HandOff_ProductDescription

Erin Peach, Ian Hadden, Sam Smith, Peter Giseburt, Seth Pendergras, Brendan Redmond, Kennan Mell
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HandOff is a mobile application designed to connect community members with food banks, shelters, and non-profit organizations. These organizations rely on donations and funding from outside sources. Accordingly, they may sometimes find themselves short on items that are essential to their operation and services. Currently, there is no simple and efficient system for organizations to broadcast requests for needed items. HandOff aims to close this communication gap between community members and local organizations. In HandOff, organizations can set up accounts and post requests to the public for needed items. Community members will be able to see local organizations requesting items near them, which they can then fill by donating items. The two groups of users that this application will have are community members and organizations.

Currently, if a local organization finds they need donations of a specific item, they have a few options. Many organizations have Facebook pages or websites on which they can post these requests. However, this method is imperfect. Only people who regularly check a specific organization's website, or follow them on Facebook, will see these specific requests. If someone has recently moved, they might not be familiar with the assistance organizations in their neighborhood. If they aren't aware of these organizations' presence, then they won't know to check their Facebook pages or websites. HandOff will allow community members to see the aggregated requests from all the local organizations which are using HandOff.

Another alternative to HandOff are mobile applications that allow users to donate money to non-profits. However, if a community member is looking to donate a specific item (e.g. diapers that their child no longer fits), there aren't any mobile applications that allow organizations to request non-monetary items and community members donate such items. While there are ways for community members to discover the requests for non-monetary items from local organizations, it requires dedicated research to discover the existence of local organizations and their requests. With HandOff, the process of discovering where to donate items is easy and doesn't require extensive searching. HandOff will act as central repository for donation requests by local organizations. The HandOff application focuses on closing the communication gap between organizations and community members to maximize the ease of donations.

The three most fundamental features of this application are the ability for organizations to request items, the ability for community members to browse the requests, and the ability for community members to search the requests. Organizations will be able to post multiple requests for the variety of items they need. Community members will be able to browse local requests in a list or on a map. This will give them an idea of the need in their local community and they might see a request for something they are willing to donate. Additionally, community members will be able to search requests to fulfill by location of the organization, name of the organization, or item to be donated. This allows users to find a location to donate a specific item they might be looking to get rid of. Another feature we will produce is allowing community members who want to prioritize the request of certain organizations over others will be able to subscribe to that organization and see the requests of their subscribed organizations at the top of their feed.

Two features we would like to implement if we have the resources are messaging and cash donations. The messaging feature would allow organizations to message donors (e.g. thanking them for their donation) or community members to message organizations (e.g. for clarification on item requests). The cash donation feature would simply allow community members to donate money to organizations and could be used for community members to contribute cash to the purchase of a much larger item or to support an organization which is inconvenient to physically visit.

The non-functional requirements of HandOff are centered on providing efficient and simple communication. Users must be able to browse requests quickly so that users can easily find and fill requests. Slow browsing will take away from the user experience and discourage users from continuing to use the application to connect with organizations in need. This applies to both a list of the requests that user will scroll through and for navigating a map of local organizations. Additionally, requests must be updated in real time so that a request is publically visible immediately after it has been published and so people won't fulfill requests that have been removed or filled. For the privacy of both community members and organizations, we need a secure login system, as users will be submitting their location information to the HandOff application. The login system will also create a sense of personal accountability which may prevent users impersonating organizations and making false requests for non-existent organizations or spamming the feed, making real requests harder to find.

A design goal of this app is that there will be very little documentation required to use it. One way we will accomplish this is by providing prompts for text input functions and producing error messages which precisely describe the error. Additionally, in the UI designs we are prioritizing simplicity and removing unnecessary buttons and screens. However, we plan on having a minimal guide for using the app on our website and in the description of the app on the mobile app store.

HandOff_UseCases

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Goal	Find a nearby request for an item the donor wishes to donate
Primary actor	Donor
Scope	HandOff system
Level	User
Precondition	The donor has an account set up already
Success end	The donor finds a request meeting the above criteria
Failure end	The donor does not find such a request
Trigger	The donor opens the app
Main success scenario	1. The donor opens the app 2. The system logs the donor in 3. The system displays a feed of requests and a search bar 4. The donor types the name of their item into the search bar 5. The system displays search results of items matching the search parameter, organized by relevance and proximity 6. The donor selects an item from the results 7. The system displays details about that item 8. If the item details box is closed, 6 through 7 may be repeated 9. The donor determines that the item matches what they want to donate
Extensions	5a. No requests match the search parameters 5a.1 The system displays no requests 5a.2 The donor enters a different search term 5a.3 The use case resumes at step 5 5b. The system is unable to fetch item requests from the database 5b.1 The system indicates the above to the donor, and displays a button which can be tapped to try loading the data again. 5b.2 The donor taps the button 5b.3. If successfully loaded, the use case resumes at step 5
Variations	4a. The donor doesn't want to use the search feature 4a.1 The donor browses the default feed of item requests 4a.2 The donor selects an item from the feed 4a.3 The use case resumes at 7 6a. The donor wants to view the map instead 6a.1 The donor selects map view 6a.2 The system replaces the feed with the map 6a.3 The donor selects a request from the requests displayed on

	the map 6a.4 The use case resumes at 7

Goal	Post an item request
Primary actor	An organization member (OM)
Scope	HandOff system
Level	User
Precondition	The organization has an account set up already
Success end	The OM successfully posts a request for the item they need
Failure end	The OM is unable to post the item request
Trigger	The OM logs into the system
Main success scenario	1. The OM enters their organization's username and password 2. The system logs the organization in 3. The system displays the organization home screen 4. The OM enters the name of the item they are requesting, a description of the item, and tags it with keywords 5. The system adds the item request to that organization's set of item requests
Extensions	2a. The organization's username or password is incorrect 2a.1 The system indicates this to the OM and gives them an option to have this information emailed to them 5a.2 The OM enters the organization's email address 2a.3 The system sends an email to the organization and indicates this to the OM. 2a.3 The use case resumes at step 1 5b. The system is unable to publish a request 5b.1 The system indicates the above to the OM, and displays a button which can be tapped to try posting again 5b.2 The OM taps the button 5b.3. If successful, the use case resumes at step 5
Variations	

Goal	Remove an item request
Primary actor	An organization member (OM)
Scope	HandOff system
Level	User
Precondition	The organization has an account set up already
Success end	The OM successfully removes an item request they have posted
Failure end	The OM is unable to remove the item request
Trigger	The OM logs into the system
Main success scenario	1. The OM enters their organization's username and password 2. The system logs the organization in 3. The system displays the organization home screen 4. The OM selects the button to see their organization's item requests 5. The system displays their organization's current item requests 6. The OM scrolls though and selects the item they wish to remove 7. The system displays that item's details and operations which can be performed on that item 8. The OM selects Remove Item 9. The system removes the item from the organization's set of items
Extensions	2a. The organization's username or password is incorrect 2a.1 The system indicates this to the OM and gives them an option to have this information emailed to them 5a.2 The OM enters the organization's email address 2a.3 The system sends an email to the organization and indicates this to the OM 2a.3 The use case resumes at step 1 5b. The system is unable to fetch item requests from the database 5b.1 The system indicates the above to the OM, and displays a button which can be tapped to try loading the data again 5b.2 The OM taps the button 5b.3. If successfully loaded, the use case resumes at step 5
Variations	

Goal	Create a donor HandOff account
Primary actor	A donor
Scope	HandOff system
Level	User
Precondition	The donor has downloaded the app
Success end	The donor successfully creates an account
Failure end	The donor is unable to create an account
Trigger	The donor opens the app
Main success scenario	1. The system displays the option to create an organization account or a donor account 2. The donor selects the donor option 3. The system displays a text field for the donor's phone number 4. The donor inputs their phone number 5. The system sends a text to the donor containing a confirmation code. 6. The donor inputs the confirmation code 7. The system registers the new donor
Extensions	6a. The donor does not receive the text 6b.1 The donor presses the Resend option 6b.2 The system attempts again to send the text 6b.3. If successful, the use case resumes at 6 7a. The donor's confirmation code is incorrect 7a.1 The system indicates this to the donor and gives them an option to reenter the code 7a.2 If successful, the use case resumes at 7
Variations	

Goal	Subscribe to a certain organization
Primary actor	Donor
Scope	HandOff system
Level	User
Precondition	The donor has an account set up already
Success end	The donor successfully subscribes to the organization
Failure end	The donor it unable to subscribe
Trigger	The donor opens the app
Main success scenario	1. The donor opens the app 2. The system logs the donor in 3. The system displays a feed of requests and a search bar 4. The donor taps on a item request in the feed 5. The system displays details of that request and who posted it 6. The donor taps on the name of the organization who posted the request 7. The system displays that organization's page 8. The donor taps the subscribe button 9. The system subscribes the donor to that organization
Extensions	9a. The system is unable to subscribe the donor to the organization 9a.1 The system indicates this to the user and says they may tap to retry 9a.2 The user taps the button again 9a.3 If successful, the use case resumes at 9
Variations	4a. The donor wants to view the map instead 4a.1 The donor selects map view 4a.2 The system replaces the feed with the map 4a.3 The donor selects a request from the requests displayed on the map 4a.4 The use case resumes at 5

These use cases cover the most important scenarios of HandOff. HandOff will be used for organizations to post requests, a use case which we covered, and by community members to browse requests from their local organizations or search for a location which requests a specific item. Additional scenarios are covered in these use cases, like signing up for HandOff, subscribing to an organization's posts, and allowing organizations to curate their requests. These cover the main functions of our application - posting and viewing item requests, as well as, ease-of-use features, like subscribing to organizations and managing an organization's posts.

HandOff_UIDiagrams

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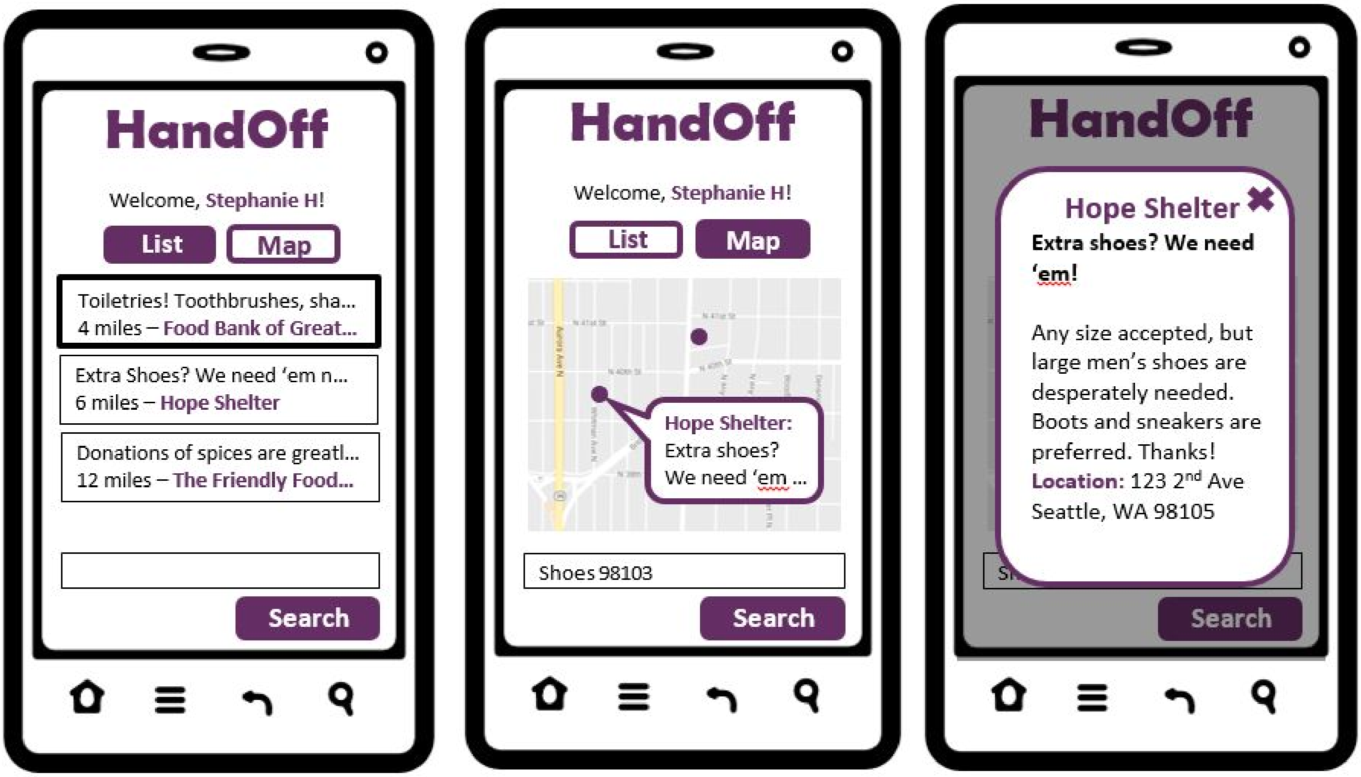
Use Case: Find a nearby request for an item the donor wishes to donate (performed by donor)



Toiletries! Toothbrushes, sha...
4 miles – Food Bank of Great...

Extra Shoes? We need 'em n...
6 miles – Hope Shelter

Donations of spices are greatl...
12 miles – The Friendly Food...

Hope Shelter: Extra shoes? We need 'em ...

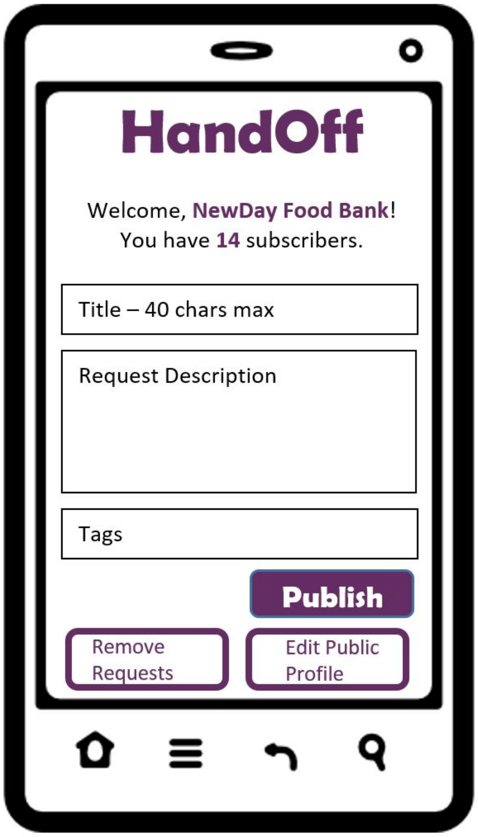
Shoes 98103

Extra shoes? We need 'em!

Any size accepted, but large men's shoes are desperately needed. Boots and sneakers are preferred. Thanks!
Location: 123 2nd Ave
Seattle, WA 98105

A user opens the app and see a list of local requests (first image). They search for an item and a location and choose the map display (second image). They choose a request and see additional details (third image).

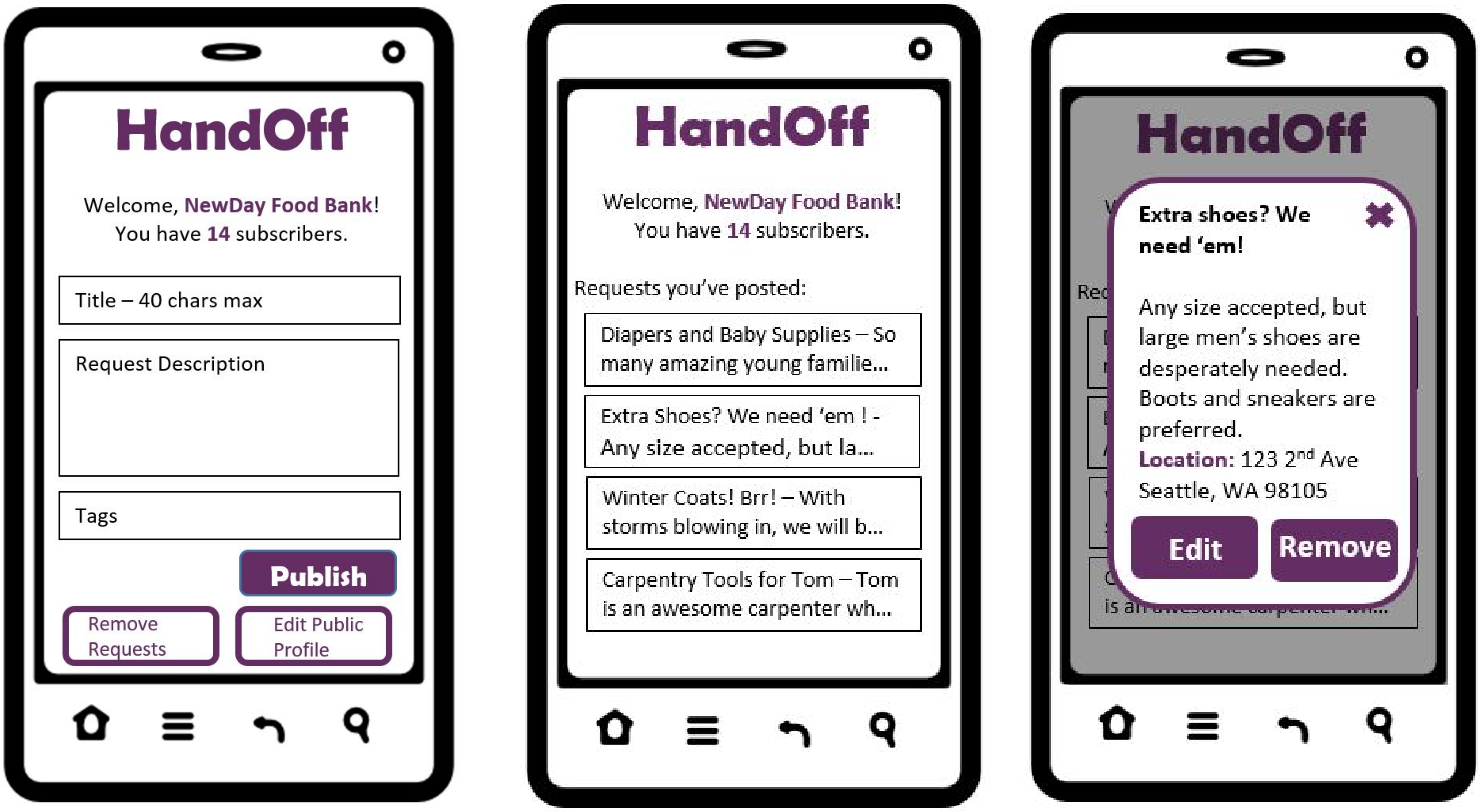
Use Case: Post an item request (performed by organization)



Welcome, **NewDay Food Bank**!
You have **14** subscribers.

An organization fills out the request form and publishes it (first image).

Use Case: Remove an item request (performed by organization)



Welcome, **NewDay Food Bank**!
You have **14** subscribers.

Welcome, **NewDay Food Bank**!
You have **14** subscribers.

Requests you've posted:

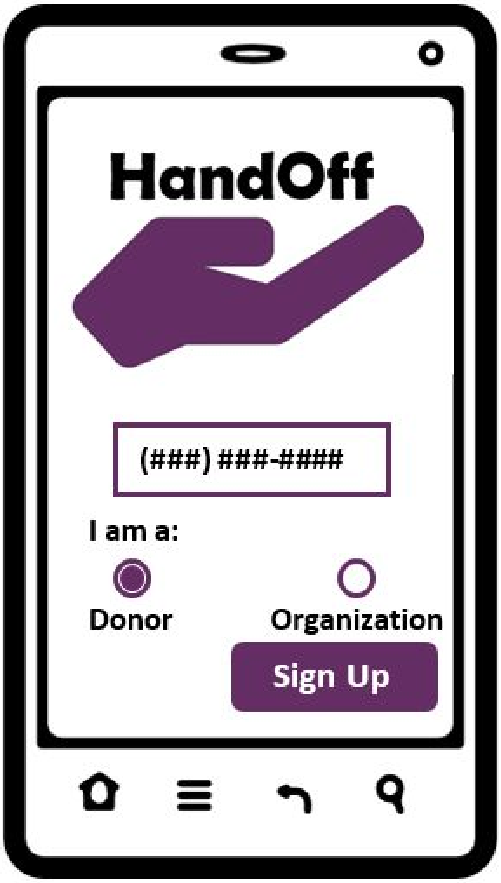
- Diapers and Baby Supplies – So many amazing young familie...
- Extra Shoes? We need 'em ! - Any size accepted, but la...
- Winter Coats! Brr! – With storms blowing in, we will b...
- Carpentry Tools for Tom – Tom is an awesome carpenter wh...

Extra shoes? We need 'em!

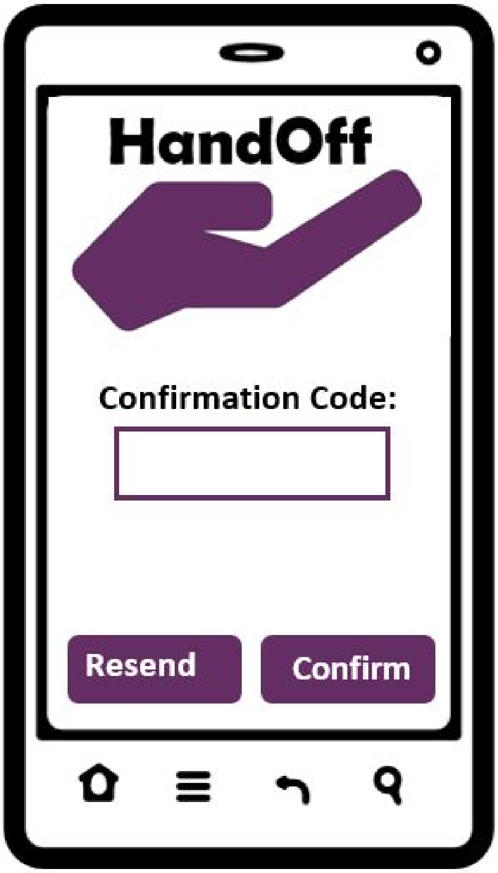
Any size accepted, but large men's shoes are desperately needed. Boots and sneakers are preferred.
Location: 123 2nd Ave
Seattle, WA 98105

An organization opens to their home page and selects remove requests (first image). They view the requests they've posted and select one (second image). They see additional details about their request and remove it (third image).

Use Case: Create a donor HandOff account (performed by donor)

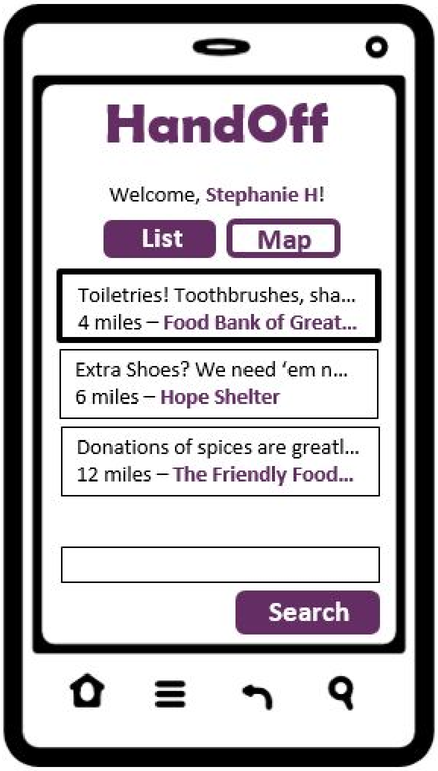


I am a:
● Donor ○ Organization



A user downloads the app and fills in their phone number and selects that they are a donor (first image). They receive a text with a confirmation code and enter that code (second image).

Use Case: Subscribe to a certain organization (performed by donor)

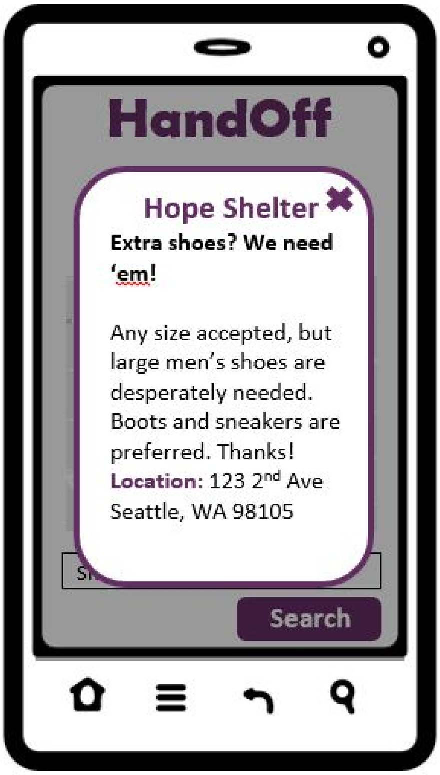


Welcome, Stephanie H!

Toiletries! Toothbrushes, sha…
4 miles – Food Bank of Great…

Extra Shoes? We need 'em n…
6 miles – Hope Shelter

Donations of spices are greatl…
12 miles – The Friendly Food…

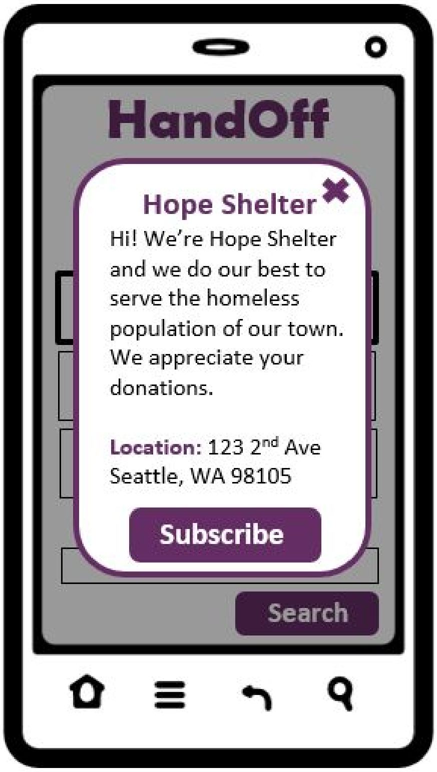


Hope Shelter

Extra shoes? We need 'em!

Any size accepted, but large men's shoes are desperately needed. Boots and sneakers are preferred. Thanks!

Location: 123 2nd Ave
Seattle, WA 98105



Hope Shelter

Hi! We're Hope Shelter and we do our best to serve the homeless population of our town. We appreciate your donations.

Location: 123 2nd Ave
Seattle, WA 98105

A user opens HandOff and view the local requests (first image). They select a request and view additional information and select the organization's name (second image). They view the organization's profile and subscribe (third image).

HandOff_ProcessDescription

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Software Toolset:
Front end:
Platform: React Native, targeting latest Android and iOS only (HTML/CSS/JS)
We decided on React Native due to its ability to write one front-end for both Android and iOS, and because of its popularity in comparison to Xamarin and Cordova. Additionally, the HTML/CSS/JS stack it uses will be easy to create, and can be carried over to React.js in the future (outside the scope of this class). We will use Java and Swift as necessary to implement platform-specific functionality that is not possible to implement using only React Native.

Back end:
Language: Java
We will be using Java, as it is the language our group (as a whole) is most familiar with. This will save us time as we won't have to learn a new language, and will allow us to write better code for the backend. Instead of managing our own server, we will use AWS Lambda and API Gateway.
Database: DynamoDB
DynamoDB is a NoSQL database-as-a-service; the reason we decided not to use a typical relational database is because of our relatively simple needs; we are only using the database for accounts and listings. Additionally, being a service, we do not have to manage it ourselves.

Project Management:
We will be using GitHub as a repository for our code base. We chose this as we are familiar with Git and GitHub accounts are easy, and free, to obtain. Additionally, GitHub has an internal bug-tracking system which we can use to report, prioritize, and solve bugs. Having our repository and bug-tracker in the same location will streamline the development process.

Group Dynamics:
Project Manager: Erin

Erin was elected Project Manager as she pitched the HandOff project. She expressed an interest in project management and has experience leading and coordinating groups as CSE TA.

Development: Everyone

Everyone in the HandOff group wants to be involved the development process. We chose to keep everyone involved in the development to ensure that everyone remains invested in the implementation of HandOff and can use this project to practice their technical skills. However, development tasks will be split based on whether someone wishes to focus on the front-end or the back-end. This will allow team members to minimize the contexts they must develop in over the short development cycle.

Testing “Czar”: Kennan

As all our team members are interested in taking an active development role, we decided that everyone will be responsible for testing their own code. However, Kennan was elected our testing ‘czar’. In this role, he will set-up our continuous deployment and hold the rest of the team accountable for testing their code. This method ensures that everyone gets to experience both development and testing and ensures that someone will be checking that testing is occurring throughout development.

Changing roles:

As the project progresses roles will likely become more specific but not shift dramatically from what they originally were. We plan to have everyone involved with all components of HandOff, to evenly distribute the work and encourage the best design possible.

Handling disagreements:

We will bring up any disagreements during our weekly Tuesday meetings and the PM will moderate and stimulate discussion. If the PM cannot be an impartial moderator, another team member will be elected to fill this position. Additionally, we will use email and Slack to communicate disagreements early; this will allow us to quickly resolve any conflicts we may have.

Schedule / Timeline:

As we plan to have everyone involved with development, and most of the features are best implemented in order, we are choosing to instead all focus on one feature at a time. Design will receive the largest time estimate, as usability is very important to HandOff, and the feature implementations will be reliant on how they are designed (both architecturally and appearance-wise). The rough order of implementation, completed by dates and estimated work days needed are listed below:

Design	10/28	1-2 weeks
Search	11/11	5 days
Browse	11/11	5 days
Login	11/11	5 days
Requests	11/11	5 days

Subscriptions	11/18	1 week

Risk Summary:

1. Timeline

    The major risks to completing our project on time is that we are developing two user interfaces (one for the organization and one for the community member) to be accessible on two mobile clients (iOS and Android). The user interfaces of the two types of user have no overlap and we want each user experience to feel robust, creating a lot of UI development work. To accomplish this, we will ensure that each user experience is developed completely and in a timely manner and, if necessary, assign one team member to each user type to make sure that interface gets done. External user evaluation will be helpful in this process. Getting feedback from each type of user on their user experience in HandOff will allow the team to check that both users are satisfied with their experience and that they understand the role of their type of user. We can achieve this feedback by having people who are involved in non-profit organizations and community members test the application and provide feedback.

    Additionally, coordinating schedules for six group members can be a challenge. To mitigate this risk, we will make a lot of use of our Slack communication and use our regularly scheduled meetings efficiently.

    Two technical risks to our timeline are getting all group members familiar with the appropriate technology, like React or DynamoDB, and ensuring that the back-end and front-end of the application are integrated properly. By splitting the features into sub-tasks, like back-end and front-end, our goal is that no team member will have to learn all the new technologies we are using. Additionally, integrating front-end and back-end periodically throughout the development process allows us to discover any difficulties and solve them early in the process.

2. Acquiring Users

    Another potential risk is developing a large enough user base to test the performance of our application under stress. With the simplicity of the application, it is worth exploring whether stress-testing can be automated. However, if we are not able to develop an automated testing system for the HandOff application, we can leverage external user evaluation and ask our CSE peers to volunteer to stress test the infrastructure.

3. Security and Spam

    A big potential risk for the viability of HandOff is the risk of it being used to spam users. If someone registers as an organization, they will be able to post messages publically, potentially requesting items for their own personal gain. To avoid this situation, we must determine a way to verify the organizations that are registered with us. One way to do this would be to verify the organizations against a list of registered non-profit, as available through nonprofitlist.org. This puts the burden of verification on an external resource.

If we accomplish our reach goal of enabling financial donations through HandOff, then we must also use a secure payment system. If we use an established system like PayPal, then we can rely on their security credentials to create a secure payment process. Getting feedback from potential users will help the team to understand whether our clients will feel their information is secure in our application.