

Product Requirement Document

- What does the product do?
 - The product will coordinate food deliveries to local shelters, food banks/pantries, directly to people in poor communities who can't afford good food, or to anyone who needs food.
- Who is it for?
 - This is for people who need to receive the food and for donors that supply the food. This app is also for the volunteer drivers, so that they know where to get the food and where to deliver it.
- Why do people need this?
 - People need this app because food waste and hunger are two big problems around the world, where perfectly good food gets wasted or thrown away, when that food can instead be given to people who need that food for a good cause. This app will help prevent food being wasted and will prevent people from going hungry.
- Who are the end-users?
 - For example, when a local shelter sends a request for food to be delivered, the end-users will be the donor that gets notified and the drivers who will deliver the food.
- What are the key features?
 - As soon as someone opens the app, there will be a login page and a question asking you if you are a driver, donor, or recipient. This is one key feature that will determine whether the app runs successfully. Another key feature will be an in-built map that shows the GPS coordinates of where the request is coming from, where all the nearby donors are, and it will show the location of the driver that will deliver the food. There will be an in-built map for the recipient, donor, and driver. You can also tap on the donor's location and driver's location to call them or text them.
- How can people request for food to be delivered?
 - There will be a button on the recipient's user interface that will allow any recipient to request for food at anytime.
- Who will deliver the food?
 - Volunteer drivers will deliver the food.
- Where will the driver know where to deliver the food?
 - The in-built map will show where to deliver the food.
- Where will the driver know where to get the food?
 - The in-built map will show where to go to get the food.

- Don't we already have Google Maps or DoorDash to make food deliveries for us?
 - Yes, but these food deliveries are not for free, and Google Maps accounts for billions of restaurants worldwide. If you are a recipient, then you are also not able to track your driver's location and ETA, and cannot communicate with them. If you are a recipient in this app, however, you are able to communicate with both the driver and the restaurant or donor through either text or phone call.
- Why do we need this app, can't we just do this ourselves?
 - Yes, we could, but if we could just do this ourselves, there would be less hunger in the world. The whole point of this process is that people should want to give back to other people who don't have as much or who are not as lucky as some. This app works on the logistics of how the food is delivered, but it won't work without people's motivation. So, yes, we could just do this ourselves, but we need the app to actually make it work, so that the recipient of the food receives it without any problem. If a shelter is in dire need of food, the app will ensure that the shelter receives food without any problem. The volunteers' motivation and the app are both coordinated to success.

Sources

- <https://www.toogoodtogo.com/en-ca/about-food-waste>
- <https://github.com/copilot>
- <https://github.com/ajayjagadish6/food-chain>
- https://github.com/ajayjagadish6/food_chain_2
- <https://openknowledge.fao.org/server/api/core/bitstreams/10388b16-5f1a-45d0-b690-e89bb78d33bb/content>
- <https://insights.refed.org/>
- <https://www.wrap.ngo/>
- <https://www.wfp.org/stories/5-facts-about-food-waste-and-hunger>
- <https://refed.org/food-waste/the-problem/>
- <https://openknowledge.fao.org/server/api/core/bitstreams/1694038d-98f7-40f6-be4b-98782544b9f9/content>
- <https://www.epa.gov/recycle/preventing-wasted-food-home>

Why does food get wasted?

- Food gets wasted for a variety of reasons. People tend to produce more food than needed, and that extra food gets thrown out if people don't use it or need it.

- In supermarket shelves, people tend to overstock shelves to give an abundance of business and economic benefit for the supermarket business, but in reality, the food that doesn't sell as much or the food that doesn't sell at all gets thrown out.
- If people leave food out or if it is not refrigerated properly, then the food gets spoiled and wasted. If people don't like a specific food, they tend to throw it away or neglect it until it spoils. People also tend to overbuy groceries, and that extra food becomes wasted
- If a particular food item or grocery item seems relatively cheap, people might tend to underestimate its true value, so if it gets wasted or left out, people won't care as much

Why is this a problem?

- Food waste is a huge contributor to world hunger.
- All the resources used to grow that food (water, energy, farmers' hard work) all goes to waste, and this is morally and environmentally a huge problem
- Food waste also contributes to global warming, as a result of food waste filling up in landfills. Dangerous gases such as methane get released because of this problem.

If we can solve the problem of food waste, we can prevent a huge environmental problem from arising, that is climate change and energy waste, but another important problem that would be mitigated is people from going hungry.

How is this app a solution for both hunger and food waste? Why this app?

- Usually, if any donor or any person decided to throw out food because they don't think that product is selling much or because they don't like the taste, they would. However, this app gives everyone a new idea they have never thought about before: instead of throwing away this good food, use it for a good cause. Give this food to people who don't have as much or to people who actually need it. Give it to local shelters or to poor communities who can't afford food as nutritious and delicious as the foods we buy in our everyday supermarkets. This app not only gives a new idea that can solve hunger and food waste, but it actually ensures that the food is not wasted and that the food is successfully delivered on time for everyone to enjoy.

App Info:

I am building an app called FoodChain. Perfectly good food gets wasted and thrown away, but instead, that good food can be used to give back to people who actually need it. This, essentially, prevents food from being wasted and prevents people from going hungry.

This food will then be collected and delivered by a driver, and my app will coordinate how and where the driver needs to go. The driver receives and delivers the food, the recipient (local shelters/people in need of the food) receives the food, and the donor supplies the food.

When anyone opens the app, there should be a sign in page that will ask you to enter your information and then a question that says "Are you a donor, recipient, or driver?" and there will be three buttons with each choice. If you click on the recipient button, there should be a button that says, "Send A Request" and when that button is clicked on, it should redirect the recipient to a map that uses GPS coordinates to show the locations of both the driver and the donor that will be both supplying and delivering the food.

The app will match a donor and a recipient based on their requirements. There will be two databases that will store forms that are made by recipients in one database and forms made by donors that are stored in another database. Every day, each donor and each recipient will have to fill out a form.

On a recipient form, the recipient will have to fill out how many people need food, and what food preferences everyone has (ex. two are vegetarian, one peanut allergy, two vegan, etc.). On a donor form, the donor will have to fill out how much food it has for how many people (ex. I have food for 10 people), what all extra food is there (ex. shrimp, roti, pasta) and it will also ask to organize all the food items into specific categories (non-veg vs. veg, foods with nuts, foods with dairy, foods with eggs, etc.).

These forms are how the app will match the recipient and the donor, based on the content and preferences in their forms. So, if a recipient has three vegetarians and two nut allergies, and a donor meets all those requirements in their forms, then the app will most likely match the recipient to that donor when a request is made by either of them. For each recipient and each donor, a form has to be filled out everyday because the food items might change or the number of people might change day by day. This is how the app ensures that a recipient not only receives the food, but receives the right amount of food that meets the food preferences for everyone on the recipient end.

When the recipient clicks on the "Send A Request" button, a notification will be sent out to any driver and a donor that is best for everyone on the recipient end. When the donor clicks on the "Donate" button, a notification will be sent out to any driver and a recipient (based on the requirements and food preferences in the forms). When the request comes, it should be a notification that appears on the very top of the page that says where the request is coming from and who sent it.

The app will match the donor to a recipient or a recipient to a donor (depending on whose sending the request), but once one donor and one recipient gets matched together, neither of them can be matched to another donor or recipient again until the current food delivery is complete. After the food delivery is complete, they can be matched to other donors and recipients. This also applies to drivers.

The driver and donor/recipient (depending on who sent the request) should click on the notification pop-up and that should redirect all of them to a map of everyone's GPS coordinates and location. Also, on the map, if anyone wants to call or text each other, all they have to do is tap on that person's location and a side menu should appear on the side with the buttons Text and Call. Click on these buttons to communicate with anyone. For the driver, two routes should appear, a route to the donor to collect the food and a route to the recipient to deliver the food, and when the driver begins to go on these two routes, an estimated time arrival should appear for each route, and each of these estimated time arrivals should be available for also the recipient and the donor to make sure that the food will arrive on time. When the driver is done with the delivery, there will be an option to end delivery, and when the driver clicks on that button, the map will disappear for everyone on that map.

If a donor has extra food that they want to donate or give away at any time, there will also be a button that will say "Donate" on the donor's screen. When this button is clicked, a message will go out to the recipient that best matches the donor's requirements (based on the forms) and the message will also go out to any driver. When the recipient and driver receives the notification pop-up at the very top of the screen, they should click on it and that will redirect both of them to a map of the same GPS coordinates with Text and Call options, ETAs, delivery routes, etc.

We need this app for a multitude of reasons. For one, recipients (ex. local shelters/homeless people) have no idea whether donors (ex. homes/restaurants) have extra food to spare and it would take a long time to ask every single home or every single restaurant for spare food. Homeless people or poor communities also might not have the resources to make such long and potentially unsuccessful journeys to every single home, asking for food. They are depending on us for donations and food drives for survival. So, instead of the recipients having to make these long journeys, we can make them, using this app. For example, a shelter that has so many people gathered there, each person waiting for good food to eat, will probably need food as soon as possible, and no one will know that. However, if this shelter sends a request, which they can do through the app for a food delivery, the driver will know which shelter actually needs the food and which donor to go to. Essentially, without this app, a driver that has to make the food delivery will not know which donor to get the food from and the driver also won't know which shelter or recipient actually needs the food.

The app also ensures that recipients with exact food preferences and dietary restrictions will be able to receive food that meets those expectations. If everyone at a shelter is vegetarian and a donor only has vegetarian food available, the app will match both of them together to make sure that everyone on the recipient end has their food preferences met.