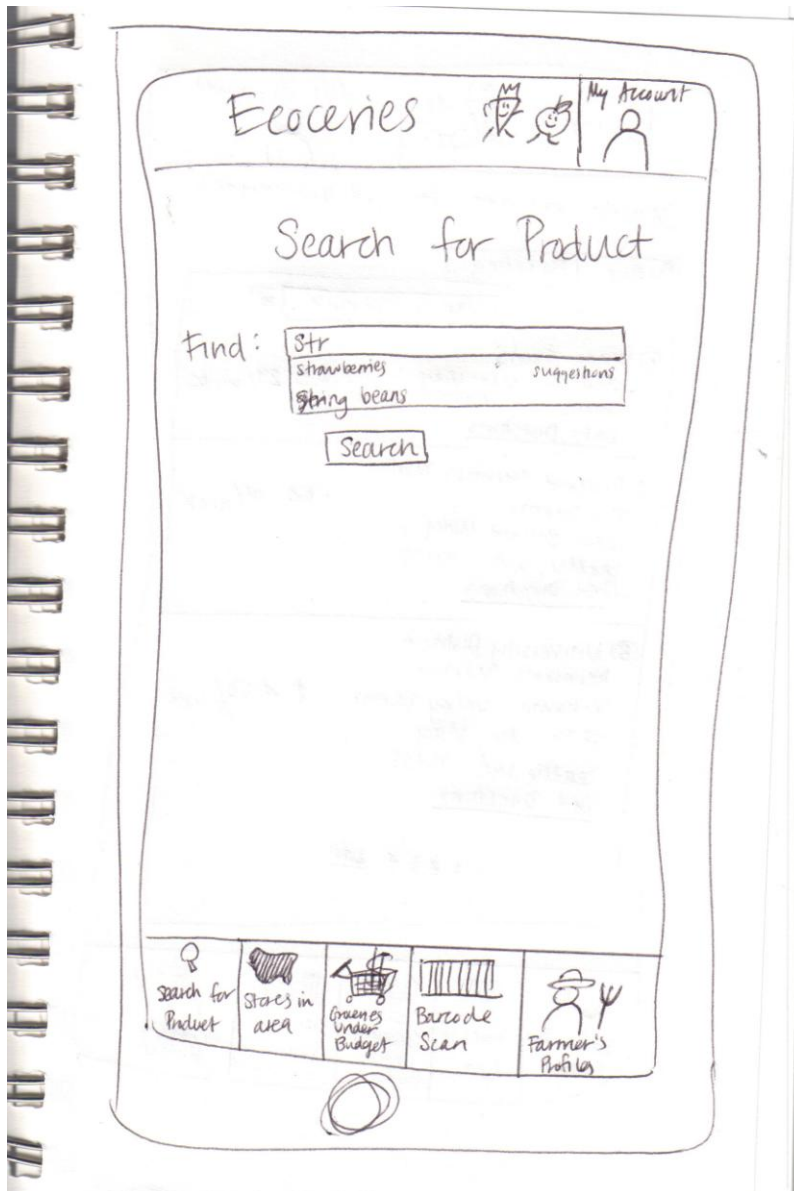
Users will often times want to find the product they are looking for by typing in the name of the product. The initial search screen features a Google-style search bar that allows the user to type in the product they are searching for. Searching will also have an auto-complete feature that will make it faster for users to find the product they are looking for, or suggestions if the product isn't found. Tapping one of the suggestions will replace the text in the search bar with the text of the suggestion. Clicking the search button starts the search for the user's product.

We chose this Google-style look because it was simple and didn't add a lot of clutter to our app. We also thought it would be easier for users to use because of the familiarity of Google-searching.

Search by Price

After clicking the search button when searching for a product, the user is shown a screen of results for their query. Initially, the results are displayed by price, and from cheapest to most expensive. Due to the amount of feedback we got about wanting to find products at low prices, we decided to make the default results be ranked by price. If users wish to see results sorted by most expensive to cheapest, there is a drop-down box near the top of the results which a user can click to change the sort. They can also click the "By Rating" tab to show results ranked by their rating, as opposed to price.

Each result is a store or market where the searched for product can be purchased at. The address for the place of purchase is also listed. Underneath the address is a link which users can click to get directions to the address. Using the GPS feature of the smartphone, directions from the user's current location to the store will be given. On the right of the address is the price for the product. If there are more results than can fit on one screen, there will be links at the bottom that lead to more pages of results. Again, this is similar to Google-searching.

Search by Rating

If a user wishes to see their search results by rating, they can access this screen by clicking the tab "By Rating" after inputting a search query. This page works much the same way as the Search by Price screen, except that instead of prices being shown to the right of the addresses, there is a rating for the product. These rating are based on input from other Ecoceries users. They can rate products using a system of stars (the more stores, the higher the rating) and by writing reviews. Under the rating, users can click a link that will take them to a Reviews page which will show reviews written about the product by other users.

Stores in Area
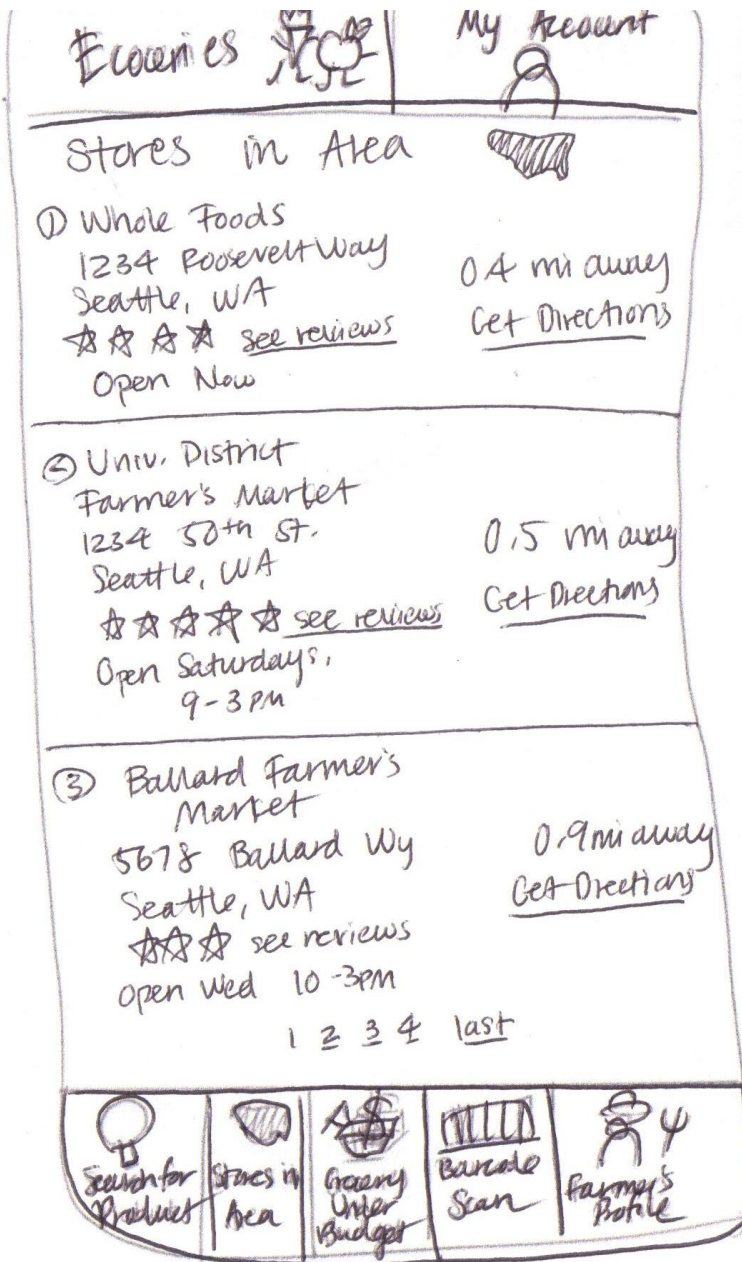
At the bottom of the screen is the button which users can press to search for stores and markets in their area. This feature uses the GPS feature that is in the smartphone and finds the closest markets and stores that sell eco-friendly products. Each entry shows name of the place, the address, reviews, store/market hours, estimated distance from the user, and a link to get directions to the destination. Like the products, users can rate store and markets and write reviews about the places. Clicking the reviews link will take users to another page to see reviews about the store/market they have chosen. Clicking the get directions link will give users directions to the selected store/market.

Map Screen
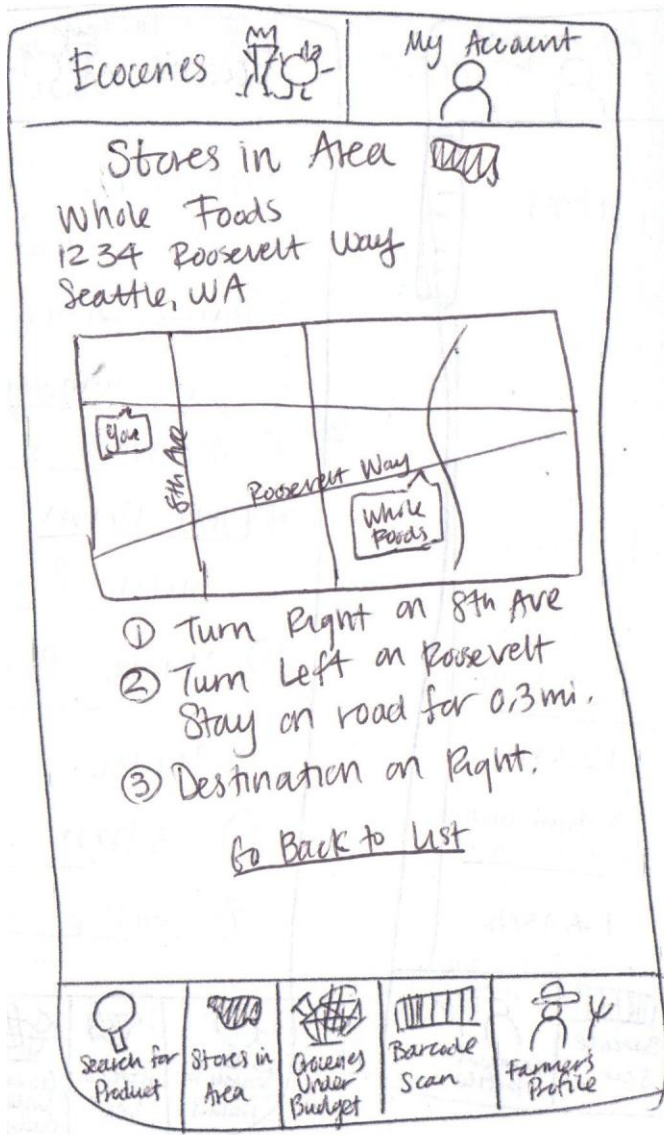
After clicking the get directions link from the product search or store in area screen, users are directed to this page which shows the address of their store of choice, a map to their destination, and turn-by-turn directions to reach their destination. At the bottom of the directions is a link to return to the list which they were viewing.

Scanner
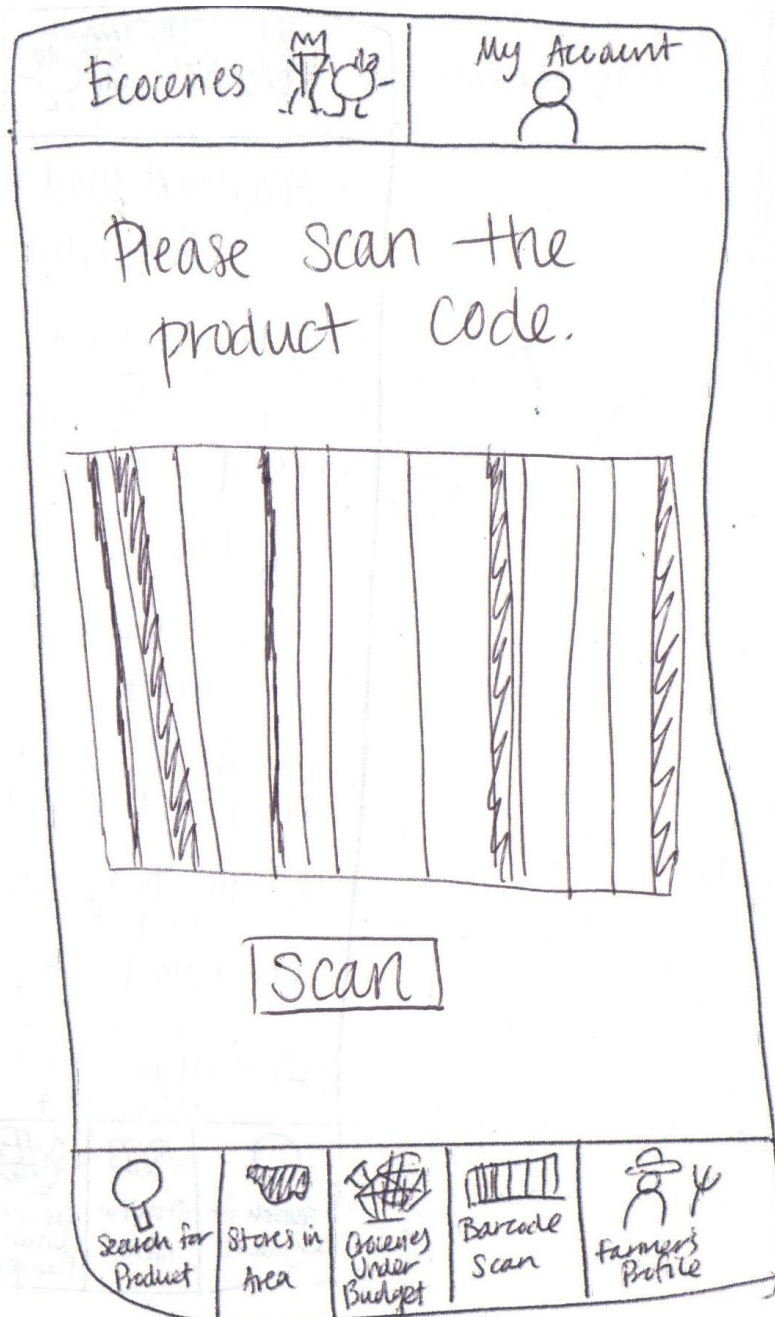
While out grocery shopping, users may want to know what the product is they're currently looking at, or see if there are competitive prices for the same product nearby. Our app features a scanner which allows users to scan the barcodes on products and see what the product is and where they can find it elsewhere. This feature would employ the use of the smartphone's camera. Once users have focused on the product barcode, they can press the scan button on the screen which will read in and analyze the barcode.

Scanned Product
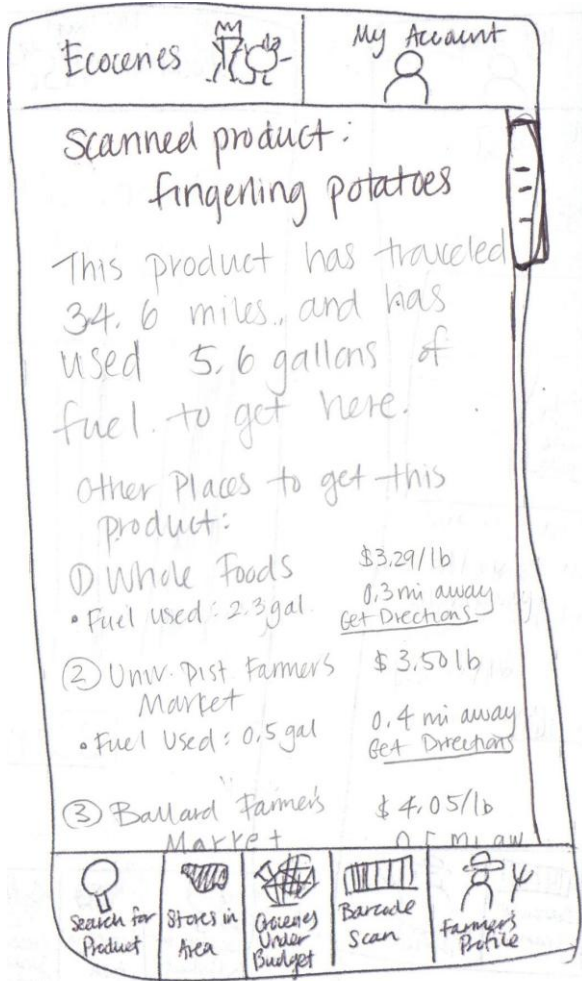
After scanning in a product, a page will appear that shows the user what the product is and information about the product. Information about the origins and travel of the product will be shown so that users can know just how local and fresh their products are. It will also give users peace-of-mind if they are trying to support local farmers. Underneath this information will be a list of other places to purchase this product. Under the name of the other place is a calculation of how much fuel would be used to get to the destination. This will let users see if going to the other place to buy the product is worth the cost of the trip. On the right of each other place is also the price of the product, the distance to the other place, and a link to get directions. All of this information together enables users to make informed and cost-effective decisions on where to buy their groceries, relative to their current location.

If there are many other places to find the product, a scroll bar will be displayed on the right side of the screen to allow users to search through the list of possibilities.

Farmer Profiles
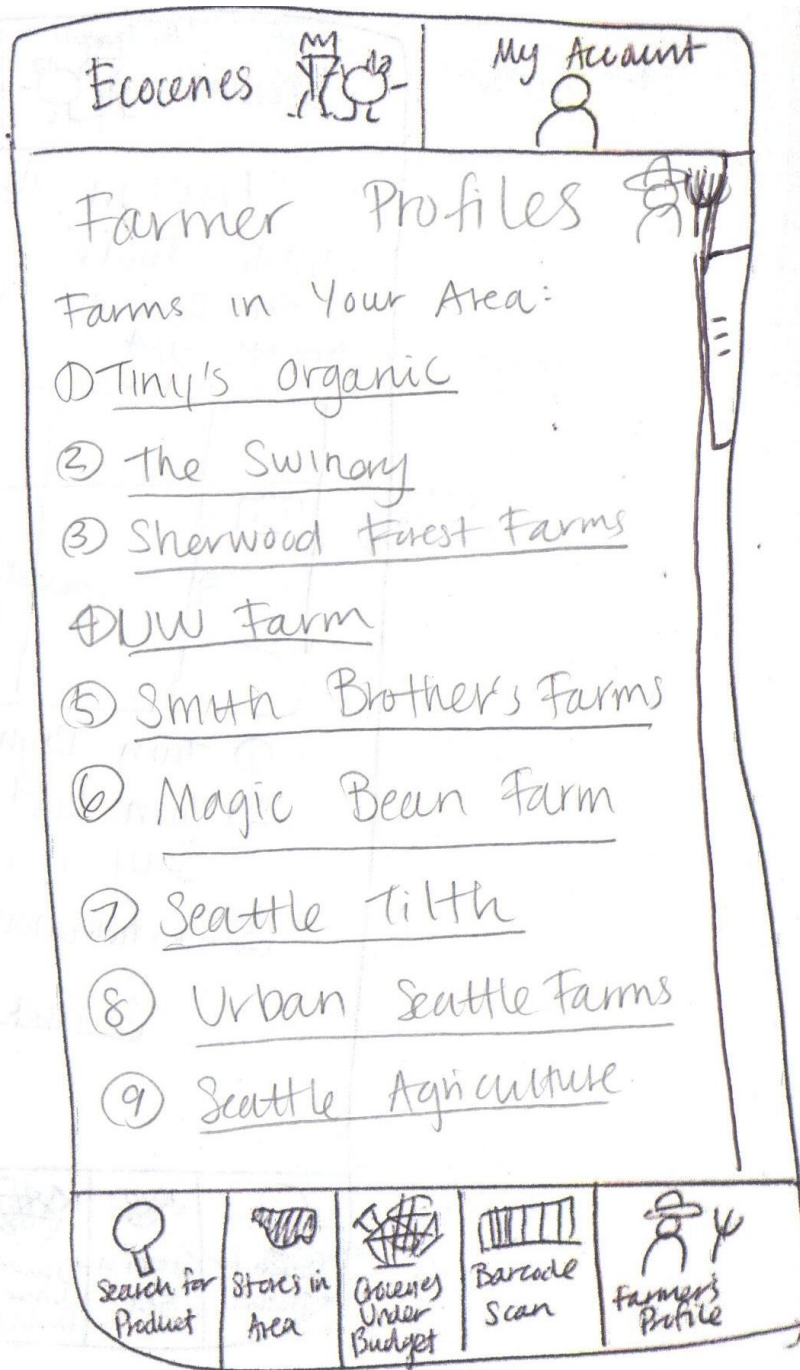
Our app strives to help make it easier for consumers to support local farmers, so another feature of our app is a list of farms in the user's area. This can also be accessed by clicking the right-most button at the bottom of the screen. When clicked, the user is shown a list of farms nearby, which all happen to be links. By clicking a link, the user is taken to a more in-depth look at each individual farm.

Individual Farmer Profile
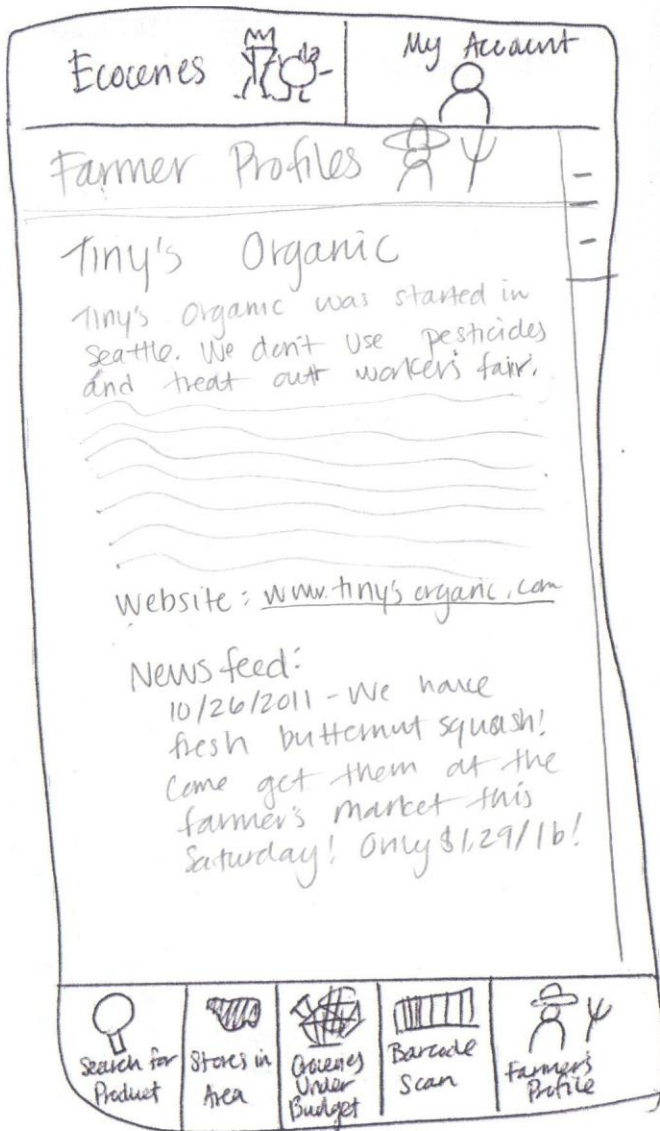
Each featured farm will have a profile to go along with it. When a user clicks a link to a farm from the Farmer Profiles screen, they are taken to this page. The name of the farm is displayed over a description of the farm. The description will oftentimes include the history of the farm, farming practices, and more information about their produce. If the farm has a website, a link will be displayed after the description. Also, if the farm uses a newsfeed feature, that will also be shown. This will let customers know about produce that will be going out soon, or sales that are going on. If there is a lot of information about the farm, a scroll bar will be displayed on the right-side of the screen to allow users to scroll through the information.