Consumester

Interactive Prototype Report
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Problem and Solution Overview

Is the item you're ready to dispose recyclable? With so many rules, restrictions, and guidelines, this question is becoming harder and harder to answer. Finding such information is not easy and often times a person places more value on saving time by throwing items in the trash than upon researching the correct disposal method. For the same reason, most people do not keep track of their personal consumption habits and do not think about the environmental impact of the materials they purchase.

Consumester's mission is to reduce the environmental impact of individuals by improving personal consumption habits. A mobile application that connects users to their consumption statistics and shares proper recycling information will allow people to realize and ultimately improve their consumption practices. To accomplish our mission, we designed an application that does three important things: encourage better consumption habits through a points system, encourage the reuse of items, and provide adequate recycling information for items.

Tasks

Our tasks highlighted each of the three important functions Consumester supports.

Task 1 (easy):

People often don't know whether or not an item is recyclable, and if so, how to recycle it. People might simply throw an item away if they are unaware of the proper recycling method or if the method is inconvenient. They also might not want to deal with the hassle of looking up specific recycling information, especially for items that require unique recycling practices (e.g. rechargeable batteries). Task 1 asks a user to determine if an item is recyclable and if so, to find a recycling center to take the item.

Task 2 (medium):

Many times people have items that are perfectly usable but aren't of interest to them anymore. In this case they often throw these items away instead of finding someone who could use them. Even if they could potentially find someone who would use the item, it may be inconvenient to connect with this person and thus the item will be thrown away regardless of the potential for further use. Conveniently connecting people who will reuse these kinds of items with people giving them away is a way to promote the reuse of items. Task 2 asks users to advertise an item to give away.

Task 3 (difficult):

People don't often realize how they are effecting the environment. Many times people could be much more environmentally friendly if they were conscious of their potential effect. One way to do this is by increasing awareness of the effects people's decisions have in regard to disposing items. Currently it would be inconvenient and most people are not willing to go out of their way to track their consumption. Task 3 asks users to add purchases to Consumester and track their impact score.

Interface Revisions

Based upon the results of our usability tests, we decided that Consumester's consumption tracking feature needed to be more interactive and visual. We previously used graphs to display consumption

statistics (Figure 1). This approach lacked excitement and feedback. To combat this issue, we introduced a points system (Figure 2). When users perform environmentally-friendly actions, such as recycling items or posting items for give-away, they are rewarded with points. Similarly, purchasing environmentally unfriendly items results in point deductions (Figure 3). The notion of points is very intuitive and provides an instant feedback mechanism. It also promotes competition when users desire to have the highest point total. By no longer displaying graphs and instead using an icon and points feedback system, we believe we have made Consumester much more simple, user-friendly, and enjoyable.
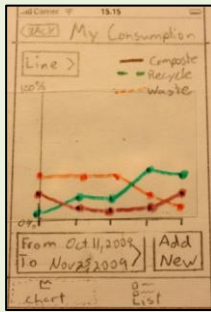
Figure 1 - Consumption stats

Figure 2 - Points system

Figure 3 - Negative total possible

Revisions for Task 1

During our usability tests, we found that users became confused trying to find how to recycle items from an item's details page. The tab at the bottom was too difficult to find (Figure 4). As a result, we decided to remove the tabs from that page and instead added a button to the recycling information just below the item description (Figure 5). This dedicated button is the first thing a user sees and is the easiest to get to since it likely contains information the user wants most.
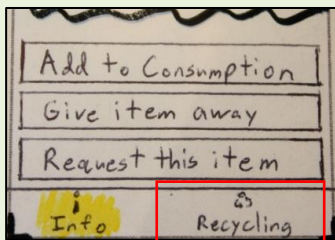

Figure 4 - Recycling tab is too small, not prominent

Figure 5 - Recycle option is first button seen

Revisions for Task 2

To better support task 2, we made a few minor adjustments to the prototype. From our low-fidelity usability testing we learned that the locations of some of our features needed to be changed to alleviate confusion. For example, in our first prototype the button to change contact preferences was below the Notes field (Figure 6). Users thought they should type their contact preferences into the Notes field before they noticed that a dedicated button exists. To fix this, we moved the button above the Notes field and also made it an attribute-value button (Figure 7 A). We also added a prompt to suggest to users what to type in the Notes field (Figure 7 B).

We also realized from our usability tests that we had not thought about the pickup location of an item that users are giving away. Should the item's location be dynamic (e.g. with the user) or static (e.g. at a predetermined location)? We added an option to specify this to remove this ambiguity (Figure 8).

Our usability tests also informed us that we should allow users to post multiple pictures of the item they are giving away. We added a button for this, but did not implement the functionality for this prototype (Figure 9).
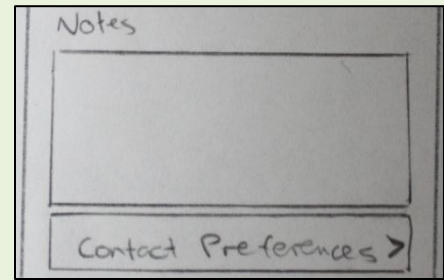

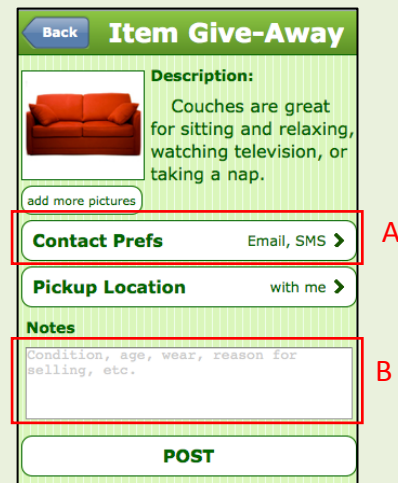
Figure 6 – Dedicated button below lead to ambiguity

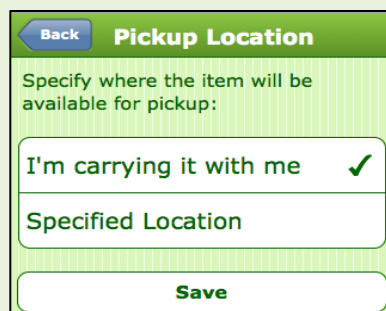Figure 7 – Adjustments to give-away page

Figure 8 – Item give-away location

Figure 9 – Add multiple pictures

Revisions for Task 3

We significantly changed the functionality for task 3. Initially we had this section titled "Track My Consumption" (Figure 10). We changed this to "My Impact" because the word "Consumption" sounds unpleasant and "My Impact" sounds more proactive (Figure 11). We want to focus more on how individuals impact the environment relative to their recycling habits. Instead of giving them this feedback through hard-to-read graphs (Figure 1), we established one point system called "Impact Points" (Figure 2, Figure 3). These points are accumulated and lost through various actions throughout our interface.

Task 3 still revolves around entering in items that have been used. This can be done in multiple ways, but is most conveniently done through the image capture of receipts. By getting rid of the graphs, we simplified the output to the user. If we had more time, we would probably still include some graphing functionality so users can see trends. In our itemized list view of a receipt, each item is listed and the applications shows how it will affect your impact points if you add the receipt to your impact (Figure 12). Each item can be expanded to view its components as well (Figure 14). Now that we have simplified output in the form of a numerical impact value for each item, it is no longer necessary to sort the list (Figure 13) because the output contains less data (Figure 12). Similarly, we removed the "visual" and "list" tabs at the bottom of the receipt breakdown page of our Lo-Fi prototype (Figure 15) because we no longer need a graph because we now are only concerned with points.
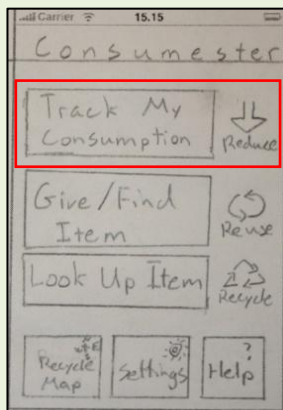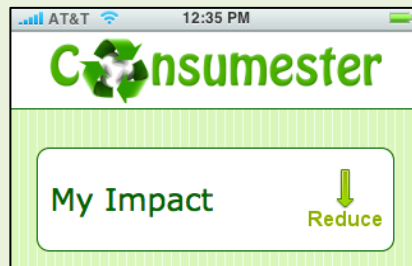
Figure 10 – Lo-Fi prototype home screen

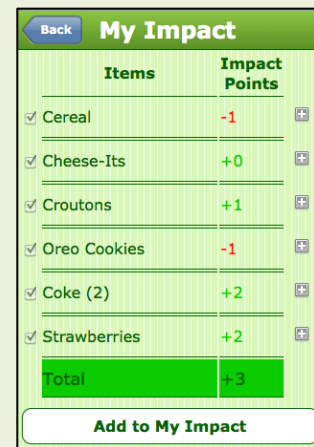Figure 11 - Text from Figure 10 changed
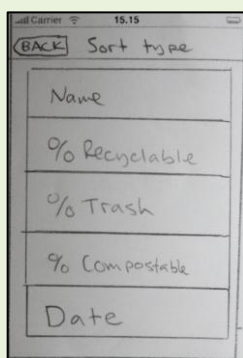
Figure 12 – Receipt breakdown

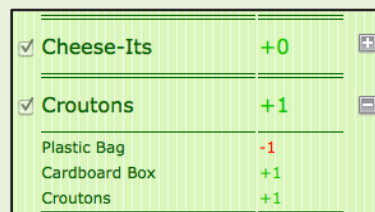Figure 13 – Sorting from Lo-Fi prototype dropped

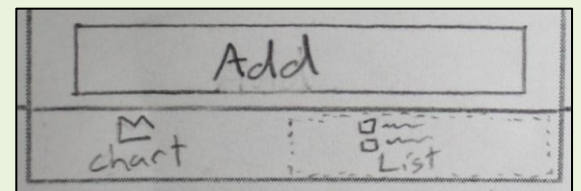Figure 14 – Individual item breakdown

Figure 15 – Tabs at bottom of receipt breakdown dropped from Lo-Fi prototype

Prototype Overview

Overview of Implementation

Consumester's high-fidelity prototype is implemented inside a simulated iPhone device (Figure 16). By encapsulating all the interactions within this pseudo-iPhone frame, we add context to the prototype. The prototype illustrated many iPhone-like themes and features, such as curved, attribute-value buttons ([Figure 7 A](#)), and Back buttons (Figure 17). We also include icon-assisted tabs to allow additional functionality for a feature without having to switch to a new page, such as our four methods of item search: image capture, textual search, bookmarks, and recent items (Figure 18). The selected tab is highlighted to notify the user of the mode they are in. We simulated all of these features using a combination of HTML and CSS.
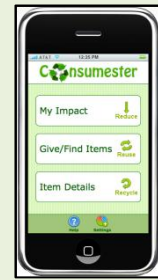

Figure 16 – iPhone frame

Figure 17 – Back button

Figure 18 – Icon-assisted tabs

Scenario 1

After months of use, Annie has noticed that the rechargeable batteries in her point-and-shoot Sony digital camera are no longer able to hold a charge. Her batteries are the standard AA size, but are

Figure 19 – Weird battery symbols

labeled with symbols unknown to Annie such as "600mAh" and "NiCd" (Figure 19). Annie wishes to dispose of the batteries, but she is unsure whether they can be recycled and if so, where she should take them to be recycled. Annie opens up her Consumester application on her mobile device. From the home screen, Annie presses "Lookup item" and decides to use the image capture feature. Once Consumester recognizes her rechargeable battery, it presents Annie with a description of the battery. Annie sees that her batteries are indeed recyclable but notices that they must be taken to a specialized recycling center. Annie clicks the button "Find nearest location" button and is presented with a map which shows her location in relation to the closest recycling centers she can take her batteries. Annie clicks on the center closest to her location, and selects "Get directions" in the tooltip, which redirects to an external directions service like Google Maps or MapQuest.

Scenario 1 Execution

The consumer begins by selecting "Item Details" from the home screen to lookup information about a specific item (Figure 20). This opens the image capture page and the consumer clicks on the Capture button to take a picture of the batteries. The Item Description page opens and has a button menu with several options. The consumer clicks the "Recycle This"

Figure 20 – Item Details button

button ([Figure 5](#)) which brings up a recycling information page about the item. If the item is recyclable, there is a button enabled called "Find local recycling centers" that leads to a map interface with the local recycling centers displayed ([Figure 21](#)).
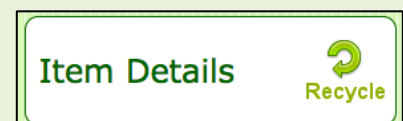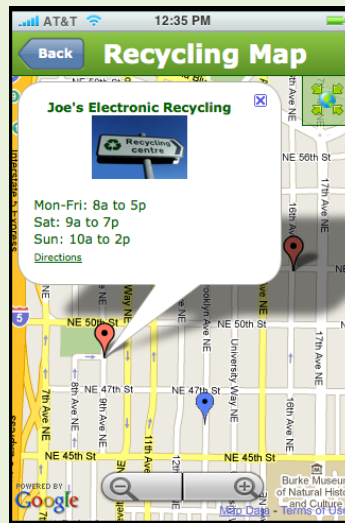
Figure 21 - Map

Scenario 2

Stephen's girlfriend April calls him on Saturday to let him know she is going to pick up a 12 pack of beer for them to enjoy while they watch the Husky football game. Midway through the game, April accidentally spills her beer on Stephen's oldest couch. Stephen has been considering getting rid of this couch for a while now and April's spill finally convinces him that it is time. At first Stephen is considering multiple options for how to get rid of his couch, such as taking it to his local dump, but then he realizes his Consumester application has the perfect solution. Stephen takes a picture of the couch and posts it for give-away with a note that there is no visible stain if someone flips the cushion over. He also specifies that he wants any interested parties to be able to contact him via telephone. The next day he receives a call from a woman named Claire who is looking for a couch and lives 1.5 miles away. Because she is willing to come get the couch with her truck, Stephen gives Claire his address and later that evening the transfer is successful. Stephen is happy that he was able to dispose of his couch without hassle and without adding anything to a local dump.

Scenario 2 Execution

First the consumer begins by selecting "Give/Find Items" from the home screen (Figure 22). This brings the user to a sub-menu with four options: "Give away an item", "Browse local items", view "Items I'm giving away", and review "Items I want" (Figure 23). After clicking "Give away an item" (Figure 22), the user captures a picture of the couch and Consumester presents a detailed item give-away page (Figure 7). On this screen the consumer can specify the condition of the couch in the Notes field and adjust his contact preferences (Figure 24). Finally, he clicks on "Post."
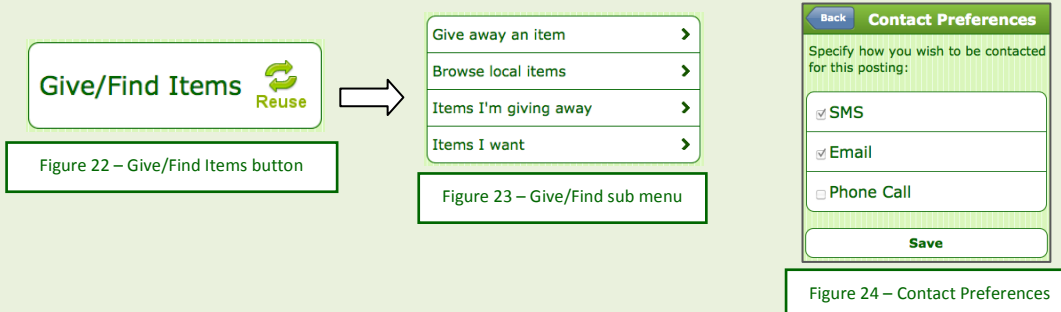

Figure 22 – Give/Find Items button

Figure 23 – Give/Find sub menu

Figure 24 – Contact Preferences

Scenario 3

Jake's neighbor Cecilia mentions that the amount of trash she has seen on the sidewalk in their neighborhood has been increasing since she moved in eight months ago. Jake realizes that his trash has been increasing also and he is not sure why. He remembers that he used the receipt recognition feature of his Consumester application to document all of the materials for the items he purchased, so he opens Consumester and clicks on "My Impact". Jake instantly realizes that his impact points are negative and determines he is not properly recycling. He decides to be more conscious of how he affects the environment. Therefore, the next time he goes to the store Jake takes a picture of his receipt and notices that what he bought was environmentally friendly. Consumester rewards him by adding +3 impact points to his total. After inputting more receipts, looking up recycling locations, and posting items for give away, Jake's total impact points are now positive. He feels great about having a positive impact on the environment once again.

Scenario 3 Execution

The consumer begins by selecting "My Impact" from the home screen (Figure 11). This brings us to the My Impact page which shows the current impact points (Figure 2). The consumer then clicks "Add New Impact" which opens the image capture page (Figure 24). The consumer takes a picture of a receipt and is automatically brought to a list view of all items on that receipt (Figure 12). Each item, which can be broken down into its components with the (+) button on the right (Figure 14), displays if it is environmentally friendly by the measure of its impact points. The total net effect on impact points is displayed at the bottom of the page. The consumer then clicks "Add to My Impact" (Figure 26) and is prompted with a confirmation asking if that is the correct action. Clicking "Yes" takes him to the initial "My Impact" page with updated impact points, whereas clicking "No" goes to the previous screen.

Figure 25 – Receipt capture

Figure 26 – Total / Add

Development Tools

Each member of our group took a slightly different approach to develop our prototype. Patrick has access to the Adobe CS4 suite, so he did his development using Dreamweaver. He also utilized Photoshop for advanced image adjustments. These tools gave Patrick a solid development environment and were extremely helpful with syntax highlighting, code formatting, and similar features. Additionally, Dreamweaver has a built-in FTP feature that allowed him to easily save edited files to the project server. The downside of using Dreamweaver's FTP feature is that it sometimes overwrote changes that other group members were making. Dreamweaver does a poor job of versioning and doesn't attempt to merge at all. This resulted in a few headaches as Patrick accidentally overwrote other members' code.

Mike used vim for text editing which is useful for fine tuning html files and scripts, and GIMP for image manipulation. This allowed him to work directly with code and files. This is much less user-friendly than a high level program like Dreamweaver, but allows for fine-tuning and specific HTML and script manipulation.

Cullen also used vim for programming with its syntax highlighting features and GIMP for image manipulation. This allowed him to directly edit code and files in the web space, rather than have to upload and possibly overwriting the changes of others. With vim, we were not able to take advantage of the visual design of the page, but were able to have much finer control over scripts and dynamic content.

Unimplemented Features

Due to the time restraint of this assignment and the lack of web-development experience of the majority of the team, many features we designed for Consumester were left out of the high-fidelity prototype.

Figure 27 – Image capture

One major piece of functionality we did not fully implement is our search capabilities other than image capture. We did not implement textual-based search, bookmarks, or recent items because all of our tasks utilize the image capture feature (Figure 27). This was a choice made by the group to highlight the image capture feature of Consumester. We want the user to know that other item lookup capabilities exist, but because all three unimplemented features are secondary to image capture and are not required for the completion of any of our tasks, we did not implement the functionality. Similarly, we did not implement the ability to add bookmarks, but we do have a button in the interface for that purpose (Figure 28).

We also did not implement the Settings page of Consumester. If we had time and an urgent need to implement this page for the completion of our tasks, we would design it similar to the sketch in Figure 29. This screen allow the users to adjust their contact email address, or restrict the hours they will accept phone calls from people interested in items they have posted for give-away.

Figure 28 – Bookmark button

Our high-fidelity prototype does not have a Help page at this time. We believe the Help page is not critical to the completion of our tasks because the tasks are already heavily guided. If we did implement a Help page (Figure 30), we would include general information about Consumester, such as our mission. We would also briefly describe the three main areas of our application ("My Impact", "Give/Find Items",

"Item Details") briefly. We would also include a pointer to a web-based help screen with more information, such as frequently asked questions.
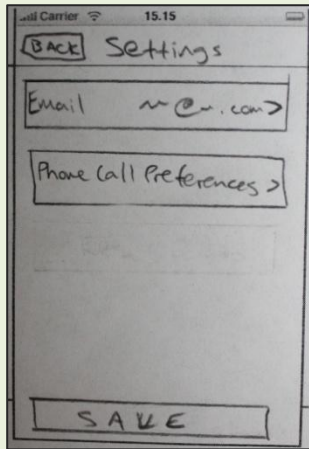

Figure 29 – Settings sketch
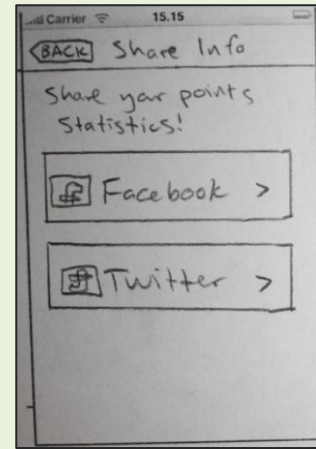

Figure 30 – Help Sketch

Figure 31 – Share sketch

The sharing aspect of our new points system is also not implemented. We wanted to add the ability to upload point statistics to Facebook or Twitter (Figure 31). This is another feature that would be fun for the user but is not critical for the completion of any tasks.

Features left out of task 1

In task 1, we did not implement the give or find buttons from the detail page of the batteries (Figure 32). The user needs to know these features are available, but implementing them is not particularly relevant to task 1, and we believe is suitably represented by task 2.

Figure 32 – Give this away

Features left out of task 2

In task 2, we did not implement the functionality to browse local items or view the items users have already posted or have requested (Figure 23). We made some sketches illustrating what we think these features would look like (Figure 33), but decided not to implement them for this prototype because they do not directly contribute to the completion of task 2. Also as mentioned previously, we added the potential to include multiple pictures of a single item when posting it for give-away (Figure 9). This is another feature we did not fully implement but we wanted to make sure the user knew it can be done.
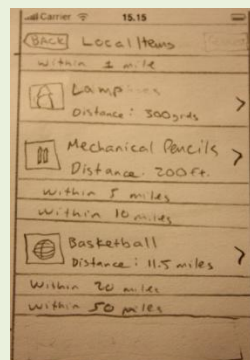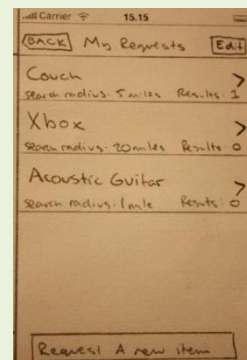

Figure 33 – Local items & requests sketches

Features left out of task 3

In task 3, we did not implement the list view of all items and receipts added to "My Impact" (Figure 34). We include a tab in our design to show that a user can view up to fifty of the past items they have entered previously, but this was not included in the high-fidelity prototype because we already include a list view for an individual receipt (Figure 12). This demonstrates a very similar functionality and design in the slightly smaller context of one receipt rather than the past 50 items.

Figure 34 – List view not implemented

Another element that was not implemented is the checkboxes on the list page after taking a picture of a receipt (Figure 35). These are important for the design because they allow a consumer to uncheck items that shouldn't be added to the impact. For instance, if I was shopping for myself but bought something for my neighbor as a favor I would not want to include that in my impact. This feature is disabled because it is not important for the completion of our tasks. The core functionality is still available and it is apparent that the design includes the ability to check and uncheck items. We also do not allow the individual items to link to their respective item details pages. This is because we provide an example of the item detail page and it is not necessary to provide a large number of other item details pages that are virtually identical.
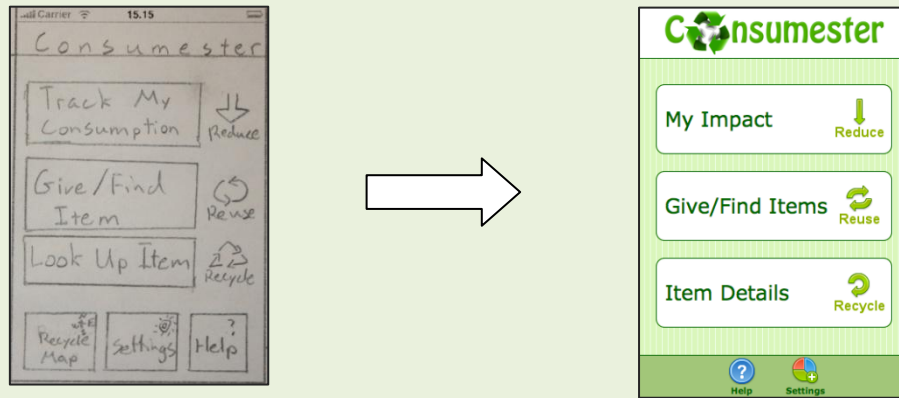

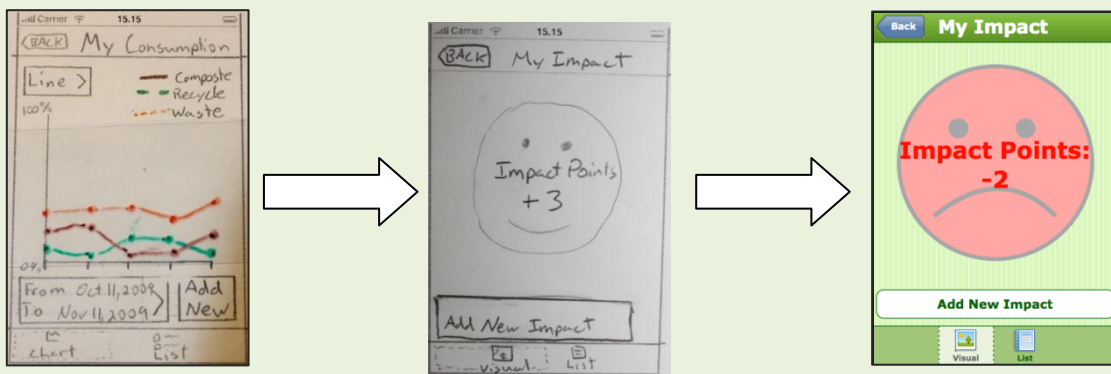Figure 35 – Disabled checkboxes

Appendix

Lo-Fi → Hi-Fi Prototype Revisions

Format: Lo-Fi Prototype → Revision Sketch (optional) → Hi-Fi prototype
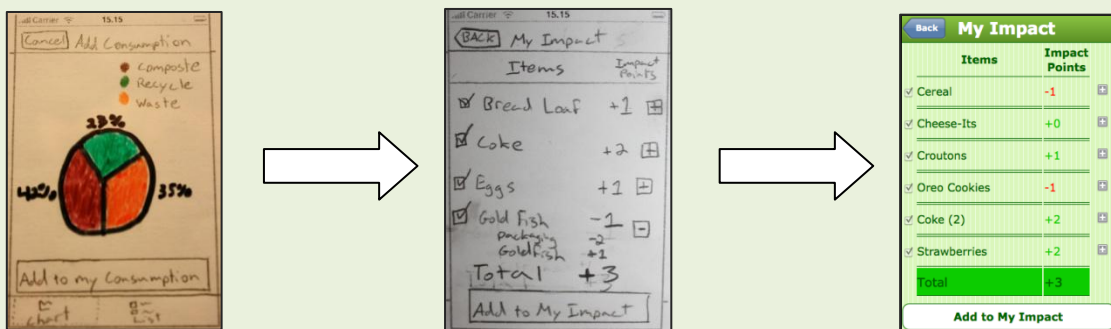
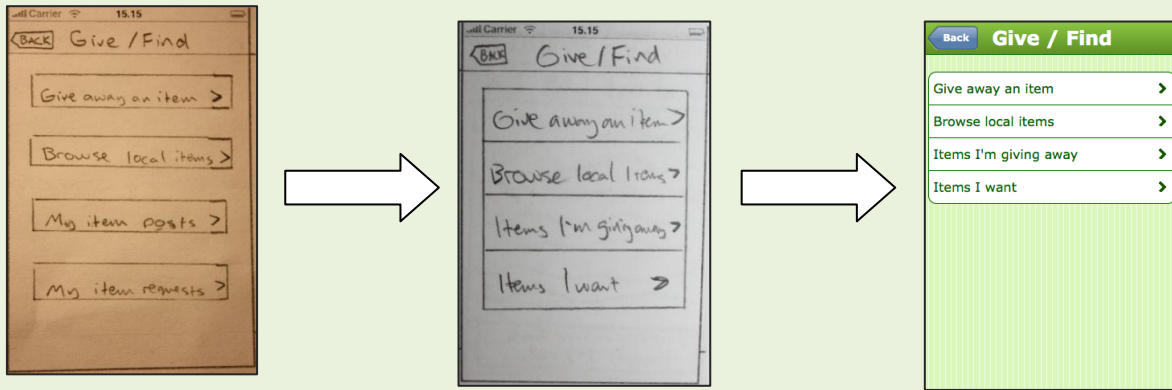Home Screen: changed button text, removed "Map" button
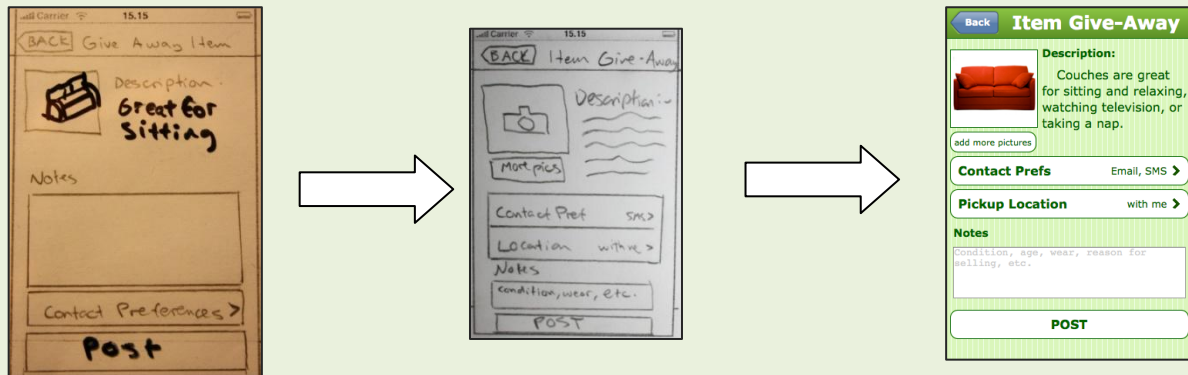

My Impact: Removed graphs, adopted points policy

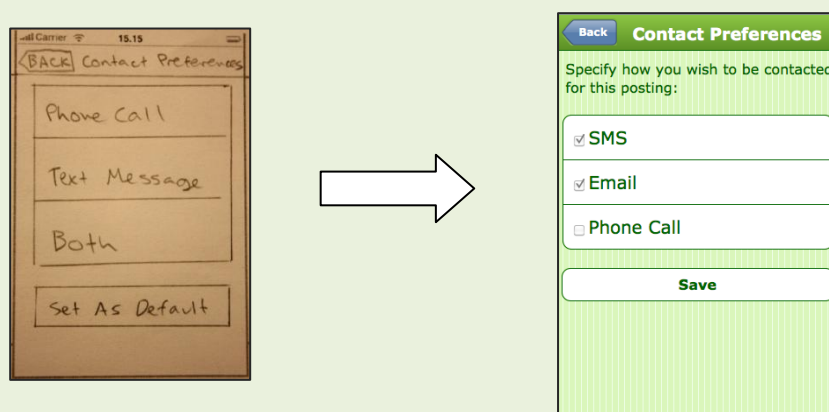Receipt details: Dropped graph and tabs, added points
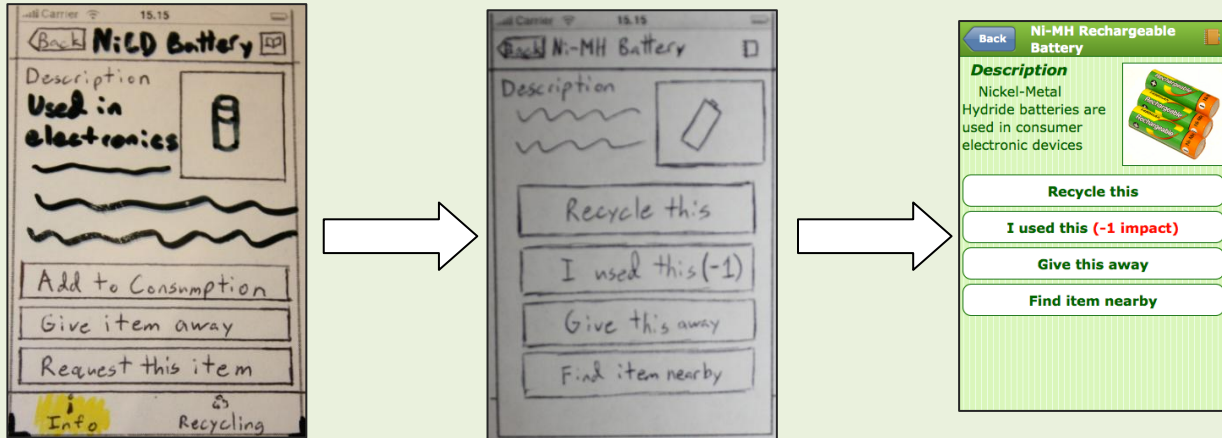
Give/Find sub menu: some button text changed

Give-away details page: Added "Location Preferences" button, moved contact preferences button up, added prompt in "Notes" field, added a "More pictures" button

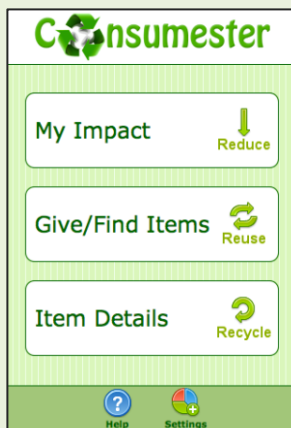Contact Preferences: changed to checkboxes

Item details page: Removed tabs, added "Recycle this" button, added points, changed button text
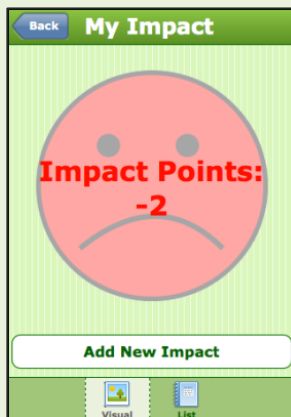

Screenshots

Home screen

"My Impact" button leads to My Impact page
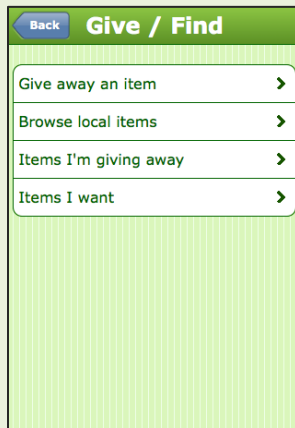
"Give/Find Items" button leads to Give/Find sub menu

"Item Details" button leads to Item lookup page with battery

My Impact page

"Add New Impact" button leads to Item Lookup Page with receipt

Give/Find sub menu

Back	**Give / Find**

Give away an item	>
Browse local items	>
Items I'm giving away	>
Items I want	>

"Give away an item" button leads to Item lookup page with couch

Item Lookup page with battery

Back	**Item Lookup**

Capture

Take a picture of the item you wish to know more about

Camera   Search   Recent   Bookmarks

"Capture" button leads to Battery Details page

Item Lookup page with couch

Back	**Item Lookup**

Capture

Take a picture of the item you wish to give away

Camera   Search   Recent   Bookmarks

"Capture" button leads to Item Give Away page

Item Lookup page with receipt
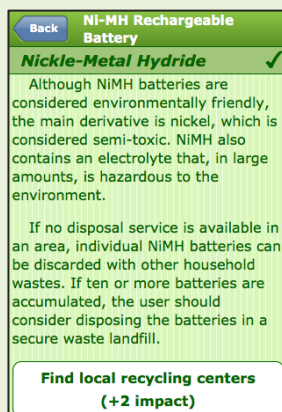

"Capture" button leads to Receipt details page

Battery details page

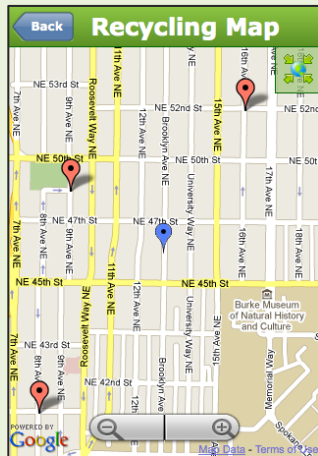"Recycle this" button leads to Battery recycling information page
"I used this" button adds the designated points to your impact

Battery recycling information page

"Find local recycling centers" buttons leads to Map

Map

Item Give Away page

"Contact Prefs" button leads to Contact Preferences page
"Pickup Location" button leads to Pickup Location page

"Post" button leads to Confirmation page

Contact Preferences page

"Save" button leads back to Item Give Away page with updated value

Pickup Location page

"Save" button leads to Item Give Away page with updated value

Confirmation page

"Yes" button leads back to Give/Find sub menu

"No" button leads back to Item Give Away page

Receipt Details page
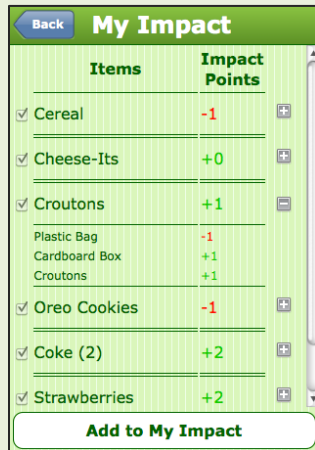
Expanding the + symbol leads to Expanded Receipt Details page

"Add to My Impact" button leads to a similar Confirmation page and updates your impact score

Expanded Receipt Details page

Clicking "—" here collapsed the expansion and leads back to the original Receipt Details page

"Add to My Impact" button leads to a similar Confirmation page and updates your impact score