1. Abstract

Freecycle.org is a community where users can donate and receive unwanted items. This report addresses the website goals, user personas, architecture, and mapping. It also assesses its usability principle considerations including errors and heuristic violations, accessibility considerations, user interface design, and design responsiveness. Lastly, a redesign of Freecycle is implemented.

1.1 Website Goals

Freecycle aims to keep items out of landfills by providing internet listing services to help people give unwanted items to others for free within their own local community, such as washing machines, computers, or couches. It also helps users find community groups nearby to donate items or search local items for free. The Freecycle Network is made up of thousands of groups with millions of members and is run by volunteers.

1.2 User Personas

Users on Freecycle are typically people who are moving or moved into a new neighborhood with a goal to give away items or find new items. Their frustrations could include not being able to deal with the items that they no longer need but that are still in good, usable condition. Users range in age from college students to senior citizens.

1.3 Architecture and Mapping

The website adopts a left to right movement eye follow and contains a top-down approach to information architecture organization with a hierarchical structure. It has a subjective organization scheme that is categorized by tasks and topics. It also has an exact organization scheme component where users can search for groups based on their geographical location. The site map can be accessed through the main navigation bar. This navigation bar can be accessed by any page in the website, except the store page. By hovering over the categories, the user is able to access the local (sub) navigation on the drop-down menu, which falls into the arrangement of a horizontal structural navigation. The navigation bar also contains a link for users to sign into their account.

In the body of the home page, users can search for a group near their geographical location, read a description of the website, see sponsors and advertisements (if the user is not using an ad-blocker), and follow them on Facebook and Twitter. The footer contains only the organization's copyright.

2.1. Usability Principle Considerations

Freecycle.org satisfies the design principles of visibility, consistency, easy reversal of actions, reducing short term memory load. It also does not satisfy the principles of universal usability, informative feedback, designing dialogs that yield closure, preventing errors, detailed in section 2.2. It has a consistent color scheme and user interface that provides visibility for the user to navigate and perform tasks, with the exception of the store page. It's also easy for the user to add and delete posts, making it easy for the user to reverse their actions. Freecycle reduces short term memory load by allowing users to create an account so they do not need to input their information every time they use the site.

2.2. Errors and Heuristic Violations

The severity is categorized as low, moderate, or high. Low severity means the task can be easily completed by the user with the heuristic violation present, but would look more aesthetically pleasing with the violation fixed. Medium severity indicates that the task can be completed without the heuristic violation fixed, but would be more efficient and effective with that fixed. High severity indicates that the heuristic violation involves a missing function that is crucial for the user to to complete the task and should be implemented or fixed as soon as possible.

H-8: Aesthetic and Minimalist Design

Freecycle's login page allows users to sign into their account, sign in with Facebook, create a new account, or retrieve a forgotten password. A good, usable design should only present information that is useful and relevant without unnecessary elements. However, this design is cluttered and visually displeasing, violating the Aesthetic and minimalist design with medium severity. A simplified and more attractive log in page should be implemented.

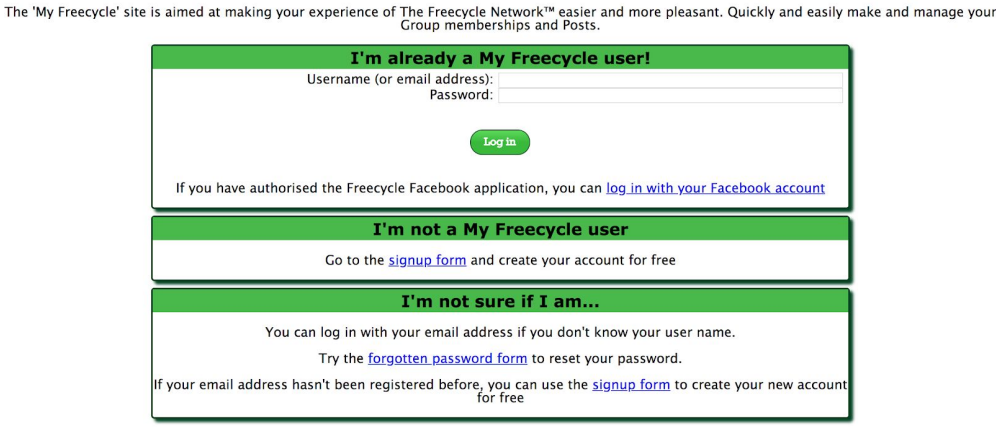

Fig. 1. Login page does not adhere to a minimalist design.

H-2: User Control and Freedom

The "about freecycle" sub-link on the navigation bar is extremely long and extends past the main search bar. The user is unable to select any of the links beyond "volunteering." This violates the user control and freedom with high severity, and should be fixed by making sure all the links in the menu are accessible.

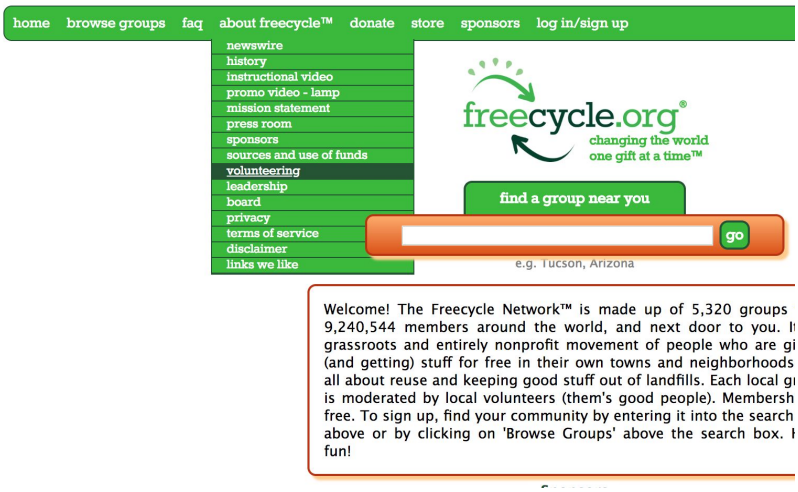

Fig. 2. User cannot select links in the drop-down menu.

H-6: Recognition Rather than Recall

The navigation bar on the "store" page has inconsistent content and style with the rest of the website's pages. The lack of consistency in visual design might confuse users, making it difficult for them to navigate through the website. The severity is moderate and can be fixed with implementing the same header design as homepage.

Fig. 3. Navigation bar on store page.

H-1: Visibility of System Status

For the t-shirt sizes available, some of the shirts offer small to large sizes, while others offer only one size. It is unclear whether the shirt sizes are out of stock, or if the system accidentally cut out other sizes available.The severity is high and can be fixed by implementing different options for all shirt sizes. If a shirt size has run out, the color of the text should be an unclickable grey font so users know that the size has run out.

Fig. 4. Selecting t-shirt sizes.

H-5: Error Prevention

Freecycle members can donate or request specific items. However, there is no error prevention method when a user posts the location of an item, allowing users to type in any string. Figure 5 shows a user entering in "dfdf" for the location. This heuristic violation also applies to posts, since users can donate spam items without verification. The severity is high, and it can be fixed by checking if the location is valid and adding a security check to ensure items are legitimate.

Fig. 5. Users can post non-existing items.

2.3. Accessibility Considerations

WCAG 2.0 guidelines were used to evaluate the accessibility.

The perceivability has a success criteria of AA because every image has an alt tag with alternative text, which are useful for people who are visually impaired and use screen readers. However, the website loads many images and runs JavaScript from external websites. This drives up the network traffic, and does not consider users who may be limited on cellular data.

The operability has a success criteria of AA because there is no heading level hierarchy on the Freecycle website. This prevents people who cannot use a mouse from navigating to the headings. However, the content was easily to understand for navigation.

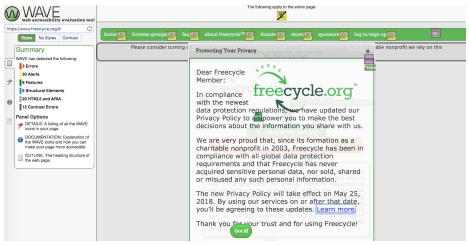

Fig. ___ WAVE (Web Accessibility Evaluation Tool) report on freecycle.org.

The operability has a success criteria of A. According to WAVE, Freecycle.org has up to 12 contrast errors (see Fig. __.). Underneath the search bar, the website has an example of typing in search locations, with light grey text behind white background. Some users are unable to read text without sufficient contrast between text and background.

The robust has a success criteria of A because some users need to enlarge web content in order to read it. When enlarging the text on the Freecycle website, users must scroll horizontally to read. However, many users cannot effectively read text that requires horizontal scrolling, and some disabilities make this nearly impossible.

2.4 User Interface Design

A good user interface design prioritizes clarity above all else. This means that a user will be able to understand why the website is useful and predict what will happen when they take certain actions. Freecycle does not support clarity through its excessive number of navigation bar options with numerous drop-down menu links. It overwhelms users and may confuse a new user by increasing the cognitive load. However, the UI maintains consistency throughout the color scheme, background color, and the rounded corners of the boxes that contain the UI elements.

A key component of UI design is also guiding the user's action—in other words, the user should know what the next preferred action is. The homepage contains a search bar that reads "find a group near you" above it. However, it is unclear whether the user can type in a state, city, or zip code. Some users may not read the text and try searching for a specific item, which is a familiar action on other sites.

Finally, the visual design and aesthetics of the website are outdated and cluttered. The drop-shadows on UI elements, such as the search bar, have been replaced in modern UIs with flat elements. The homepage contains several boxes, ads, text areas, and a navigation bar with 25 links; this visual clutter can be hard to process for a new user.

2.5 Design Responsiveness Over Different Devices

The Freecycle website is not designed for use on non-desktop devices. On a mobile device, the navigation bar remains the same width, requiring users to manually scroll over the screen to reach menu options. The text is not resized for mobile devices, which also forces users to pinch and zoom in order to read (see Fig. 7). The screenshots below show how the website looks on an iPhone 6S.

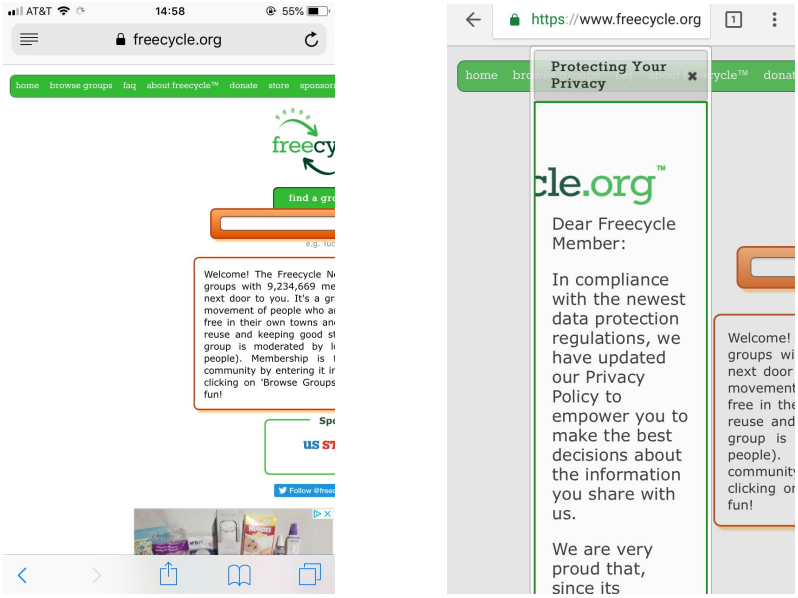

Fig. 7. Navigation bar and text are not resized on mobile devices.

Finally, because there is no responsive design built into the website, the load time on mobile devices is longer.

3 Redesign

3.1 Information Architecture

One of the main problems with the Freecycle website was the cluttered navigation bar, which made using the website difficult and confusing. First, the number of links was decreased, since there were a total of 25 links on one menu. Some links were renamed for clarity, such as “Find Your Group” instead of “browse groups.” Because a lot of the content in the links overlapped, many of the links were consolidated. For example, the “sponsors” link on the navigation bar was merged with the sub menu item “terms of service.” Decreasing the number of links also made all of the menu options clickable, since many of them had been inaccessible before. This helped fix the User Control and Freedom heuristic violation mentioned in section 2.2.

After the number of links was decreased, they were ordered in a way that organized the content more logically. First was the home button, which was changed from the word “home” to the Freecycle logo. Afterwards, the links were: Find Your Group, About, Donate, Store, and FAQ. Limiting the navigation bar to 5 links makes it easier for a user to find the desired page, reducing the cognitive load. The FAQ link was second option on the navigation bar on the original website, but generally, the FAQ comes last. The “Log In/Sign Up” link was moved to the far right section of the navigation bar for greater emphasis. The login button appears on the right on many websites, making it more familiar for the user. The links were ordered from most to least important; this follows a topical subjective organization scheme, in which information is arranged by subject matter.

The log-in/sign up page was also redesigned to improve usability. The new design contains two separate dialogs that allow users to either log into an existing account or create a new account. This is an audience-based subjective organization scheme, since it divides the content into two separate types of users: returning and new. The two dialogs also mirror the mental model of a sign-in page that many users have from visiting other websites. Redesigning this page helped address the Aesthetic and Minimalist Design heuristic violation discussed in 2.2.

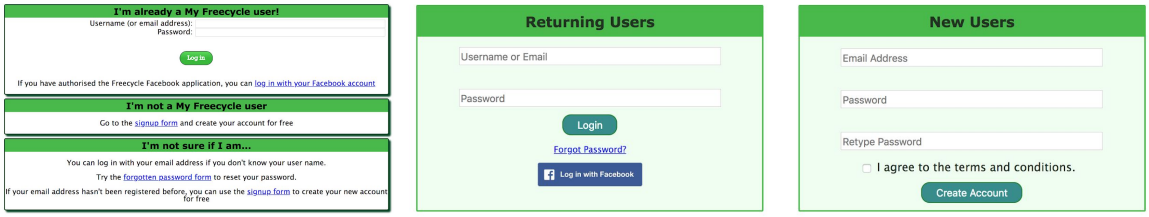

Fig x. Left: the original log-in page. Right: Redesigned log-in page.

3.2 Visual Design

The visual design of the Freecycle website was redone to have a more modern look and feel. The drop shadows on dialog boxes, search bars, and text areas were removed from both the homepage and the log-in page, since flat UI elements are much more prevalent. Using the Paletton color picker, a new color scheme that included lighter shades of green and teal was created to make the website more attractive and improve contrast.

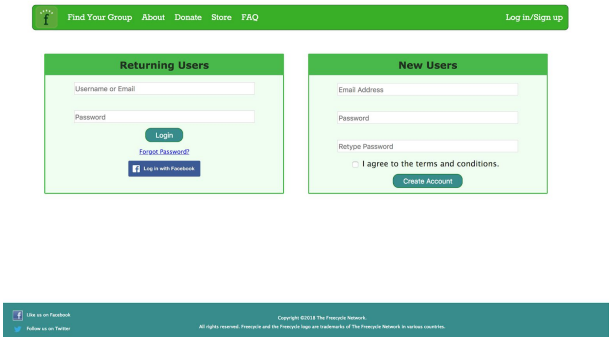

Fig x. Combination of green, light green, and teal in new color scheme.

The navigation bar was widened, and the font size of the navigation links was increased. This change improved the readability of the text, making it easier to communicate content with the user. The links were also capitalized, giving the website a more professional look. Readable, attractive typography is highly important to establish a brand and communicate with users; the figure below shows the visual changes made to the navigation.

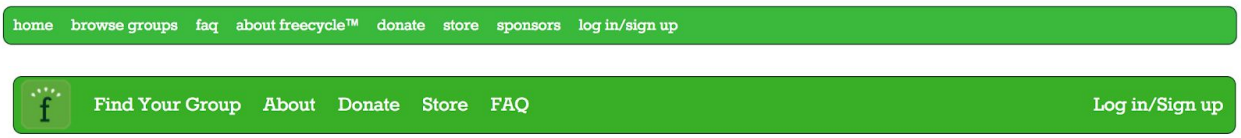

Fig x. Top: original navigation bar. Bottom: redesigned navigation bar.

The navigation bar on the Store page was changed to match the navigation bar on all the other website pages. This improves visual consistency among each page, making it easier for users to transition from one page to the next. Furthermore, unavailable sizes for apparel were changed to an unclickable grey font to help users understand the availability of certain items. These changes address the Recognition Rather Than Recall and Visibility of System Status heuristic violations discussed in section 2.2. Finally, the apparel options on the Store page were centered, rather than the original left-justified position, to provide symmetry.

3.3 Accessibility and Responsiveness

Accessibility

We made the visual design more accessible by changing the font sizes throughout the website, as well as the key elements on each page. On the homepage we added icons in the search bars, which help serve as a metaphor for the types of search queries that a user should make. Users cannot select some of the items on the drop down menu, so we changed how the page detects whether or not to show the hidden menu.

Responsiveness

The Freecycle website does not display a responsive design for mobile devices. Most people prefer to use their mobile device in portrait mode, so when websites don't include design responsiveness, users will ultimately have a different experience when using the site. Moreover, its common to style elements according to a proportion *(e.g width: 10%)* because by default, web browsers calculate the HTML based on the width of the device in its current orientation before to scaling the page with the proportional dimensions. This lead to content partially getting clipped and requiring that users scroll left and right or change their zoom in order to see a complete representation.

In order to make the freecycle website responsive, we started by changing how the *widest* elements on the page were displayed. First, we removed the titles from the navigation bar, and replaced them with a hamburger menu icon. Additionally, we left the freecycle icon on the navigation bar so that users can return to the homepage, with one click regardless of which page they are on.

4 Conclusion

The Freecycle concept is extremely useful for its users, but the website design would prevent many people from being able to easily learn and use the site. It has an outdated visual look, does not incorporate responsiveness, and has a cluttered and chaotic organization of information. The redesign addresses these issues, making it easier for a user to navigate and perform tasks throughout the website.

Sitewide

https://www.freecycle.org/

https://www.freecycle.org/about/

Current Issues

- <header> section
    - It is being used as a container for the logo
    - The navigation bar should be moved into here
- Drop down menu
    - items are all <a> instead of
    - Cannot select items at the bottom of the drop down
    - The height of each item should be increased
- Logo
    - Should float left and above navigation bar
    - Should link directly to home pag

In home page, under search example, change font contrast so readers can clearly see the direction format for typing in the search bar.

At the shopping page, change header to similar color theme and style as front page header and offer all shirt sizes, with unavailable items in unclickable grey font to keep consistency. In home page, enlarge options from the hamburger menu to avoid clutter.

/about/links

Added

```
<h1 style="width:80%">Links we like</h1>
```

Removed

```
<header id="main_logo" class="boxCenter">
```

Moved

No longer in navigation bar. Now it is used as a wrapper to link the logo to the homepage. How often will the user need to revisit the home page?

```
<a href="https://www.freecycle.org" class="menu_header " title="Home">Home</a>
```

Margins

Each of the items are styled to center themselves within their container. The problem is that they aren't inside of the same container, so they don't center themselves relative to the same space. They do not appear to be centered horizontally.

Overlay

The navigation bar uses a common aesthetic technique of rounding the corners of a rectangular box. When the user moves their cursor over an item, the background color should darkened, and the font color should turn green. The first and last navigation do not correctly clip

Padding & Margin

- The padding of each item should be increased
- The font size, and family, and lack of capitalization makes it difficult to read.

Other resources for us to use:
https://www.gloomaps.com/

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H-5. Error Prevention

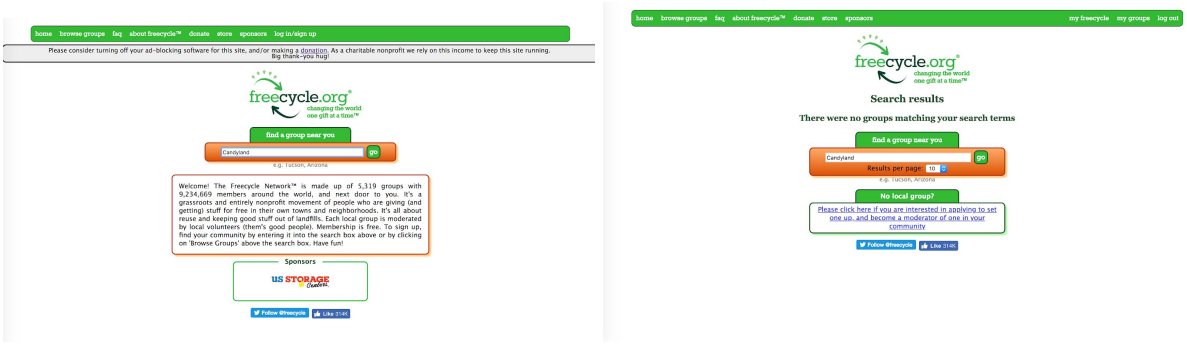

Figure __. Searching for a location-based group.

There is no error prevention mechanism put in place, allowing users to type in any location to find a group nearby and then potentially getting an error because the location does not exist. This violates the error prevention heuristic with moderate severity; it can be fixed by adding a drop down menu on the possible choices based on what the user is currently typing into the search bar.