

Human Computer Interaction

Project Report

201810- Spring 2018 - ITIS 6400-091

For the People by the People



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1. INTRODUCTION

Often we are restricted in helping each other by the availability of data, which is either present and we are not aware of it or its not viable. People are in need and there is an abundance of resources available to them, but they may not have the proper access to know of such resources when they need assistance. Often users rely on word or mouth, previous experience , or search endlessly on the internet. We have recognized the need for people to be able to gather the right information and get to the help they need. We want to provide them with the ability to bridge data and technology at the palm of their hands for whenever they need assistance or want to help others.

1.1 Problem Statement :

People in need are not able to connect to the people who want to help and the vice versa, there are various variables that play a part here like accurate data, transportation, accessibility of the available solutions, etc. We as a team have come up with a design to bridge the gap between people in need and people who can suffice the need and also include all latest technology possible in bringing the best solution out of it.

This is how we started our design journey :

1.2 Needfinding:

Data Gathering:

Data gathering is a central part of establishing requirements and of evaluation. The purpose of data gathering is to collect sufficient, accurate and relevant data, so that a set of stable requirements can be produced. So, we collected the raw data from Charlotte area, mainly concerning about -

- a) What are the most requested/needed resources in this area?
- b) How currently people find help for their needs ?
- c) How currently people help others with their needs ?

This data was then analysed, interpreted and the conclusions were drawn from it. This helped us in setting our user and design goals.

Data Gathering Techniques:

We used Triangulation investigation method to gather data. Which means that data was drawn from different sources at different times, in different places and from different people by using different data gathering techniques. This technique helped us gaining a wide perspective to the issue we were concerned about.

We developed interview questions and then ran multiple Interviews. We gathered data from:

- Interview with Tina Postel at Loaves and Fishes
- Brief Conversation with Kerry Burch at the County Health Department
- Semi structured interview with Senior Account Executive Mrs. Andi Garcia of AuntBertha.com, Charlotte.
- Direct observation in the field and interview of people who came to seek help in Jamil niner Student Pantry.
- Contextual Inquiry with Volunteers who are providing help in Jamil niner Student Pantry.

We recorded this data by taking notes, audio recording, video recordings and by taking photographs. The below information from internet also helped us in data gathering.

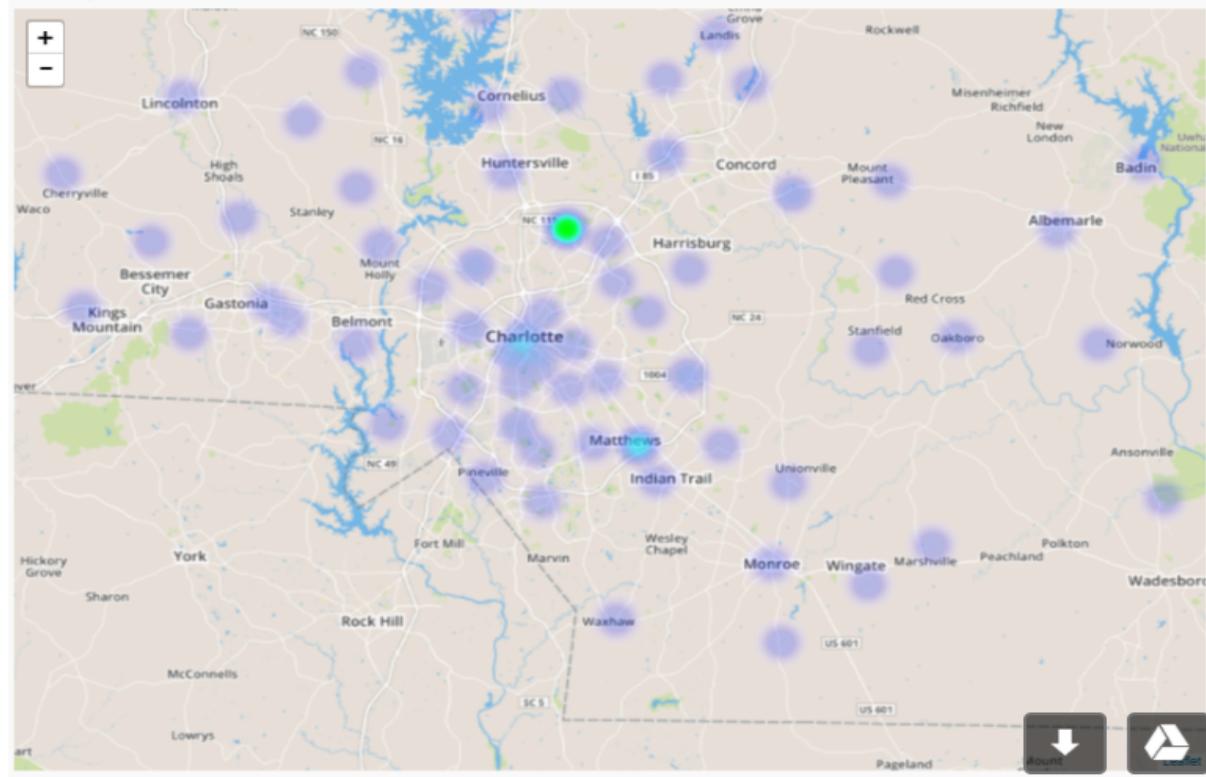
Last 90 days 'where' people are searching for resources. On 2/15/2018 at 12:20 pm:

DASHBOARD

Aunt Bertha Search Map ⓘ ⚡ Last Refreshed 1 minute ago

FILTERS (3) ▾ state_code_filter NC Aggregation Monthly DateRange 90 Days

All Activity - Auntbertha.com



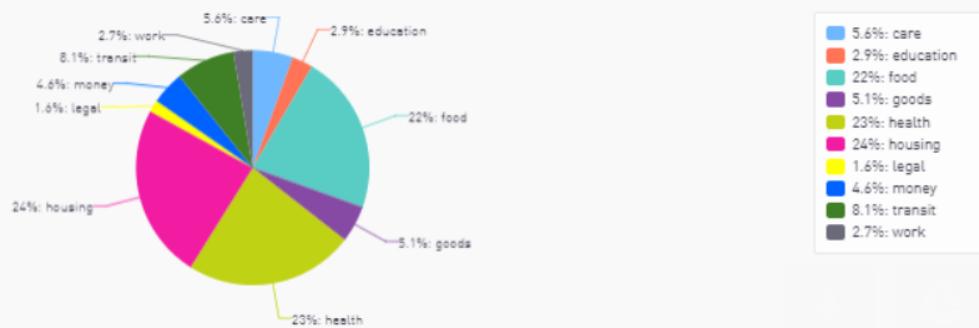
Last 90 days "what" people are searching for in our county:

DASHBOARD

Search History - By State ⓘ ⚡ Last Refreshed 7 minutes ago

FILTERS (3) ▾ state_code_filter NC county_filter MECKLENBURG DateRange 90 Days

Searches by Category - NC



Data Analysis and Interpretation:

The raw data collected, was then analysed and interpreted. The responses collected from the interview conveys that there is no one stop solution available for all the needs. For different needs people use to go and search for it at different sites. Even the people who wants to help, face hard time to find and connect to people who needs help. This needfinding what led us to take decision to make an efficient application which will connect the one who wants to help to the people/organizations who need help or volunteers and will bring them on the same platform. The study also helped us in getting the four most needed resource in Charlotte area namely Food, housing, transportation and health. Based on which we made decision to concentrate mainly on these four resources in our application. This also helped us in forming Personas and Scenarios, which further helped us in establishing requirements and goals for our application design.

1.3 User Goals

User- who need help

- Can reach out for help easily and find support from other people/organizations who are there to help.
- Search for help nearby, sorted according to the distance from the current location.
- Get directions on map to the location where help is offered.
- Can also add their own details and information regarding the kind of help they required and broadcast it, so that it can be seen by others who want to help.
- Can bookmark any available help, in order to revisit it later.
- User can contact the donor easily

User- who want to help

- Can donate or help others who are in need.
- Can see all the posts from individual and organizations who are seeking help, sorted according to the distance from the current location.
- Can bookmark those posts where help is needed.
- Can donate money with the online payment options.
- Keep a track of their activities, so that they can know how much they have donated till now and all the posts they bookmarked till now.
- User can easily contact the individual/organizations who need help.

1.4 Design goals

- Provide the most up to date accurate information about all of the resources listed.
- Enable users to access the most requested/needed resources.
- Allow users to be able to donate money and/or their time
- Provide quick information in the form of tips/solutions for people in immediate need
- Enable users to navigate to the place of need
- Some users just want to help out and making it easier for them to sign up to assist
- Users will be able to revisit posts later
- Allow the users to keep track of donation history.
- Enable users to be able to communicate, so that donor and the one who is in need can contact efficiently, easily and quickly

1.5 Usability goals

Our Usability goals consist of Effectiveness, Efficiency, Safety, Utility, Learnability, and Memorability.

- **Effectiveness**

The system should do what it should do effectively helping both the user seeking help as well as the user who wants to provide help

- **Efficiency**

The application should do things quickly and easily with all major functions available on the screen.

- **Safety**

The application will help prevent users from seeing private data of other users.

- **Utility**

The right kind of functionality will support users in accomplishing tasks by making sure it is not confined to a specific domain

- **Learnability**

The application should be easy to learn for new users and advanced users in navigating and utilizing the app

- **Memorability**

The application should be easy to use and simple and should be able to be memorable for all users and minimize the amount of memory required to operate the application

2. Design Description and Design Rationale

Having established some requirements, the next step is to try out design ideas through prototyping and evaluation cycles. We came up with various interface types - design prototypes as follows :

- **IVR/VRU : Interactive Voice Response/ Voice Response Unit**

In this type of interface users would select different categories of help from an automated touch tone list

- **Kiosk/Web App**

Users would go to physical locations where kiosk will be located to access the information that they needed.

- **Mobile App**

Users would be able to download a mobile application to their phone and be able to gain access to the information that they need.

2.1 Design Rationale

We finalize on Touch Interface based Mobile Application. Below are the rationales for Design Goals for each interface type as well as Usability Goals to help us make our determination into which Interface type to move forward with.

Design Goals Evaluation of IVR/VRU, Kiosk/Web App, and Mobile App Interfaces.

Concept/Goal	IVR/VRU	Kiosk/Web App	Mobile App
Finding help	Very High	Very High	High
Providing help	Low	High	High
Maps	Very Low	High	Very High
Activity Dashboard	Very Low	Very Low	High
Messaging	Very Low	Very Low	Very High
Bookmarking	Very Low	Very Low	Very High
User Management	Very Low	Low	Very High
Accessibility	Very High	Low	High

Usability Goals Evaluation of IVR/VRU, Kiosk/Web App, and Mobile App Interfaces

Concept/Usability	IVR/VRU	Kiosk/Web App	Mobile App
Efficiency	Normal	Normal	High
Learnability	High	Normal	High
Safety	High	High	High
Satisfying	Normal	Normal	Normal
Memorability	Low	Low	High
Visibility	Very high	High	Very High

We decided to go with the Mobile Application Design for the following reasons below:

- High scores in the Design and the Usability goals
- Personalized dashboard
- Highly accessible due to the portability of the devices itself
- Easy for user to learn as most are self-explanatory
- Maps that use GPS from the device to guide users to appropriate location
- Messaging organization and users directly to help
- Tracking of activities grouped under individual users

Pros/Cons of Mobile Application Interface:

Pros

- Cost Effective- can make app available to everyone , no physical location to go to
- Accessible to users with disabilities
- Speech to text feature
- GPS- pick up where user currently is and show nearby assistance
- Brings those in need and those willing to help to one platform
- Messaging features that connects individuals with donors/helpers

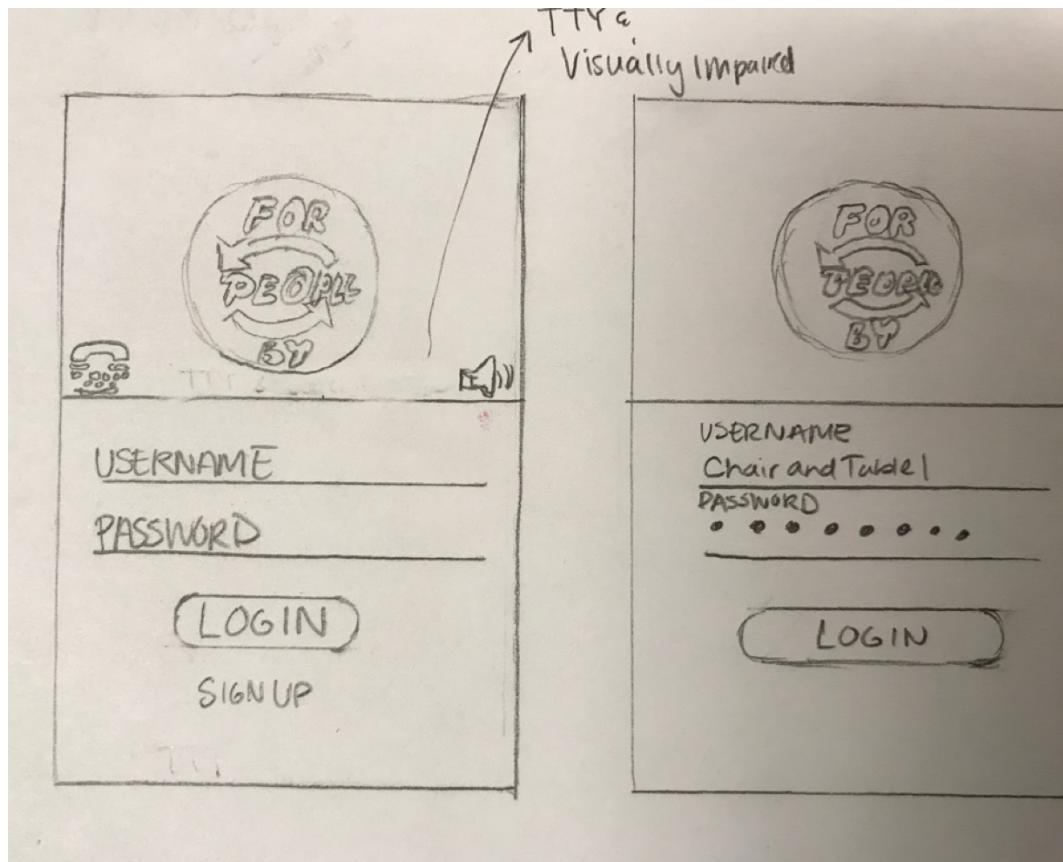
Cons

- All users may not have access to a smartphone
- Skill level of users with downloading/accessing an mobile app
- Potential bugs within application
- Not all organizations may be available at time user accesses it and may have to request an organization to be added or a particular service category

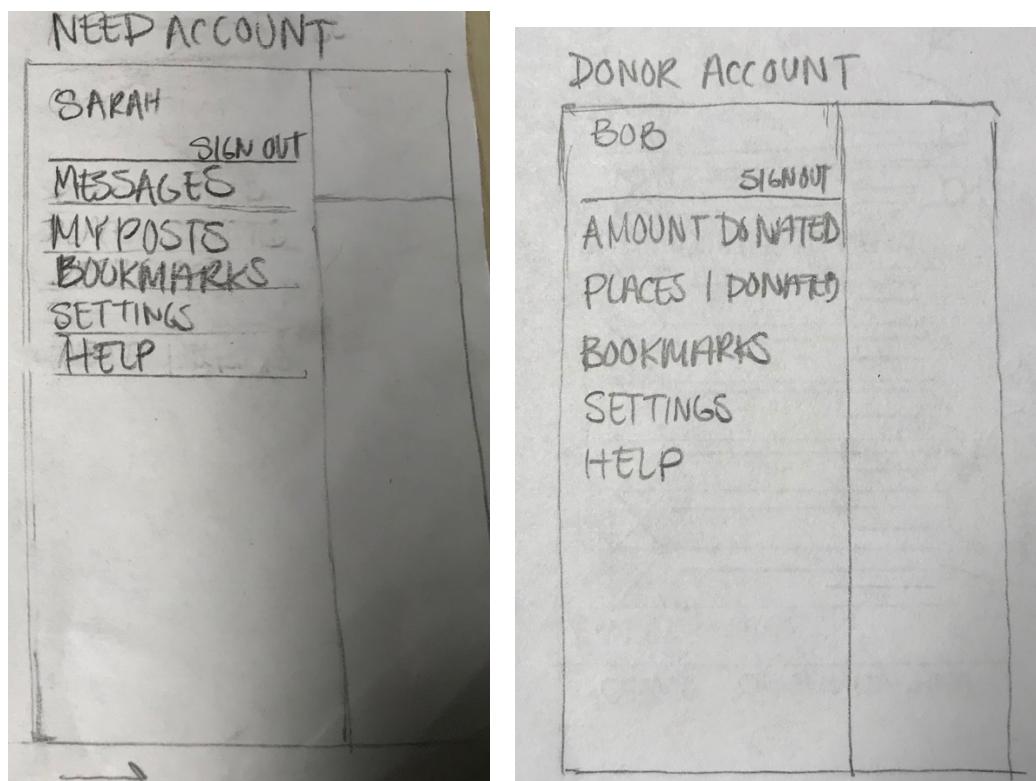
2.2 Design Description

Wireframes:

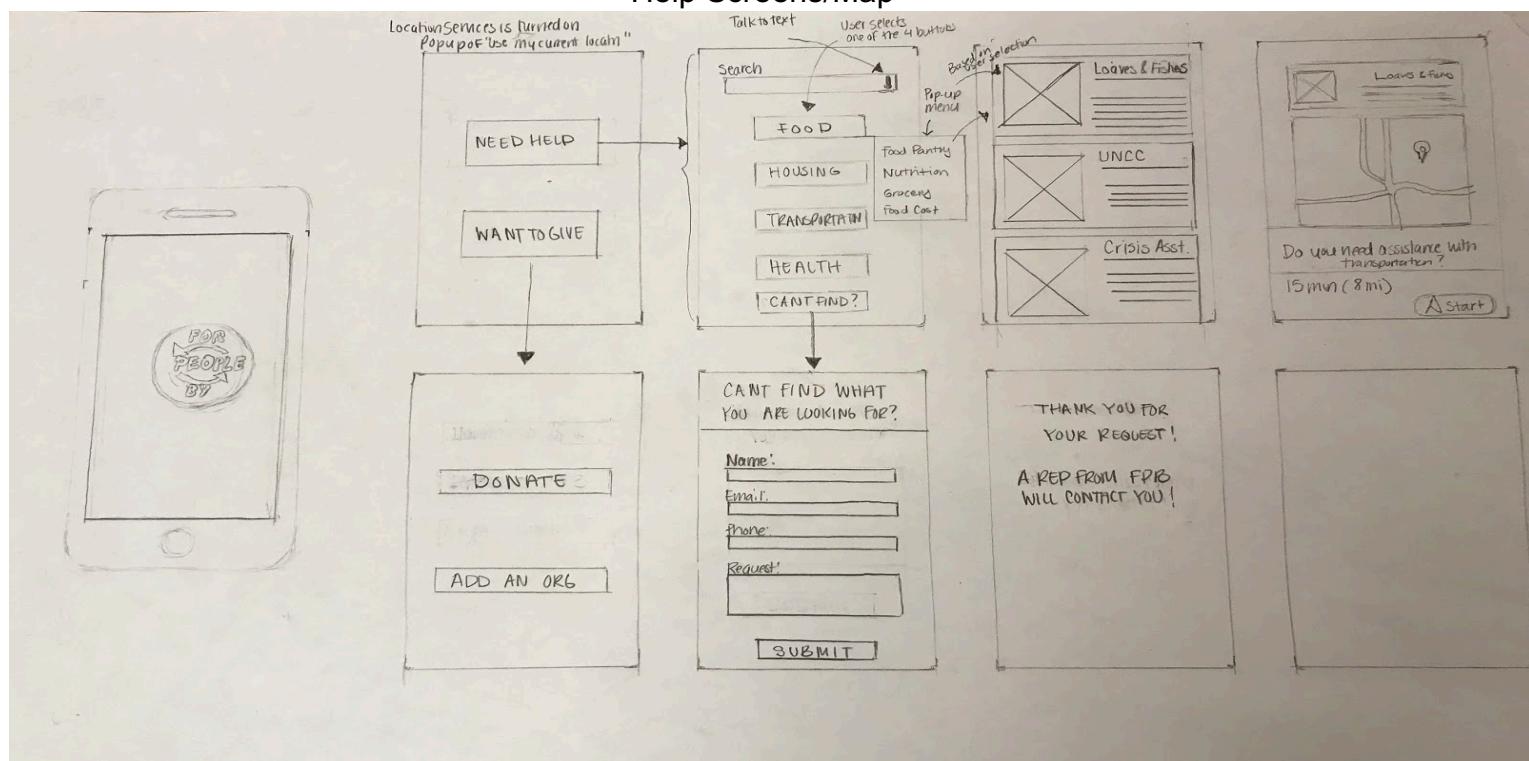
Login Screen



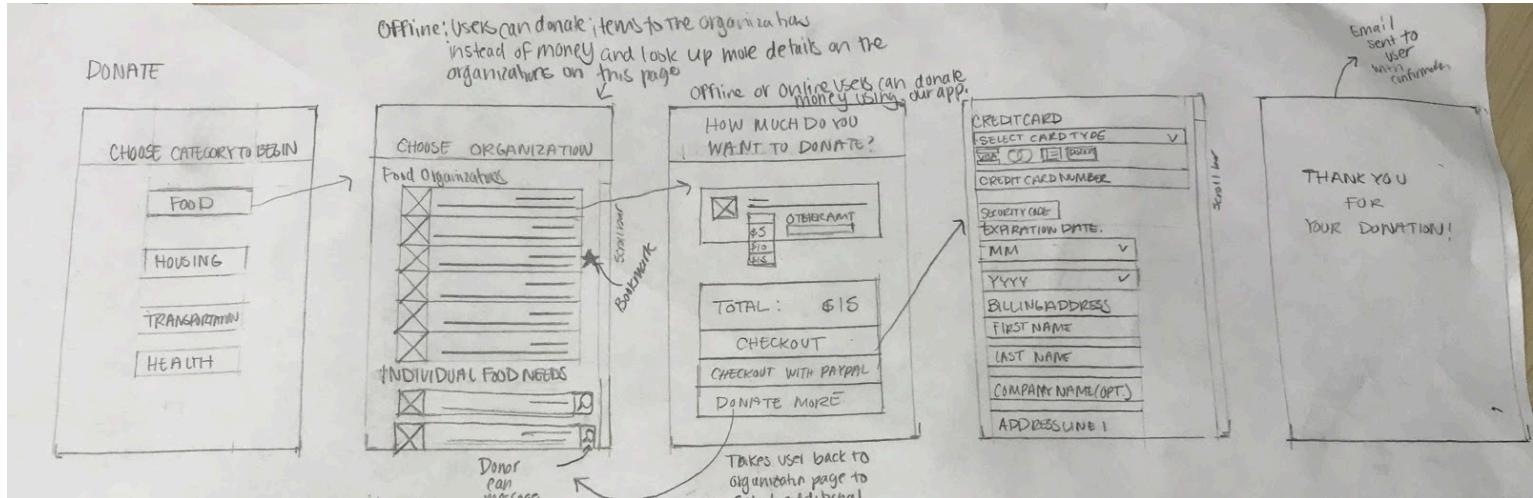
Account Screen



Help Screens/Map



Donation



Add Organization

How it works:

- Users navigates to the For the People by the People application on their mobile device
- Users can register by signing up with his/her details and start using the application.
- User can either choose to help others (I want to help) or can ask for help from others (I need help).
- Users can select from a few categories to get assistance from a variety of organizations, sorted according to the distance from the current location.
- Users can add their own new requests and broadcast it, so that it can be seen by others who want to help
- Users can see all the posts from individual and organizations who are seeking help, sorted according to the distance from the current location.
- Users can also help others by donation
- Users can bookmark items they would like to revisit
- Maps based on GPS location is available for the user to donate or get help
- Users of the app can connect to each other through the messaging system

Features

- Accessibility : Speech and Touch input.
- Map View or Detailed View of help nearby represented in a map form or in list form
- GPS- location services to determine where the user is located in reference to nearby assistance
- Multiple Output methods- display information visually to the user or through speech
- History - screen where users can keep track of the posts they made as well as donations given
- Bookmark – User can see all the bookmarked items at one place.
- Messaging System- Connects individual request for help with those who want to help
- Donation - Donation can be made in the app itself
- New Request - New requests can be made if not available
- Help - contains contact us information of FPBP

2.3 Concrete Design

The conceptual model is ready, that captures what the product will do and how it will behave. Then we move to concrete design model, which is concerned with the details of the design. The design emerged iteratively, through repeated design -evaluation - redesign cycles involving users. We came up with the final design, as a interactive prototype. Some screenshots from the same below –

Application Screens:

Figure 1:Sign in Page

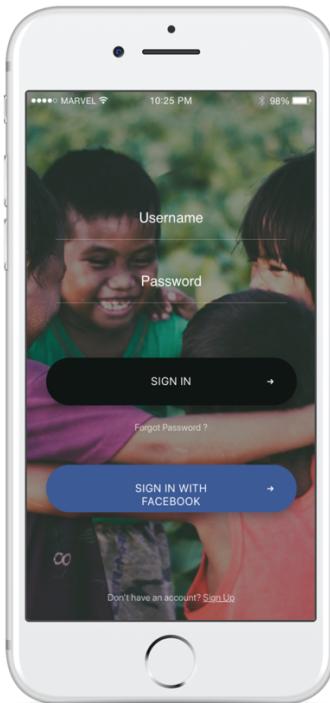


Figure 2: Sign up page

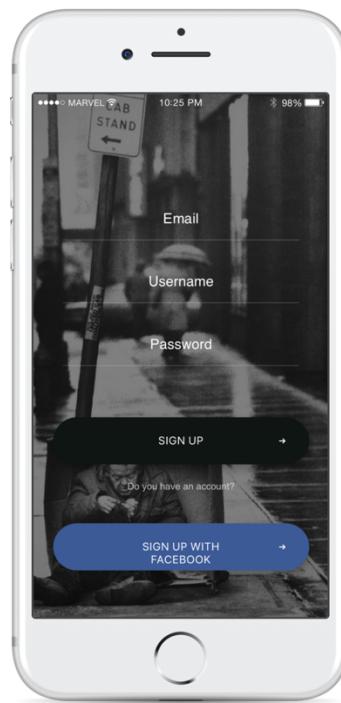


Figure 3 : Home Page



Figure 4: List of available apps for need help



Figure 5: Map and list view showing nearby location of resources

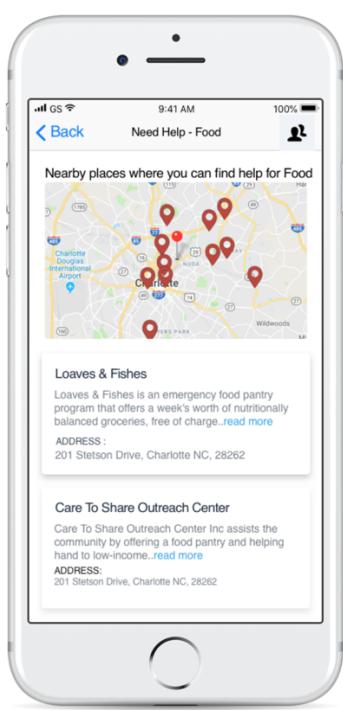


Figure 6: Details of the organisation and link to its website and direction

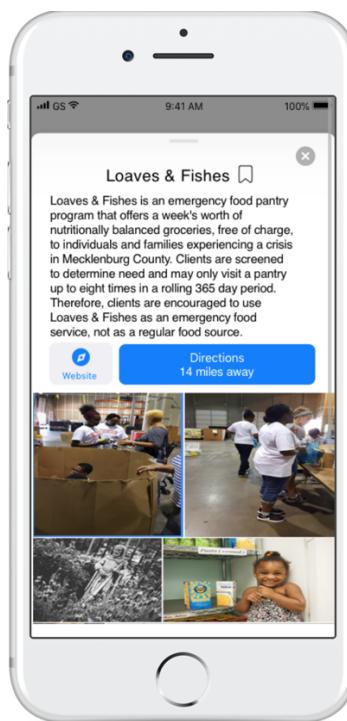


Figure 7: Other option – to handle new requests

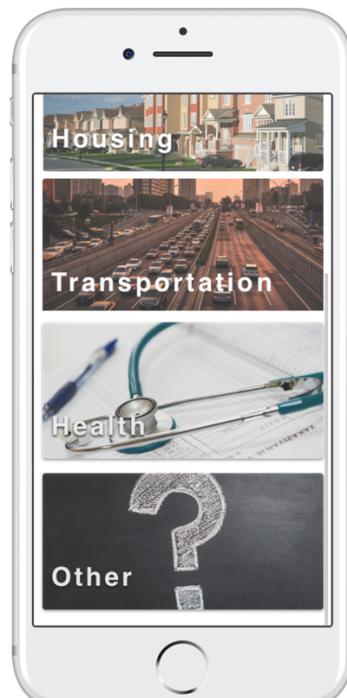


Figure 8: Form to submit a new request

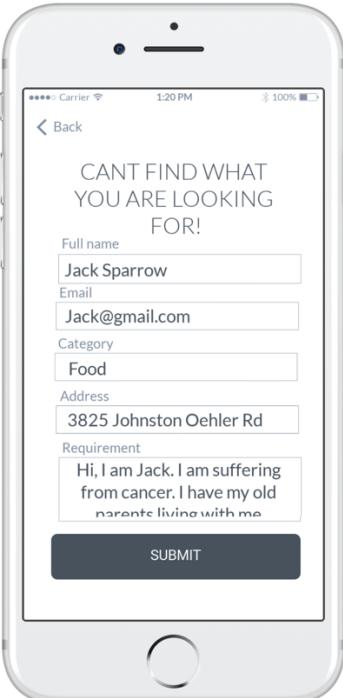


Figure 9: List of categories available for want to help



Figure 10: Page displaying the request with options of messaging, bookmarking and getting directions

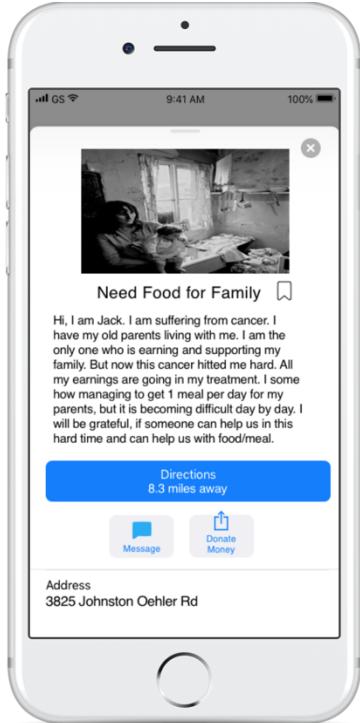


Figure 11: Online payment option embedded within the app to donate money

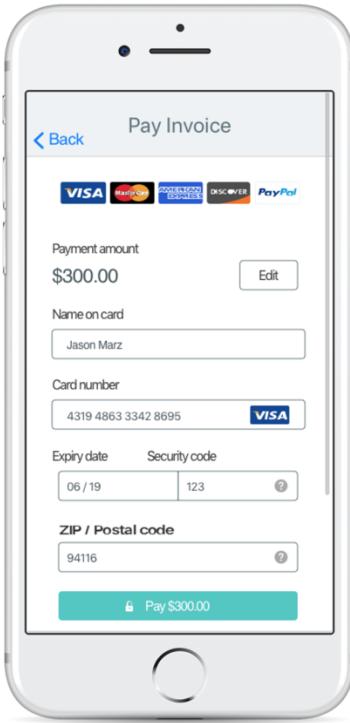


Figure 12: Messaging inside the app



Figure 13: Google maps opening in the new window to help in directions

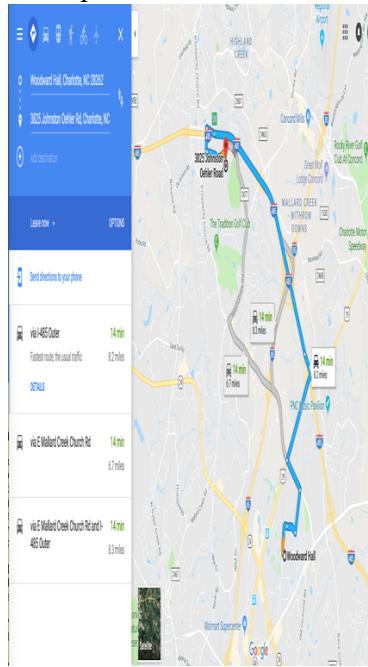


Figure 14: Bookmarking a post to review later

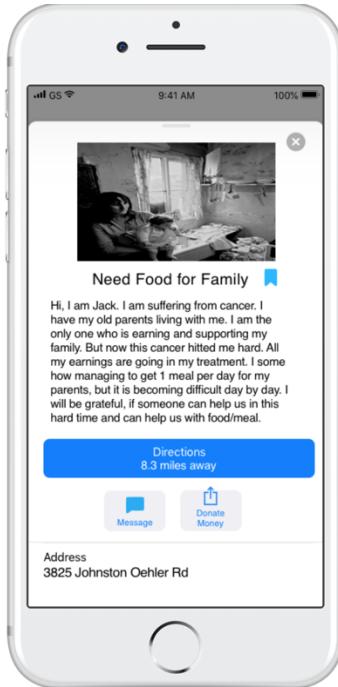


Figure 15: The account icon showing the dashboard and available options

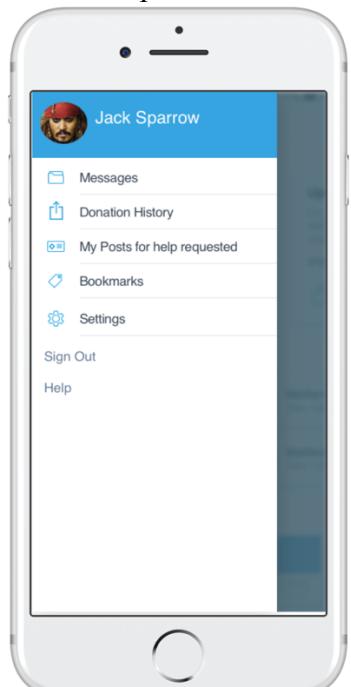


Figure 16: Account dashboard - messages

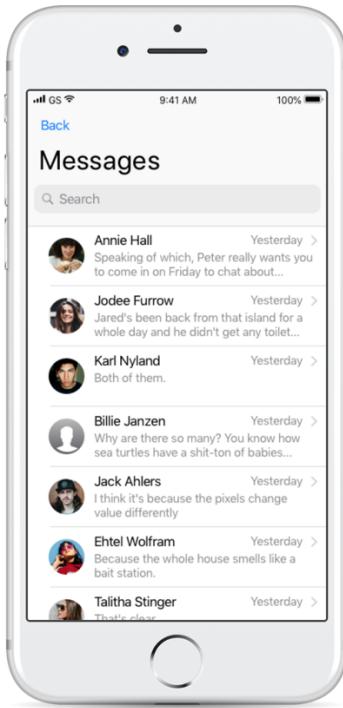


Figure 17: Account dashboard - bookmarks

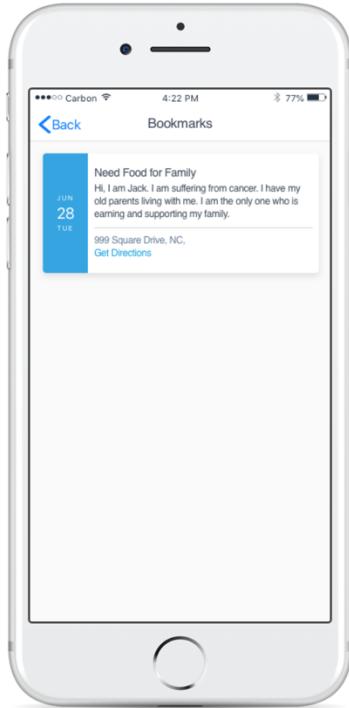


Figure 18: Account dashboard donation History

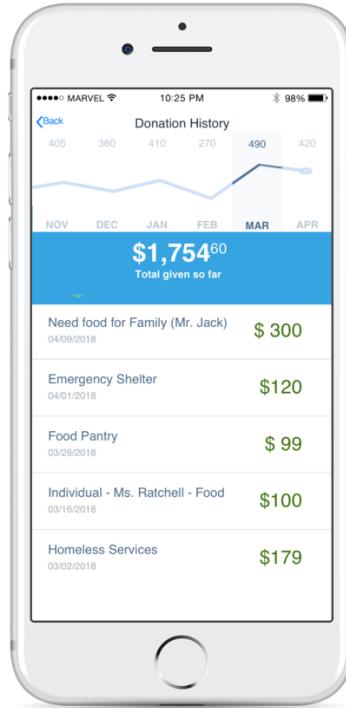


Figure 19: Account dashboard – My posts

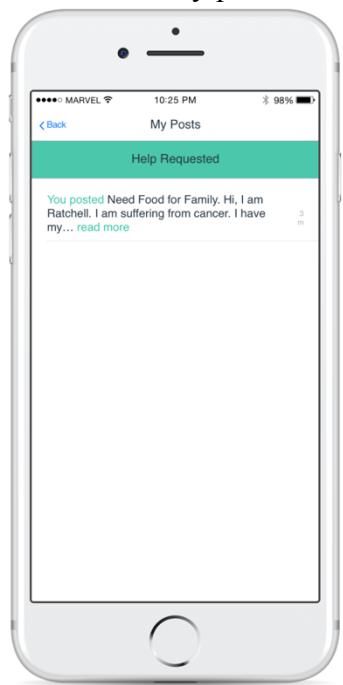


Figure 20: Account dashboard - sign-out



Figure 21: Account dashboard - Help

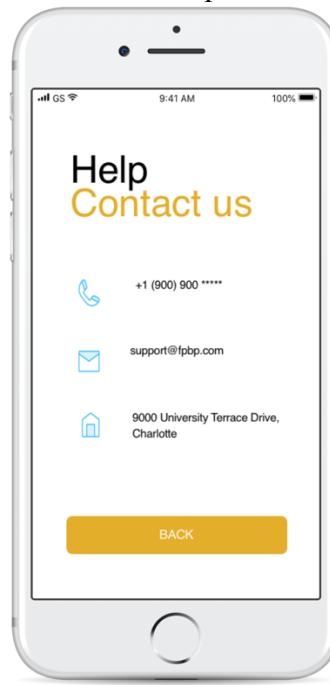


Figure 22: Speech input

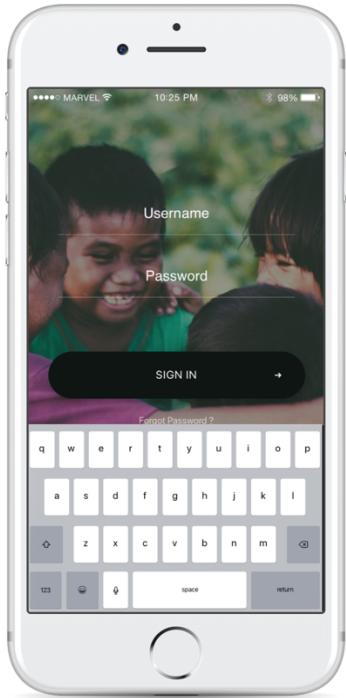
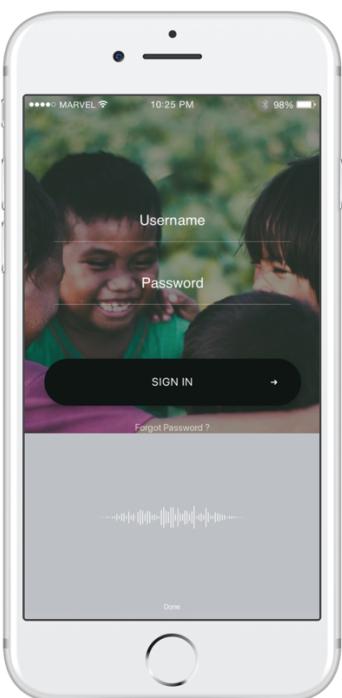


Figure 23: Speech input being recognised



3. Discount Evaluation

As we prototyped our first design and implemented the core functionality. We now evaluate and inspect it. So, for evaluating our application we followed the **Pilot Study** evaluation methodology, in order to identify the potential problems before embarking on the final prototype.

We used the heuristic evaluation here for this initial inspection. This method typically involved an expert role- playing the users (expert are people who are knowledgeable about both interaction design and the needs and typical behaviour of users). They analysed aspects of an interface and identified potential usability problems by using set of guidelines.

Expert users being:

Our HCI Professor - Mr. Nicholas Davis
Team members - Titus and Jessica

Heuristic Analysis:

We did Heuristic evaluation based on ‘heuristics’ developed by Jakob Nielsen. So, first of all we held a briefing session, in which the experts are told what to do. Then we asked experts to independently inspect the product, using the heuristics for guidance. Then we had a debriefing session in which we evaluators come together to discuss the findings and to prioritize the problems we found and suggest solutions. We come up with the below table after the discussion.

The severity of the response has been categorized as:

1. Not a problem
2. Cosmetic issue, only fixed if extra time
3. Minor usability problem, low priority
4. Major usability problem, high priority
5. Usability catastrophe, must be fixed

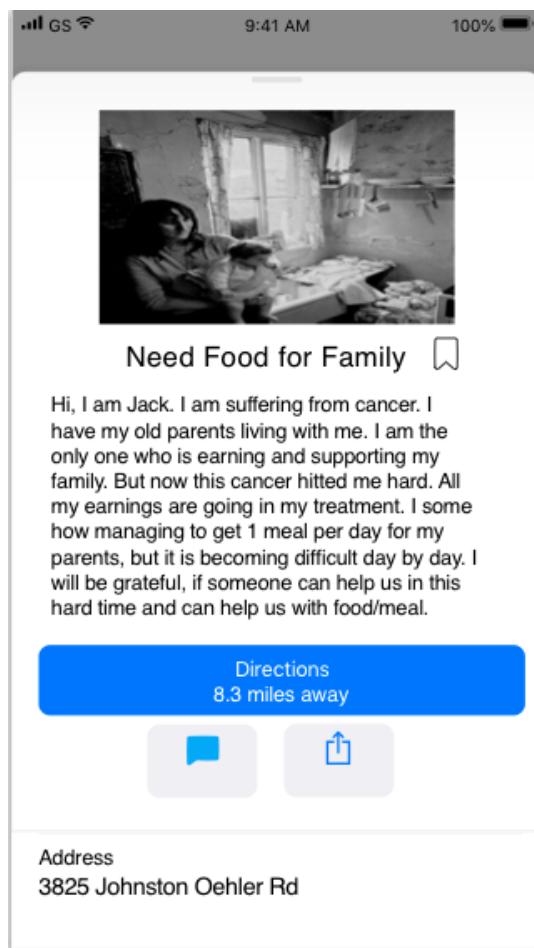
Some of the issues mentioned below:

Issue 1:

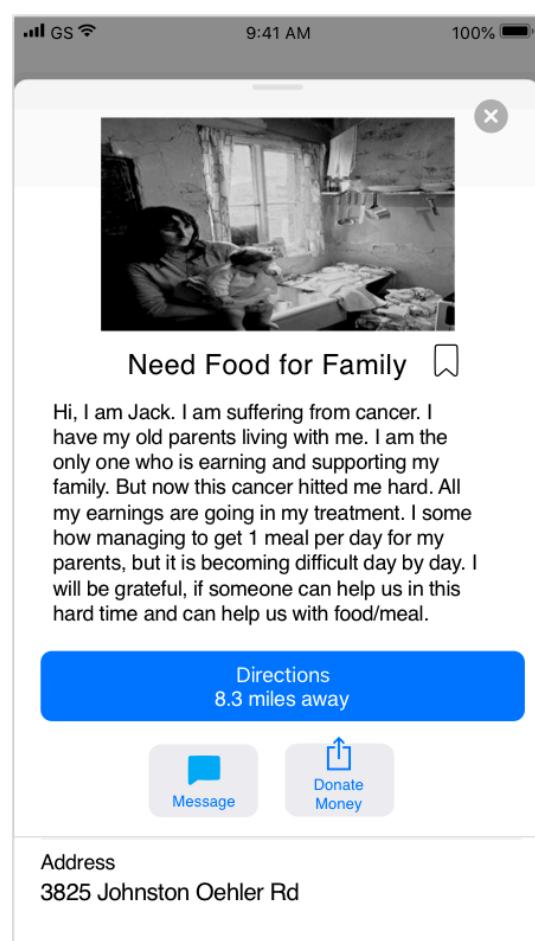
Not able to recognize the functionality of buttons represented by some popular icon

Violation of Neilsons Analysis: Recognition rather than recall
Severity: 5

Before : Message and Money Donation function was just denoted by its popular icons used to indicate this functionality.



After: We labeled it as ‘Message’ and ‘Donate Money’, as most of the user was not familiar with the icons meaning.



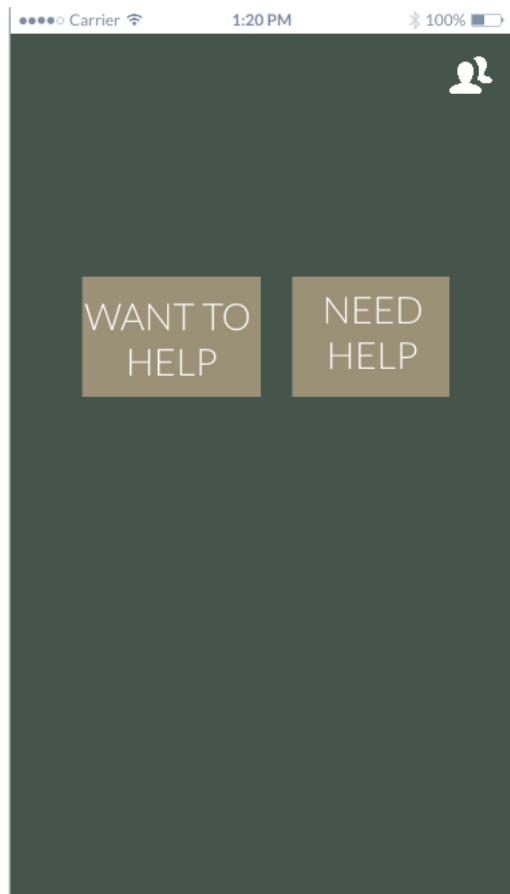
Issue 2:

Buttons too close, causing errors while trying to select an option

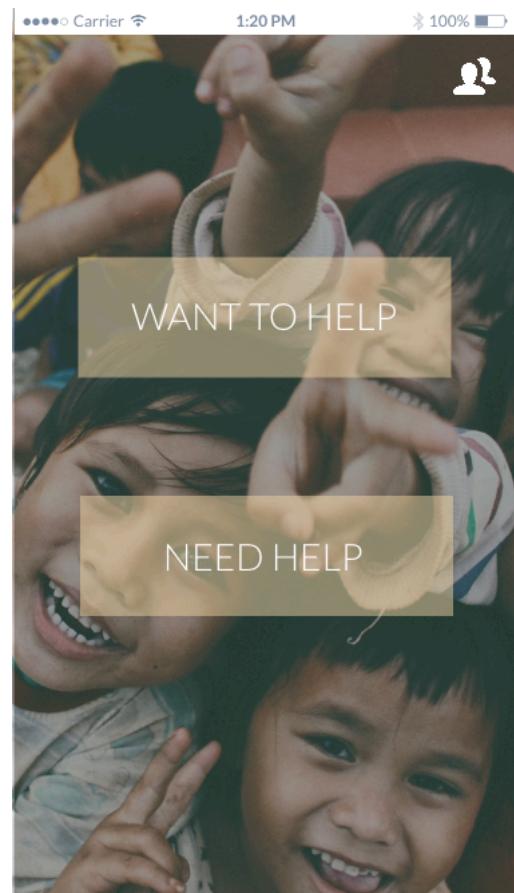
Violation of Neilsons Analysis: Error Prevention

Severity: 4

Before : Want to Help and Need Help buttons too close, making it hard to select one out of it.



After: Made the button more visible and inserted more white space between them.

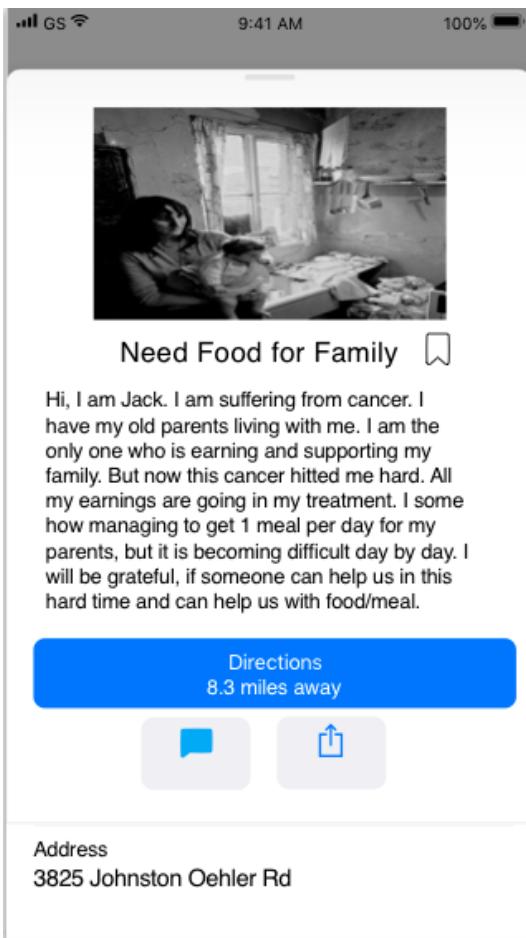


Issue 3:

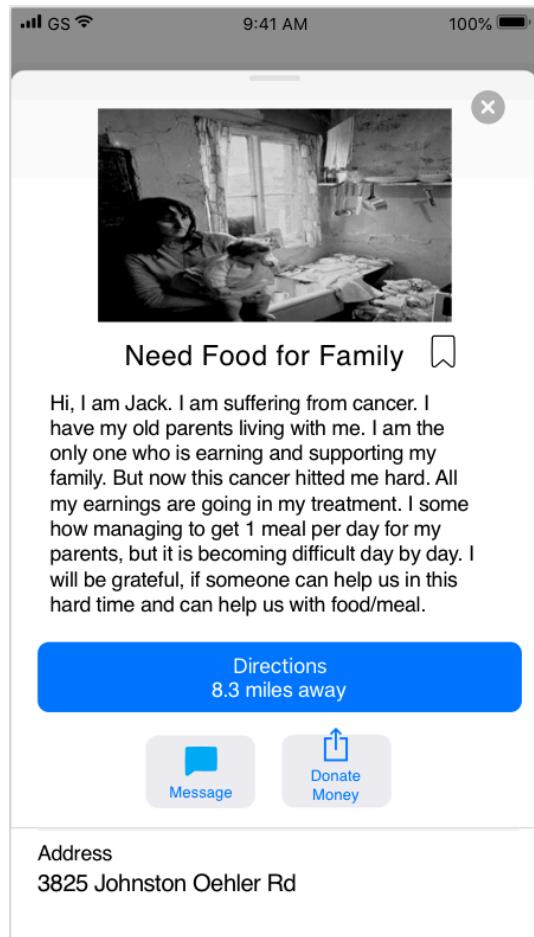
Cross button missing on the details page

Violation of Neilsons Analysis: User control and freedom
Severity: 3

Before : Cross button missing on the detail page screen. We made the grey section to go to the back screen and close the current page, but users didn't understand that.



After: We draw the Cross button on the detail page screen.



Issue 4:

Map and list view were on different page

Violation of Neilsons Analysis: Flexibility and efficiency of use
Severity: 2

Before : We took map view and list view on different pages with a toggle button. People got confuse when asked to see the nearby location on map.

List View Map View

Loaves & Fishes

Loaves & Fishes is an emergency food pantry program that offers a week's worth of nutritionally balanced groceries, free of charge, to individuals and families experiencing a crisis in Mecklenburg County. Clients are screened to determine need and may only visit a pantry up to eight times in a rolling 365 day period. Therefore, clients are encouraged to use Loaves & Fishes as an emergency food service, not as a regular food source.

Address: 648 Griffith Rd suite b, Charlotte, NC 28217

Hours:

- Thursday 8:30AM–4:30PM
- Friday 8:30AM–4:30PM
- Saturday Closed
- Sunday Closed
- Monday 8:30AM–4:30PM
- Tuesday 8:30AM–4:30PM
- Wednesday 8:30AM–4:30PM

Phone: (704) 523-4333

After: So, we brought both the view on the same page. Making the GPS feature more efficient.

9:41 AM 100%

< Back Need Help - Food

Nearby places where you can find help for Food

Loaves & Fishes

Loaves & Fishes is an emergency food pantry program that offers a week's worth of nutritionally balanced groceries, free of charge..[read more](#)

ADDRESS :
201 Stetson Drive, Charlotte NC, 28262

Care To Share Outreach Center

Care To Share Outreach Center Inc assists the community by offering a food pantry and helping hand to low-income..[read more](#)

ADDRESS:
201 Stetson Drive, Charlotte NC, 28262

Issue 5:

Giving too much information on first page

Violation of Neilsons Analysis: Aesthetic and minimalist design
Severity: 2

Before : We took too much information on first page, which make the user to scroll down endlessly.

List View Map View

Loaves & Fishes

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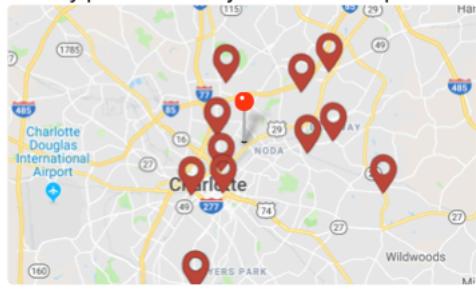
Phone: (704) 523-4333

After: So, we make the changes and just gave the snapshot of the organization/individual and other details will come after clicking those boxes.

9:41 AM 100%

< Back Need Help - Food

Nearby places where you can find help for Food



Charlotte Douglas International Airport

Charlotte

Wildwoods

WALTERS PARK

Charlotte

Loaves & Fishes

Loaves & Fishes is an emergency food pantry program that offers a week's worth of nutritionally balanced groceries, free of charge..[read more](#)

ADDRESS :
201 Stetson Drive, Charlotte NC, 28262

Care To Share Outreach Center

Care To Share Outreach Center Inc assists the community by offering a food pantry and helping hand to low-income..[read more](#)

ADDRESS:
201 Stetson Drive, Charlotte NC, 28262

Reflection:

Based on these evaluations we made changes in our working prototype design. By correcting the navigation is imperative as well making certain features more clear to users. The other items we corrected were mostly cosmetic. Overall we found the prototype to be efficient in accomplishing the main goal it is therefore and correction of the items above helped our prototype get closer to completion and on to the start of a final product. So, these heuristics closely resemble high-level design principles by making designs consistent, reducing memory load and using terms that users understand.

4. Evaluation Methodology

After doing the changes in prototype based on Heuristic evaluation we moved to actual potential users. We collected information about users/potential users experiences when interacting with a prototype. Evaluation focuses on both the usability of the system and the users experience when interacting with it. (e.g. how satisfying, enjoyable, or motivating the interaction is).

4.1 Goals of Evaluation:

As the Nielsen Norman Group notes “..the first requirement for an exemplary user experience is to meet the exact needs of the customer, without fuss or bother. Next come simplicity and elegance, which produce products that are a joy to own, a joy to use.”

So, our first goal of our evaluation was to accomplish our design goals, which are :

- Provide the most up to date accurate information about all of the resources listed.
- Enable users to access the most requested/needed resources.
- Allow users to be able to donate money and/or their time
- Provide quick information in the form of tips/solutions for people in immediate need
- Enable users to navigate to the place of need
- Some users just want to help out and making it easier for them to sign up to assist
- Users will be able to revisit posts later
- Allow the users to keep track of donation history.
- Enable users to be able to communicate, so that donor and the one who is in need can contact efficiently, easily and quickly

The following are the goals we are trying to accomplish during our evaluation :

- Determine the user speed of attempting to complete a given task
- Can the user actually complete the given task at all?
- How easy is it for the user to learn the app
- Determine how the user feels about the aesthetics of the app
- Determine how the user feels about organization and categorization
- Determine how memorable using the app is
- Determine if we have reached our previously stated design goals
- What users liked/disliked about the app

4.2 Data Collection and participants

Types of Evaluation:

In order to collect data of user experience with our prototype, we had following set of evaluations -

1. Controlled settings involving users.
 - 7 Users from workplace
2. Natural settings involving users.
 - 2 Users from UNCC food pantry (Jamil niner Student Pantry), in need of help (who wanted help with Food)
 - 1 User standing on local bus stand (who wanted help with Housing)
3. Settings involving expert users.
 - Heuristic evaluation

How we recruited our participants:

We recruited our participants by seeking out users who could fall into either of the categories of users who could help and those who need help, but fell in the appropriate age groups we determined we would like to test. We sought out participants in the workplace who were able to provide an insight on users who wanted to help and participants around the UNCC food pantry who were able to provide insight on those who need assistance. Most of the participants were people whom we were familiar with at these locations with who were willing to participate and also guide us to other potential participants.

Planned Measurements and Metrics:

The evaluating team prepared the tasks for performing the usability testing and then the participants were selected to perform the prepared list of tasks. The platform used for this as a mobile prototype running on a smartphone. There were two examiners with one of them explaining the application and the goal of the study to the user and the other examiner taking notes about the users' feedback of the product and noting the way the user was interacting with the application. The user was asked to think aloud while doing tasks. This sessions captured each participant's choices, task completion rates, comments, feedback, satisfaction ratings, and questions. After the last task was completed, the guide asked the participant to rate the website overall by using a 5-point Likert scale (Strongly Disagree to Strongly Agree) for five subjective measures via paper format. In addition, the guide asked the participants overall application questions, which was then recorded using notes.

We planned to test 10 users from ages 20-55 years old in which 5 will fit the target audience of needing help and 5 who want to help. The following is the distribution of how we have selected our range of participants :

Sex	Age	Participants
Male	20-30	3
Female	20-30	3
Male	30-55	2
Female	30-55	2

Number of users in need: 5

Number of users who can help:5

The following metrics were recorded for each of the participating user:

- Choices of the participant
- The task completion rate
- Comments
- Feedback
- Satisfaction
- Rating
- Time taken for Task Completion

Evaluation Tasks:

(1) Think aloud technique

All 10 participants were asked to perform the following tasks in the fully developed prototypes, using **think aloud technique** while they were performing the task.

Task	Description
Task 1	Ask user to create an account(Sign Up)
Task 2	Ask user to login to account
Task 3	Ask user to search for food or housing nearby
Task 4	Ask user to donate for a request
Task 5	Ask user to bookmark a page
Task 6	Ask user to request assistance for services not available
Task 7	Ask user to navigate to contact us page of FPBP
Task 8	Ask user to Locate destinations with the map available
Task 9	Ask user to navigate to Account Dashboard to view Donation history, bookmarks, posts added, message history.
Task 10	Ask user to message the one in need using the messaging feature
Task 11	Ask user to find contact information of people who can help
Task 12	Ask user to Sign out

(2) Questionnaire : 5-point Likert scale

After the last task was completed, we had **5-point Likert scale** (Strongly Disagree to Strongly Agree) Questionnaire for all 10 participants to rate the application overall, for evaluating user satisfaction with products. The five subjective measures were:

S.No	Tasks
1	How easy was it to keeping track of the navigation in the app
2	How easy was it to learn navigation without documentation
3	How easy was it to search for what they were looking for
4	How would you rate the look and feel of the application
5	How was the contents organised and categorised

(3) Semi structured Interview

The guide asked all the 10 participants overall application questions, which was then recorded using notes.

5. Evaluation Results

The data collected from the user interviews was then studied and evaluated as below.

5.1 Recordings on prototype data for ‘Evaluation Task 1 (Think aloud Technique)’-

1. **Task Completion Success Rate** for between the subject’s category :

Participant	1	2	3	4	5	6	7	8	9	10	Success	Completion %
Task 1:Account Sign Up	*	*	-	*	-	*	*	*	*	*	8	80
Task 2:Login to account	*	*	*	*	*	*	*	*	*	*	10	100
Task 3:Search for resources	*	*	*	*	*	*	*	*	*	*	10	100
Task 4:Donation	*	*	*	*	*	*	*	*	*	*	10	100
Task 5:Bookmarking	-	*	*	*	-	-	*	*	*	*	7	70
Task 6:Raising new request	-	*	*	*	*	*	*	-	-	*	7	70
Task 7:Finding contact us page	*	*	*	*	*	*	*	*	*	*	10	100
Task 8:Locate destinations on map	*	-	*	*	*	*	*	*	*	*	9	90
Task 9:Using dashboard	*	*	-	*	-	*	-	*	*	*	7	70
Task 10:Messaging	*	-	*	-	*	*	*	-	*	*	7	70
Task 11:Finding contact information	*	*	*	-	*	*	*	*	*	*	9	90
Task 12:Ask user to Sign out	*	*	*	*	*	*	*	*	*	*	10	100

* Able to complete

- Unable to complete



Learnings and findings

All participants successfully completed the majority of task without hazel like login to account, search for resources, donation, finding contact us page.

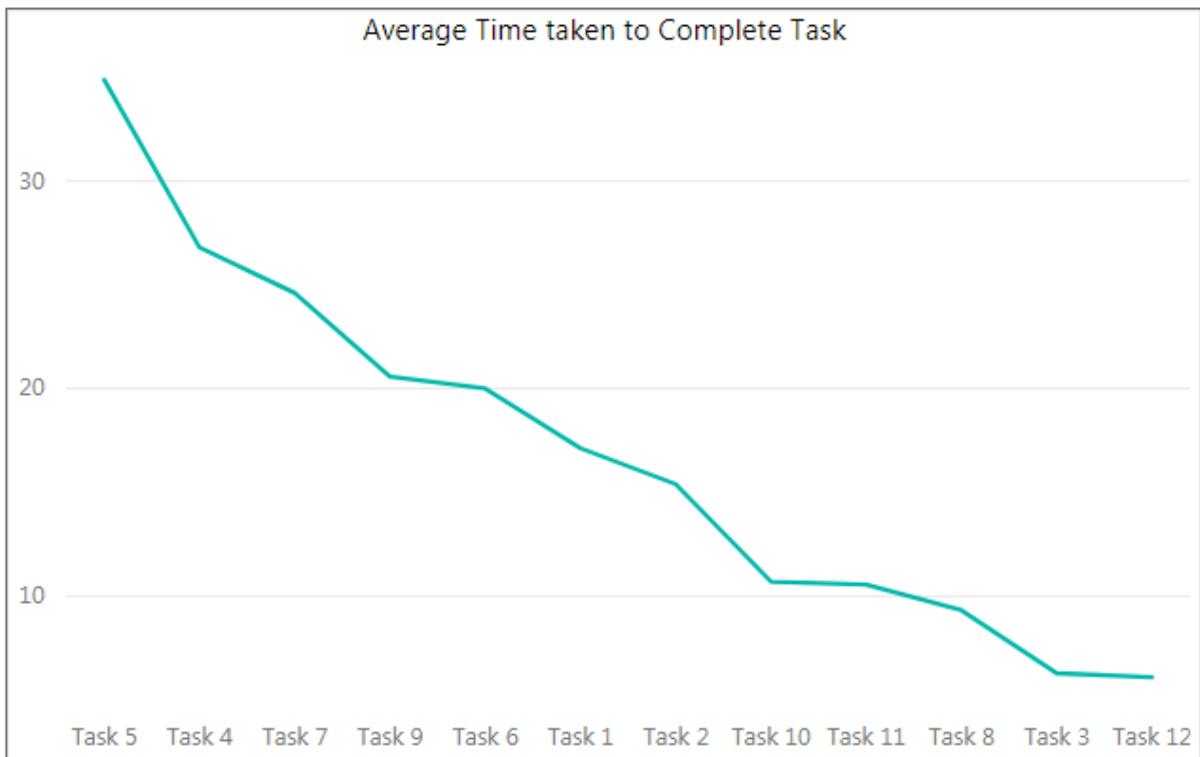
The variation on some of the tasks were found and the reason behind these were because the users were novice and they were unable to understand few items based on the icons, eg. Bookmarking, where we had the icon which denoted the action of bookmarking but the users were unable to identify them, some of the users comments were that they were expecting a label against the icon which would have made them identify and complete the task. On the other hand for the task like messaging users were unable to complete it as they were trying to look messaging as a menu in the application similar to the other tasks which they were unable to complete, the users however found it when they were trying to complete the task of signing out and the feedback was that they never expected the features to be available in the profile menu.

(2) Time taken on each Task by group of users :

The speed evaluator recorded the time on task for each participant. Some tasks were inherently more difficult to complete than others and is reflected by the average time on task.

Participant	1	2	3	4	5	6	7	8	9	10	Success	Average Time
Task 1:Account Sign Up	18	15	-	20	-	17	15	16	20	16	8	17.13
Task 2:Login to account	22	10	19	12	14	13	10	18	20	16	10	15.40
Task 3:Search for resources	7	6	8	6	7	5	8	7	4	5	10	6.30
Task 4:Donation	34	20	22	24	25	27	30	32	28	26	10	26.80
Task 5:Bookmarking	-	28	30	35	-	-	38	40	36	37	7	34.86
Task 6:Raising new request	-	30	20	15	18	20	25	-	-	12	7	20.00
Task 7:Finding contact us page	37	20	22	24	25	22	26	23	23	24	10	24.60

Task 8:Locate destinations on map	10	-	9	8	9	12	11	10	7	8	9	9.33
Task 9:Using dashboard	30	30	-	35	-	12	-	10	12	15	7	20.57
Task 10:Messaging	10	-	13	-	12	11	9	-	10	10	7	10.71
Task 11:Finding contact information	10	12	13	-	12	11	9	8	10	10	9	10.56
Task 12:Ask user to Sign out	5	5	10	9	8	5	4	5	5	5	10	6.10



Learnings and findings

Some of the tasks took considerable amount of time due to various reasons eg. the task bookmarking - users were unable to infer that the icon represented the bookmarking facility and were switching between screens over and over again. So primarily the reason of delay in this task was that the users were unable to find it based on the task and this can be rectified if we change the icon to hold the text "Bookmark" or add a label to the icon.

However for the other task like donation people were spending more time to find the terms and condition before they made the donation, like would they receive tax credit and if there are any service charges applied. This was never thought in designing and this has to be addressed and can be done with a terms and condition page or a FAQ page explaining the common questions they had like on tax, service charge, refund or reverse donation, receipt or acknowledgement

in terms of a certificate or thank you card etc. The similar is applicable to the task raising new request where they had questions which can be handled as explained above.

The task on dashboard required the users to do multiple tasks like to view Donation history, bookmarks, posts added, message history all combined together as one activity and the time taken to complete them are acceptable and no changes are required, if these task are spitted into individual activity the time taken to complete them will be very minimalistic.

(3) Errors:

Errors are defined as users clicking on areas of the application that are not in the correct order/workflow and number of steps expected to complete each given tasks. Task 5 asked the user to bookmark a page and what was defined as an error was the user clicking on the account button and clicking on the bookmark section but then realizing the bookmark symbol was next to the title of the page. Task 6 asked users to raise a new request and error defined in this is users not scrolling all the way down to the bottom to find the “other” category. Task 7 asked users to find the contact us page in which users opened and closed the dashboard then clicked on help to navigate to the contact us page.

Error evaluator captured: Number of errors participants made when trying to complete the task scenarios

Task	Average Steps involved	Satisfaction	Average Error
Task 1:Account Sign Up	3	4.6	0
Task 2:Login to account	3	4.4	0
Task 3:Search for resources	2	4.7	0
Task 4:Donation	6	4.5	0
Task 5:Bookmarking	4	4.6	2
Task 6:Raising new request	4	4.5	1
Task 7:Finding contact us page	2	4.8	1
Task 8:Locate destinations on map	4	4.7	0
Task 9:Using dashboard	2	4.6	0
Task 10:Messaging	6	4.6	0
Task 11:Finding contact information	3	4.7	0
Task 12:Ask user to Sign out	2	4.9	0

5.2 Recordings for ‘Evaluation Task 2 (Likert Scale)’-

The 5-point rating scale ranged from 1 (Strongly disagree) to 5 (Strongly agree). Agree ratings are the agree and strongly agree ratings combined with a mean agreement rating of > 4.0 considered as the user agrees that the information was easy to find, that they could keep track of their location and predict the section to find the information.

Prototype Tasks Perform Analysis:

These questions were used to get a Likert scale on the application prototype

S.No	Questions	Overall Rating
1	How easy was it to keeping track of the navigation in the app	4.63
2	How easy was it to learn navigation without documentation	4.43
3	How easy was it to search for what they were looking for	4.73
4	How would you rate the look and feel of the application	4.53
5	How was the contents organised and categorised	4.57

Learnings and findings

Upon completion of the tasks, participants provided feedback for what they liked most and least about the website, and recommendations for improving the website via interviews in which the observer recorded the users answers. The feedback and comments from the users have been categorized as follows: likes, dislikes, participants recommendations.

What users liked the most about the application prototype was how simple the application was to use, the large buttons guided them throughout the application with ease. “ I wasn't strayed away from getting towards what I was looking for”- Participant 2. Other participants said similar statements of how easy it was to use. Participants also like that GPS and maps were a feature as it kept them from having to open up another device to search the address of the resource. It was able to save them extra work to get to the resource they were trying to obtain. Users also noted that they like that all of the information/resources were all in one place such as top resource categories of Food, Transportation, Housing, and Health were all in one application with corresponding information much like the map being in the same application. The overall application having all of the information in one place, simple to use and ability to located the resources they liked.

What users noted they disliked in the interview process is the small issues with the navigation such as the back button not working on some pages and trying to get to their account information. When testing users noticed that when they clicked on the “back” button that it did not take them back to where they wanted to go and no other option appeared to help them. A few users pointed out that symbol used in the top right-hand corner of the app did not indicate to them that it was there to get to their dashboard/account information but choose it because of no other options and that it indicated something with multiple users instead of one due to two head shaped figures instead of one.

5.3 Recordings for ‘Evaluation Task 3 (Semi-structured Interview)’-

After users evaluated the prototype we not only asked them to fill out Likert scale based questions, interviewed them, but also asked for their recommendations on how to improve the prototype. There were several recommendations mostly cosmetic and are simple changes and some others will take time and consideration into whether they will be implemented.

Below are the participant recommendations that we recorded:

- Switch “Needs Help” with “Wants to Help”
- Adjust the wording of the Help buttons to not be so similar
- Change icon at top right to the word “Menu” or another more representative icon that doesn’t resemble a “friend” icon
- Add contact information
- Make bookmarking more vigilant or easy to get to
- Make the ability to request another service more apparent “Other” title not representative enough or easy to find as have to scroll all the way to the bottom

Overall, most of the recommendations are cosmetic but others alter existing design goals. Switching “Needs Help” with “Wants to Help” is vital as most users may be in need that are using this app and having that button appear first thing on the screen gets them faster to the help they need as most users read the first thing on the screen. It was noted that some participants clicked on the first button of “Wants to Help” with intention of requesting “Needs Help”. Adjusting the wording of the Help buttons will take careful consideration into what to change the verbiage to. Research into other assistant type apps can help us with consideration of implementing this recommendation. A few participants stated that not only they didn't like the icon in the top right hand corner but also recommended it be changed. This will be implemented with a simple changing of the icon located there. The change of the icon will not impact the overall design goals of the prototype. Participants being able to bookmark posts to revisit at a later date are a part of our design goals and users having issues with this feature is not reaching that said goal. Implementing the adjustments to this feature will take time and careful consideration into the best place to have it in the application for it to be effective for participants to utilize. The “Other” feature for users to request further assistance they don't see listed in the app will remain in the location that it currently exists as there aren't currently any other better options to add it.

6. Evaluation Implication

Based on the results of our evaluation of the prototype we were able to meet most of our design goals and usability goals, but not all of them. Details below:

6.1 We were able to meet the following design goals based on our evaluation results:

- **Providing the most up to date accurate information about all of the resources listed.** Users were able to navigate to resources pertaining to their relevant needs that had accurate information listed, phone numbers of resources, addresses, and map location were correct for the items they selected. Users were observed obtaining this information by completing Task 3: Searching for resources, and Task 8: Located resources on map

- **Enabling users to access the most requested/needed resources**
Users were asked to complete Task 3: Searching for resources in which they looked for assistance with food and the screen users first come to search for this list the most requested/needed resources according to our needfinding activities.
- **Allowing users to be able to donate money and/or their time** Users were observed navigating to the donation screen by clicking on the button “Want to Help” button during Task 4: Asking user to donate, it took users an average of 26 seconds to complete and 100% of users were able to complete the task.
- **Enable users to navigate to the place of need** Users were observed navigating to the place of need by completing Task 8: Locate destinations on the map , it took users an average of 9.33 seconds to complete meaning it was a very quick process to locate the resource. Users noted that they liked that GPS/map feature was available in follow up interviews.
- **Some users just want to help out and making it easier for them to sign up to assist**
All users whether wanting to help or receive help were asked to sign up in Task 1 and are required to sign up to use the app. This task took an average of 17 seconds to complete and was completed by 80% of individuals.
- **Allow the users to keep track of donation history.**
Users were asked to locate the dashboard which contains the users donation history. Task 9: Locate dashboard enabled users to access this information
- **Enable users to be able to communicate, so that donor and the one who is in need can contact efficiently, easily and quickly**
Users were asked to complete the task of messaging were it took on average around 10 seconds and 70% of users completed. The user would navigate to the messaging system in the app and send information to another user.

6.2 We were not able to meet the following design goals:

- **Provide quick information in the form of tips/solutions for people in immediate need.** This feature has not been implemented and only info related to specific organizations. This can be accomplished through the messaging system but would be up to the individual users and not provided by the application itself.
- **Using bookmark functionality, so that users can revisit a post later.** The bookmark feature is available but very difficult for users to understand its purpose or where it is in the app. It took users on average 34.86 seconds the longest of any task completed.

6.3 We were able to meet the following usability goals with a few challenges:

1. Effectiveness

The system should do what it should do effectively helping both the user seeking help as well as the user who wants to provide help. The application proved to be effective through our evaluation of completeness of task. All users were able to complete the tasks of logging in, searching for resources, donation, locate destinations on map and signing out at 90% or

above completion rate. These tasks are essential at users being able to accomplish the goal of the app which is to get help or provide help.

Participant	1	2	3	4	5	6	7	8	9	10	Success	Completion %
Task 1:Account Sign Up	*	*	-	*	-	*	*	*	*	*	8	80
Task 2:Login to account	*	*	*	*	*	*	*	*	*	*	10	100
Task 3:Search for resources	*	*	*	*	*	*	*	*	*	*	10	100
Task 4:Donation	*	*	*	*	*	*	*	*	*	*	10	100
Task 5:Bookmarking	-	*	*	*	-	-	*	*	*	*	7	70
Task 6:Raising new request	-	*	*	*	*	*	*	-	-	*	7	70
Task 7:Finding contact us page	*	*	*	*	*	*	*	*	*	*	10	100
Task 8:Locate destinations on map	*	-	*	*	*	*	*	*	*	*	9	90
Task 9:Using dashboard	*	*	-	*	-	*	-	*	*	*	7	70
Task 10:Messaging	*	-	*	-	*	*	*	-	*	*	7	70
Task 11:Finding contact information	*	*	*	-	*	*	*	*	*	*	9	90
Task 12:Ask user to Sign out	*	*	*	*	*	*	*	*	*	*	10	100

2. Efficiency

The application should do things quickly and easily with all major functions available on the screen. The following tasks were the most efficient according to the average time taken, variance and completion rate.

Task 3: Search for resources was not only the most efficient task users completed but one of the fastest completed with an average time of 6.3 seconds with a standard deviation of 1.34 seconds and completion rate of 100% of users.

Task 12: Ask user to Sign out also was just as fast with an average time of 6.1 seconds with a standard deviation of 2.17 seconds.

Areas of the application which were not as efficient.

Task 5: Bookmarking with an average time to completion of 34.86 seconds with a standard deviation of 4.34 seconds with only 70% of users being able to complete.

Task 4: Asking users to complete a donation took users 26.8 seconds on average to complete with standard deviation of 4.37 seconds.

Task 9: Using Dashboard took users on average 20.57 seconds with a standard deviation of 10.61 showing a the highest variance of all of our tasks and a 70% completion rate

Task	1	2	3	4	5	6	7	8	9	10	Average Time	Standard Deviation	Completion %
Task 12: Ask user to Sign Out	5	5	10	9	8	5	4	5	5	5	6.1	2.17	10
Task 3: Search for resources	7	6	8	6	7	5	8	7	4	5	6.3	1.34	100
Task 8 : Located destinations on map	10	-	9	8	9	12	11	10	7	8	9.33	1.58	90
Task 11: Finding contact information	10	12	13	-	12	11	9	8	10	10	10.56	1.69	90
Task 10: Messaging	10	-	13	-	12	11	9	-	10	10	10.71	1.38	70
Task 2: Login to account	22	10	19	12	14	13	10	18	20	16	15.4	4.25	100
Task 1 : Account Sign Up	18	15	-	20	-	17	15	16	20	16	17.13	2.03	80
Task 6: Raising new request	-	30	20	15	18	20	25	-	-	12	20	6.03	70
Task 9: Using dashboard	30	30	-	35	-	12	-	10	12	15	20.57	10.61	70
Task 7: Finding contact us page	37	20	22	24	25	22	26	23	23	24	24.6	4.67	100
Task 4: Donation	34	20	22	24	25	27	30	32	28	26	26.8	4.37	100
Task 5: Bookmarking	-	28	30	35	-	-	38	40	36	37	34.86	4.34	70

2. Safety

The application will help prevent users from seeing private data of other users. The messaging capabilities allow users to send private information between each other without the public viewing. Any personal data collected when user signs up for the app is not shared as well. We have also made sure phone numbers are not available in public and messaging the particular party has be through the app and not personally as they will not have access to the contact number

3. Utility

The right kind of functionality will support users in accomplishing tasks by making sure it is not confined to a specific device.

Users were able to test the app on any smartphone device.

4. Learnability

The application should be easy to learn for new users and advanced users in navigating and utilizing the app. Most users found the app easy to learn due high level buttons and consistency among the different pages.

5. Memorability

The application should be easy to use and simple and should be able to be memorable for all users and minimize the amount of memory required to operate the application. Little to no work on memory was required to use the application as navigation guided them to what they needed.

6.4 Changes that were done based on feedback

There were few changes done based on the feedback from users like the font size was increased, size of the options in the main menu was increased to afford usability, the background image initially was stretched out, we have changed the image to accommodate the resolution of the device with a responsive design to work on different devices with different screen ratios.

6.5 The other cosmetic changes that can be improved further:

We implemented few design modifications based on the results of the evaluation experiment and are primarily based on the recommendations provided by the expert users and some participants.

We can also incorporate other changes like

1. Changing the account icon in the top right-hand corner of the application pages to a single user instead of two to be more representative of an account.
2. The messaging feature can be enhanced to make it more visible and easier for users to navigate to.
3. The “Need Help” button can be moved to the top so that users in need will see and click on this button first and elevate errors of mistakenly clicking on “Wants Help” which is currently at top first when they are intending to click on “Needs Help”.

7. Prototype Link

[For the People by the People Prototype](#)

<https://marvelapp.com/8afedb4/screen/41437645>

8. References

- Book : Interaction Design (4th Edition) - by Preece, rogers, sharp