reducing food waste

at the consumer level

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project statement

What's the problem?

Many resources are allocated towards producing and distributing food. These resources translate into a larger loss when they are thrown out rather than consumed by the consumer at the end of the chain of production. Part of the reason for increased food waste behavior is a lack of knowledge on the available food in a household, effective storing practices and household routines that do not promote consistent habits. This project aims to introduce a means of reducing obstacles in obtaining knowledge about the groceries a consumer has, needs, its state and what dishes they can create with it. Through this, consumers would potentially develop better food-related habits.

What will you do?

In order to alter behavior embedded in routine, the technology that stores our food should also change. The fridge (and an accompanying app to track groceries) would be designed to endorse behavior that reduces food waste within the household. However, due to the scope and speculative nature of the product, the final product is not the fridge itself but an informative piece that highlights and markets the anti-food waste concepts behind the fridge. It's intended to sell the idea, proposing an improved alternative to the existing system, and promote anti-food waste behaviour. Features of the fridge and application would be highlighted through a fold-out flyer that could be presented at tradeshows. The accompanying app will provide users with an opportunity to simulate the real-life experience and better understand how the fridge's features play a role in affecting their routine.

What did you find?

The primary research conducted was a diary study that uncovered the thought process of a participant as they engaged in a food-related decisions over the span of seven days. The results of the primary research showed that convenience and knowledge of available food was a primary factor in determining what was to be eaten. The participant displayed a reliance on convenience; meals were based off of what they primarily saw which required the most minimal amount of effort. Such behavior is predicted to occur among consumers maintaining busy lifestyles. The primary research also revealed the participant and their household's eating and grocery shopping routine (or lack thereof), which studies have shown result in higher cases of food waste behavior.

Secondary research revealed the complex issues of food waste and its overlapping causes. There were two primary approaches – the theory of planned behavior and social practice. Both approaches were seen within the results as well. The participant's intention to commit a particular action and the ease of which they could achieve it impacted their behavior. Their thought process also outlined the social practices (routines) that inhibited or promoted food waste habits.

Other experimentation included a visualization of all the expiry dates of food in a participant's fridge. The visualization revealed the tendency for ingredients placed farther back and farther from eye-level of the fridge to be expired. Groceries that are not often consumed are pushed back farther to make room for groceries that are often interacted with, making them even less likely to be consumed.

objectives

What do you want to achieve through the flyer?

Introduce a new, more efficient method of storing food in a fridge that incites interest among potential buyers.

Attract the attention of sponsors.

Market the features of the fridge and showcase it as a **positive alternative.**

Communicate the benefits of decreasing food waste.

Make readers **aware of different facets** of food waste behaviour

Elevate food waste **into a social and public concern** to incentivize users to improve on their food storage practices.

What do you want to achieve through the application?

Allow for users to **experience** how **the real-life application** would function

Remove barriers for users to better organize and track their inventory and grocery shopping.

Inform users of strategies to reduce food waste

Conveniently **inform** users and all members of the household of the state of their food inventory.

Encourage positive grocery shopping behaviour and routines that reduces the likelihood of overlapping groceries among family members.

user definition

Who's the primary audience?

The primary audience is the end user of the speculative fridge with a focus on targeting family homes who are estimated to accumulate the most food waste. Also, the purchase of a fridge is often synonymous with the purchase of a home. The fridge would cost more than the current fridge with digital displays which average $4,000. Thus, the target audience would need to have an income that can afford such expenses. Since the occupants of a household vary greatly, the fridge design has to accommodate as many ages as possible. By focusing on the end user, the informative piece will have stronger appeal to companies that will aim to market to these users.

General Primary Target User Demographic

Age	12 – 65 years old
	Owns a mobile device that can connect to the fridge
	Can open or close a fridge
	Decides what goes in and out of the fridge
Requirements	Goes grocery shopping
Min. Household Income	$35 K
	Saving money
	Reducing food waste
	Improving food storage practices
	Environmental concerns
Values	Convenience

Persona Sample – Jessica Salini

Age	24	**Gender**	Female
Household	Lives in Suburbs with parents and younger brother		
Work Life	Office Worker: 9 am - 5 pm Tutor: 6 pm - 8 pm		
Shops at	HMart Longos NoFrills		
Skills	Basic cooking knowledge Well-versed with learning technology Heavily attached to phone		
Goals	Learn how to cook Save money Eat fresh food Not eat late (past 7 pm)		
Frustrations	Cleaning up is a lot of work The fridge is stuffed but there's no ready-to-eat food in the house Cannot cook when she wants to Doesn't like what's been cooked No time to cook		
Habits	Wakes up at 8 am, sleeps at 1 am Orders sushi delivery often and drinks lots of bubble tea Eats out once a week with boyfriend Gets inspired by watching online cooking/recipe videos Cooks and grocery shops on a whim Posts food pictures onto social media Has no idea what's in her fridge Goes to the gym in the evenings Picky eater Tries to cook enough to eat one more time		

Who's the secondary audience?

A potential venue for the informative piece is at a trade show that introduces the fridge to the masses or for a product pitch to investors and clients. While the actual speculative product would be designed for traditional homes and living spaces, the flyer and application would be revealed to potential investors or buyers.

General Secondary Target User Demographic

Age	27 - 65 years old
Requirements	Interest in investing
Min. Income	$35 K
	Making money
	Reducing food waste
	Environmental concerns
Values	Innovative products

functionality

There are multiple cases in which a person may encounter the final system and interact with it. In this proposal, three of the projected most common cases are outlined – a user looking to cook, a hungry user that's short on time, and a user that's grocery shopping.

Cooking user flow

User is hungry and wants to cook something to eat. User enters the kitchen. Fridge detects movement in front of it and lights up the display. The display shows a rotating digital snapshot of the interior of the fridge. User scrolls through snapshots and the interior rotates along with it. User remains undecided and taps a section of the display that shows the expiry dates of food within the fridge. User receives information on which ingredients are soon to be expired. User identifies that the best before date for eggs is approaching. User decides to use eggs before they pass the best before date. After tapping the image, the display recommends other ingredients to be used in conjunction with the eggs. User receives information on cooking combinations and finds that they'd like cheese with their eggs. User taps on cheese as well and the display shows where it is inside the fridge. User opens fridge and is confronted with the eggs in a compartment at relatively eye-level. User sees all items in that compartment side-by-side. User picks up the carton of eggs and pushes the compartment down until it reaches where the cheese is stored. User picks up the cheese and closes the fridge with a meal plan in hand.

No food user flow

User is in their room, in a rush, and wants to know what they can eat for breakfast. User turn on application and views what is in the fridge through the application dashboard. User sees that there is not a lot of ready-to-eat food in their fridge. User presses the search button and filters the options by time to prep. Application provides a list of simple recipes using ingredients that are due to expire and then of freezer items. User decides that they have time to create a cold-cut sandwich with the turkey that's been in the fridge for a week. User heads to the kitchen knowing what they will make and how long it will take.

Grocery shopping user flow

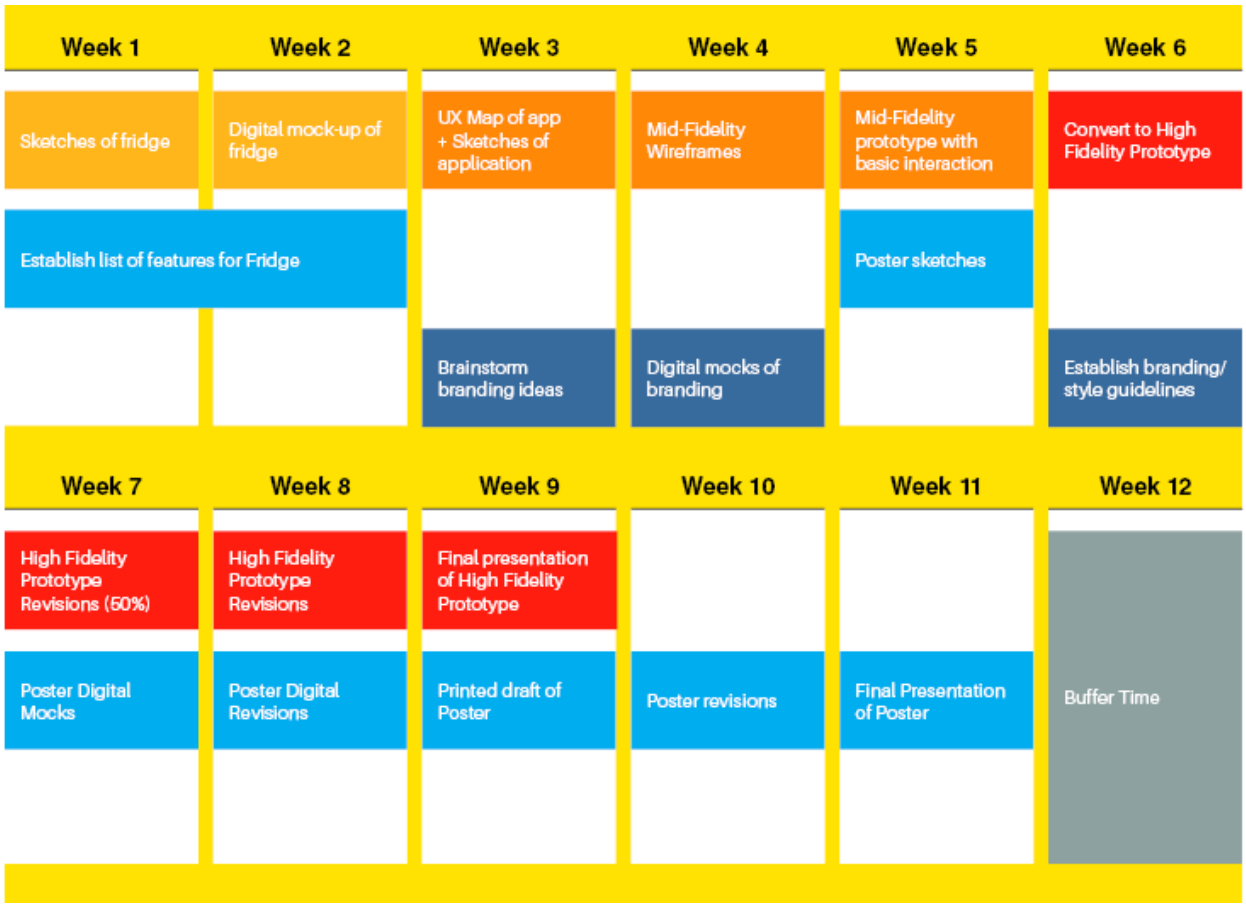
User is coming home from work. User believes they have to go grocery shopping. User opens the application on their phone and taps the button that indicates that they shall grocery shop. A prompt asks the user to input their shopping destination. The application redirects the user to the grocery list. Other members of the household receive a notification that the user is grocery shopping and are encouraged to provide input on the grocery list. The user uses their phone as a grocery list. An item that already exists in the fridge receives a warning. User acknowledges the warning and returns the item to the shelves. An item that has stayed in the fridge for an inordinately long amount of time receives a warning. User leaves the grocery store with the understanding that they have bought everything they need and only what they need. Members of the household are notified that the user has left their shopping destination.

Additionally, there is the user flow for the secondary target audience interacting with the deliverables.

Trade show user flow

Appliance Company investor is attending a trade show looking for new products. Investor passes by booth containing pamphlets, an opened version and a row of phones. Investor sees large image of a new type of fridge on an informative poster. Investor reads poster and obtains information on the potential features of the fridge and the issues they tackle. Investor is intrigued by the information. Investor is informed that the fridge would come with an accompanying app. Investor tinkers with the high-fidelity prototype and realizes that a shareable grocery shopping feature would be extremely helpful in their own household. Investor takes a pamphlet and moves on to the next booth with the concepts in mind.

timeline


Week 1
Week 2
Week 3
Week 4
Week 5
Week 6
Sketches of fridge
Digital mock-up of fridge
UX Map of app + Sketches of application
Mid-Fidelity Wireframes
Mid-Fidelity prototype with basic interaction
Convert to High Fidelity Prototype
Establish list of features for Fridge
Poster sketches
Brainstorm branding ideas
Digital mocks of branding
Establish branding/ style guidelines
Week 7
Week 8
Week 9
Week 10
Week 11
Week 12
High Fidelity Prototype Revisions (50%)
High Fidelity Prototype Revisions
Final presentation of High Fidelity Prototype
Poster Digital Mocks
Poster Digital Revisions
Printed draft of Poster
Poster revisions
Final Presentation of Poster
Buffer Time

deliverables

Informative piece of speculative fridge

A double-sided informative fold-out pamphlet, which may double as a poster, outlining all the different features of the fridge and how they improve upon the existing fridge/food storage experience. Connects features of the fridge with the functionality of the application through screenshots. Highlighted features explain how the fridge will aid in decreasing food waste behaviour and the resulting economic or functional benefits. Imagery will mimic product photography using 3D modeling or an isometric approach.

High-fidelity prototype of application

An interactive, high-fidelity Figma prototype that covers the shared inventory, grocery shopping and recipe aspects of the application. The application will allow users to simulate some habits that could reduce food waste. The prototype will be fully branded and cover the 3 basic functions of the application-updated grocery inventory list, a dynamic shopping list and recipe options. The application will contain guided prompts that reflect feedback from the fridge. It is projected that each function will end up with 5 screens at minimum.

Promotional video (option B)

A 1-minute video that demonstrates features of the fridge and the connection between the product and the app, showcasing the potential real-life applications. It runs through the different features of the application, when they are relevant to a user, and how it will change their behaviour to reduce food waste. The product will be a 3D model animation. Use cases will use real life participants/actors that pretend to interact with a physical product.

poster references