REDUCING HOUSEHOLD FOOD WASTE IN THE UK

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INTRODUCTION

The UN has listed SDG goals in zero hunger, an urgent call for action by all countries. In response to these goals, this pictorial target aims to respond to the zero loss or waste of food by reducing household food waste. To encourage behavioral change, this pictorial presents a solution using household data to assist the users' behavior in accomplishing a more sustainable future.

RESEARCH

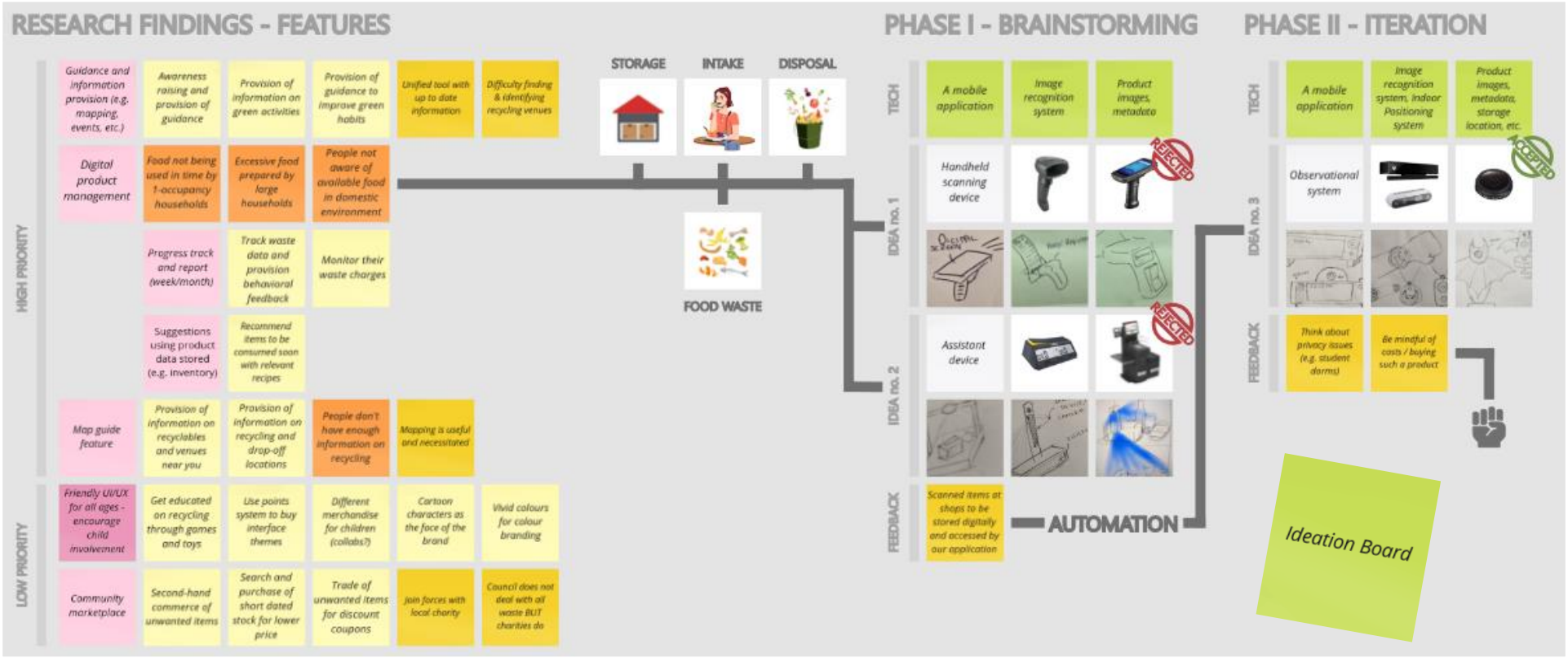
Most of the apps on the market focus on sharing and recycling goods among the community. Our research discovered that 67% of wasted food comes from households; this equates to about £250-400 waste per household in the UK.

The significant behaviors that resulted in food waste are transparency, awareness of available foods and misled/incorrect tacit knowledge. Individuals do not know the available foods in the fridge and often forget the food in the refrigerator. They determine the food expiration based on the given date without using their sight, smell and touch. Other research has shown that the primary motivation for the user to recycle waste is to save money. Providing user information about reducing waste and building social connections between users has dramatically reduced household food waste.

IDEATION

Following the classification of the research findings and relevant feedback received, five predominant requirements emerged. The team explored different technologies that would permit the intervention to manage products in a digital space, transforming the kitchen towards a smart kitchen. At first, user involvement was necessitated to scan the items into the system, with the support of an image recognition system, however this idea was scrapped due to the recurrence of mundane actions.

Further research into technologies paved the way forward to an automated system, encompassing an indoor positioning system alongside the previous system. This system depends on the collaboration of composite independent components; sensor devices, a mobile application, and complementary wearable devices.



USER PERSONAS

The personas are based on our household focus. We created a persona of a mother of 2 children with limited time to manage her food and a university fresher who does not know how to cook independently.

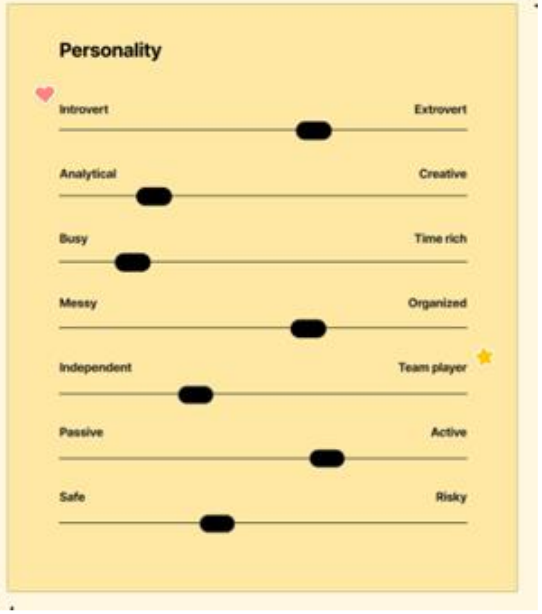
Louisa Winter

"Mother of 2"

- Age: 32
- Occupation: Accountant
- Location: Newcastle upon Tyne
- Education: Bachelor

Bio

Louisa is a accountant living in Newcastle. She has to take care of her 2 kids after work causing she has limited time in her day. She goes to supermarkets to buy groceries for 3 people. Because she is really busy managing between her job and taking care of her 2 kids, she often forgets what items are left in the fridge. This causes her worries when grocery shopping, sometimes she finds a moulded orange in her fridge and could cause food hygiene issues to her 2 kids. Louisa wish there was an app that could help her manage groceries and remind her what items there are and what items are about to expire.



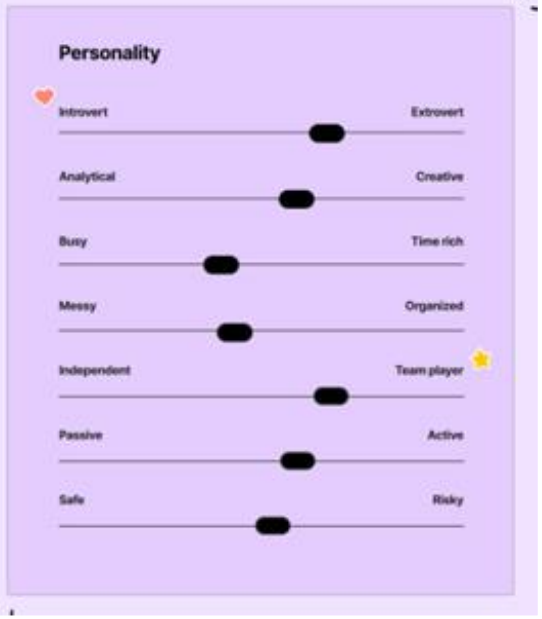
Jamie Norman

"University fresher"

- Age: 18
- Occupation: University student
- Location: Newcastle upon Tyne
- Education: Ongoing Bachelors

Bio

Jamie is a fresher in university. He shares a common fridge with 3 other flatmates. He often buy groceries for the whole week, but he isn't able to finish all the left groceries before they expire. He is new to cooking and often made his food inedible because the lack of skills and sometimes he was not sure whether the food has gone bad since it is his first time living alone. He wishes there is an app that could recommend him recipes for using the leftover groceries and also tutorials for him to cook properly.



USER SCENARIOS

The scenario presents how our design changes the life of one of our personas Louisa's life. By using Faibat, she could better manage food storage, purchase and discard. Faibat saves time and money in her busy and tight life making everything much easier.

PROBLEM BASED SCENARIO

Louisa is a single mother with two kids. She firmly believes that takeaway food is harmful to children's health, and she insists on making dinner for her children every day to provide the best nutrition for them, which makes her life chaos.

Every day when she comes home from work, she will go to school to pick up her children, thinking about what to eat for dinner on the way home. But the noise of the children always made her unable to concentrate on planning the dinner.

While shopping for ingredients at the mall, she's always too busy taking care of two kids running around, and her chronic lack of sleep prevents her from remembering when the fridge runs out and needs to be bought.

Her income was limited and difficult to raise two children. So she always saves on shopping, and only wants to buy the food she needs. But she always purchases redundant food due to a lack of planning.

Because of financial constraints, she is not willing to throw away the excess food. Always keep them in the refrigerator. Some of them get mouldy after being forgotten for a long time, contaminating other food in the refrigerator. This put the health of two children at risk.

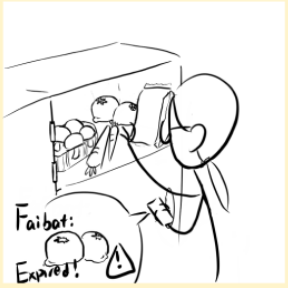
DESIGN BASED SCENARIO

Louisa is a single mother with two kids. She firmly believes that takeaway food is harmful to children's health, and she insists on making dinner for her children every day to provide the best nutrition for them, so she uses Faibat to manage food consumption and protect her family.

Every day when she comes home from work, she will go to school to pick up her children. With the kids' annoying around her, she open the Faibat and quickly made dinner plans for the dinner based on the information about food at home and recipe suggestions.

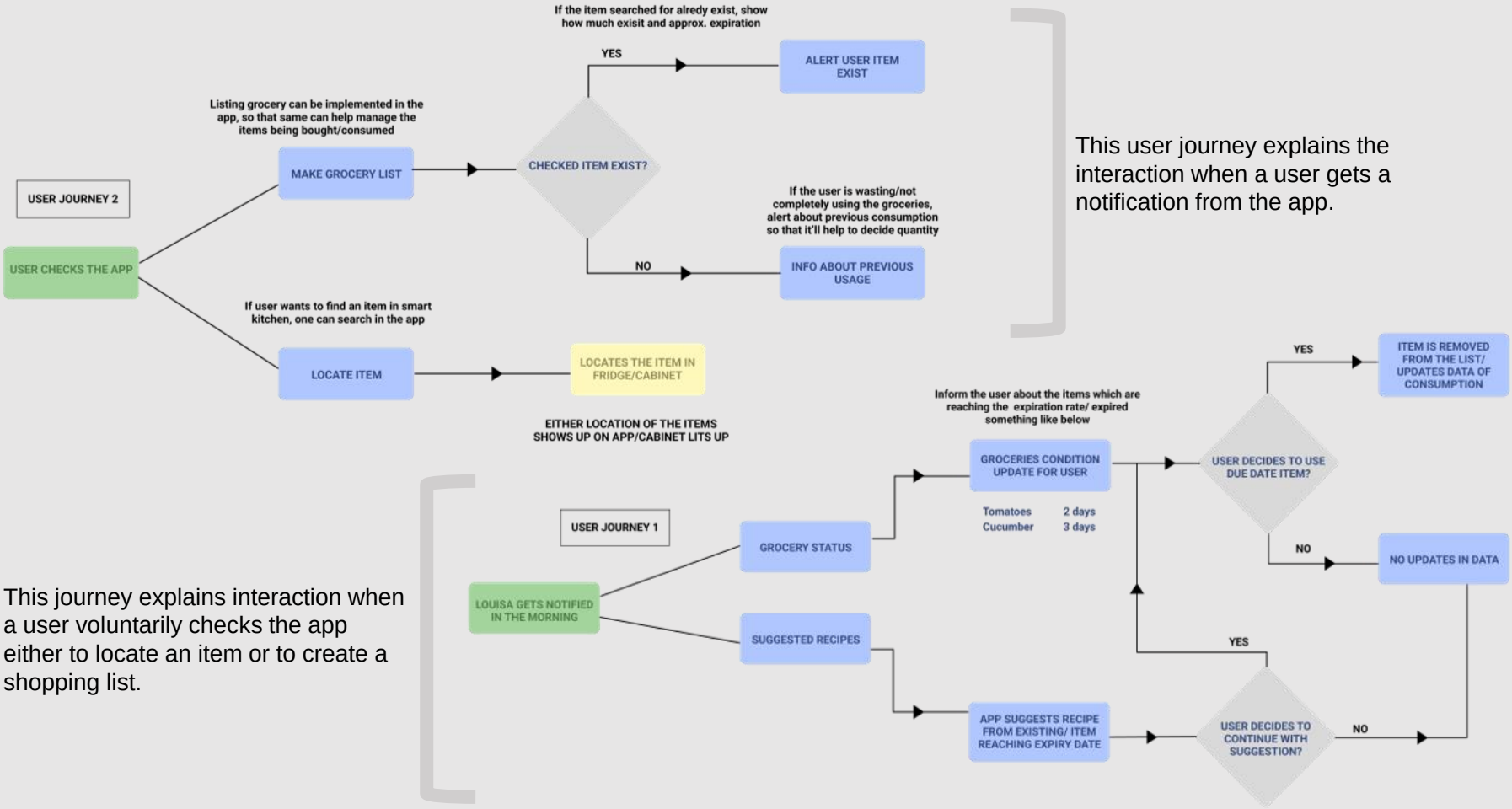
While shopping for ingredients at the mall, Faibat could show her what commonly used ingredients are used up. So she doesn't have to wander around the supermarket aimlessly while keeping an eye on two running kids.

Her income was limited and difficult to raise two children. So she always saves on shopping, and only wants to buy the food she needs. Faibat helps her to achieve that by reminding her of the redundant food.



Because of financial constraints, she is not willing to throw away the excess food. Always keep them in the refrigerator. That's ok because Faibat would help her. Moldy and expired food will be reminded to throw away, so she can use the food in the refrigerator to cook for the children with confidence.

USE CASES

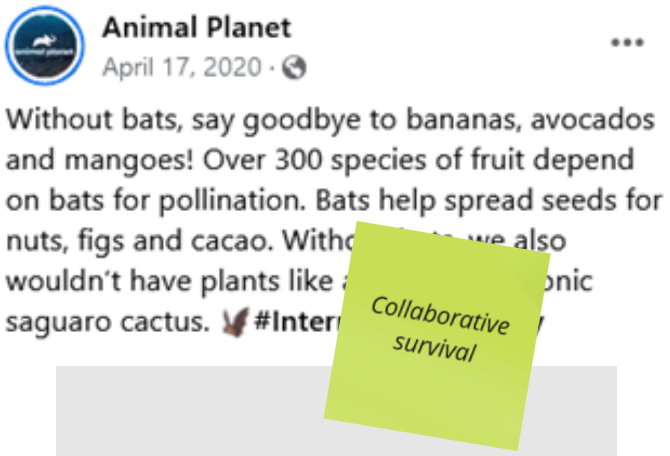


This user journey explains the interaction when a user gets a notification from the app.

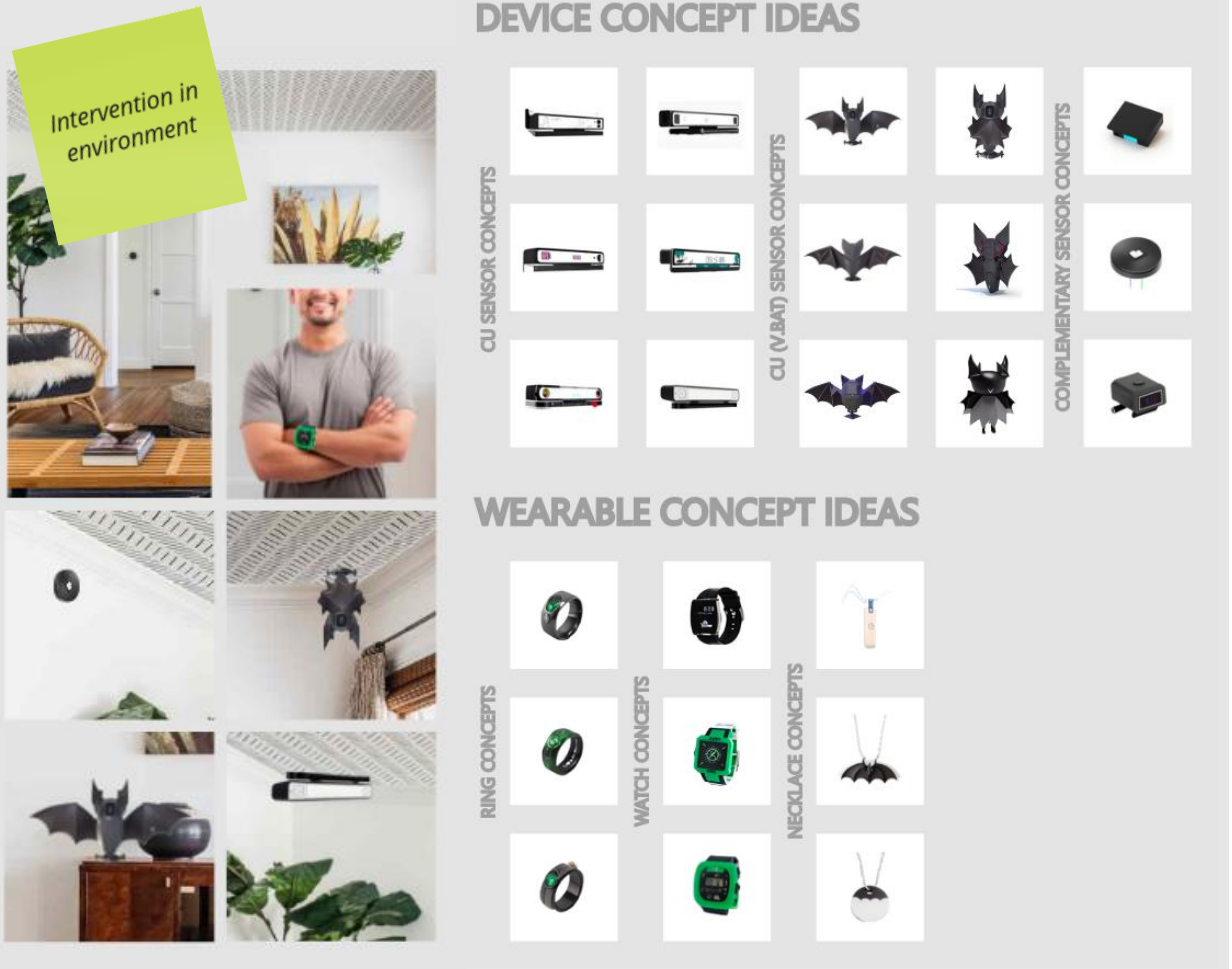
This journey explains interaction when a user voluntarily checks the app either to locate an item or to create a shopping list.

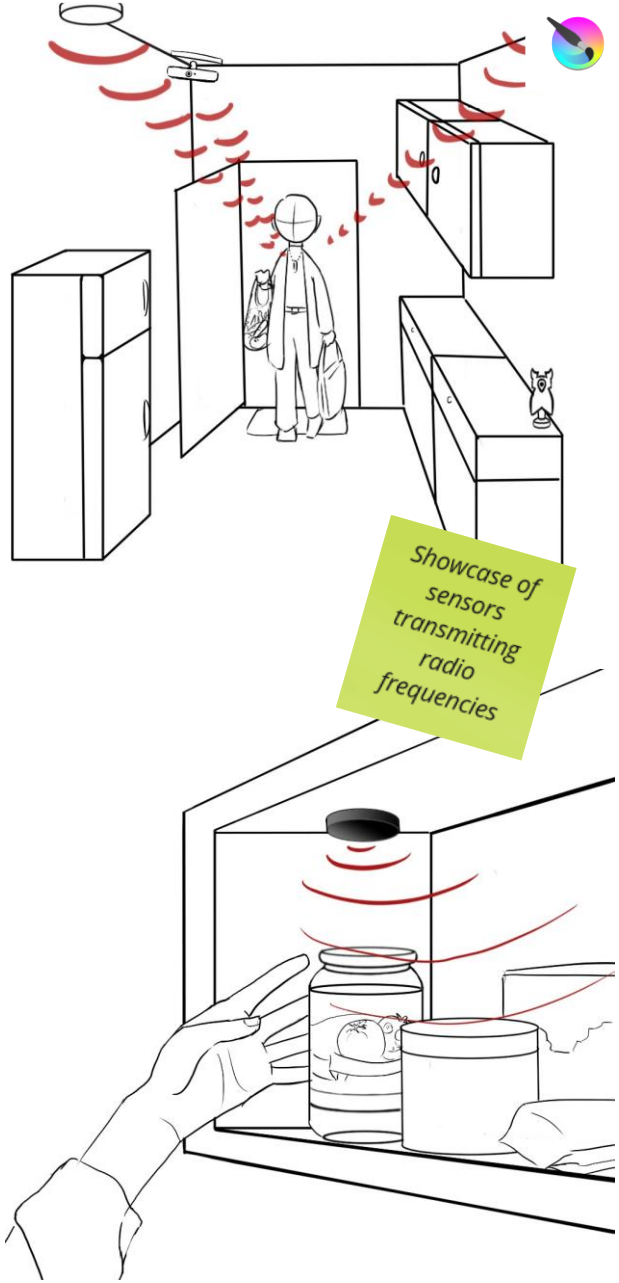
BRANDING – FAIBAT

Fai is a greeklish word that comes from the Greek word φαΐ which means food. Whilst bats are an essential to the food chain, with more than three hundred species of fruit relying on them for pollination, deeming them an icon for the preservation of the human species. An accidental association was recognized between the potential placement of the intervention on the ceiling, with bats hanging themselves upside down. Likewise, bats were additionally associated with the comic superhero Batman.



CONCEPT IDEATION

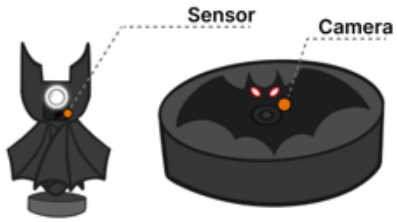




CONCEPT SKETCHING

External sensors to place

These sensors can be placed inside cabinets and other small storage



Wearable sensors

Sensors can be worn by the house members while placing the items in the kitchen/storage

Data is received from external sensors and wearable devices to the central unit

Central Unit

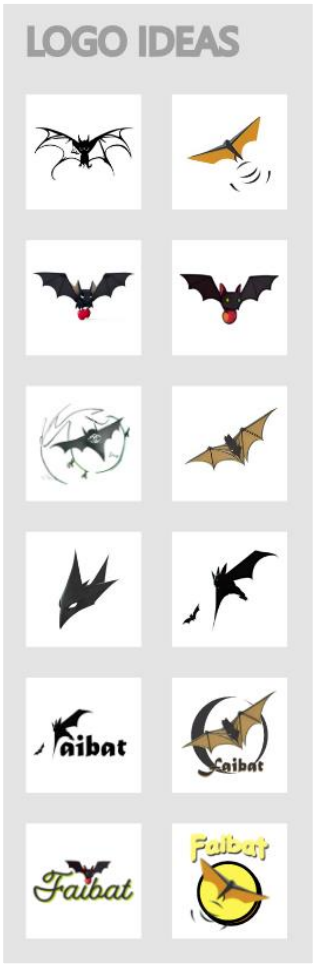
This is the interactable central unit placed in the kitchen, which receives data from other sensors and the Faibat app

FAIBAT APP SCREEN HERE

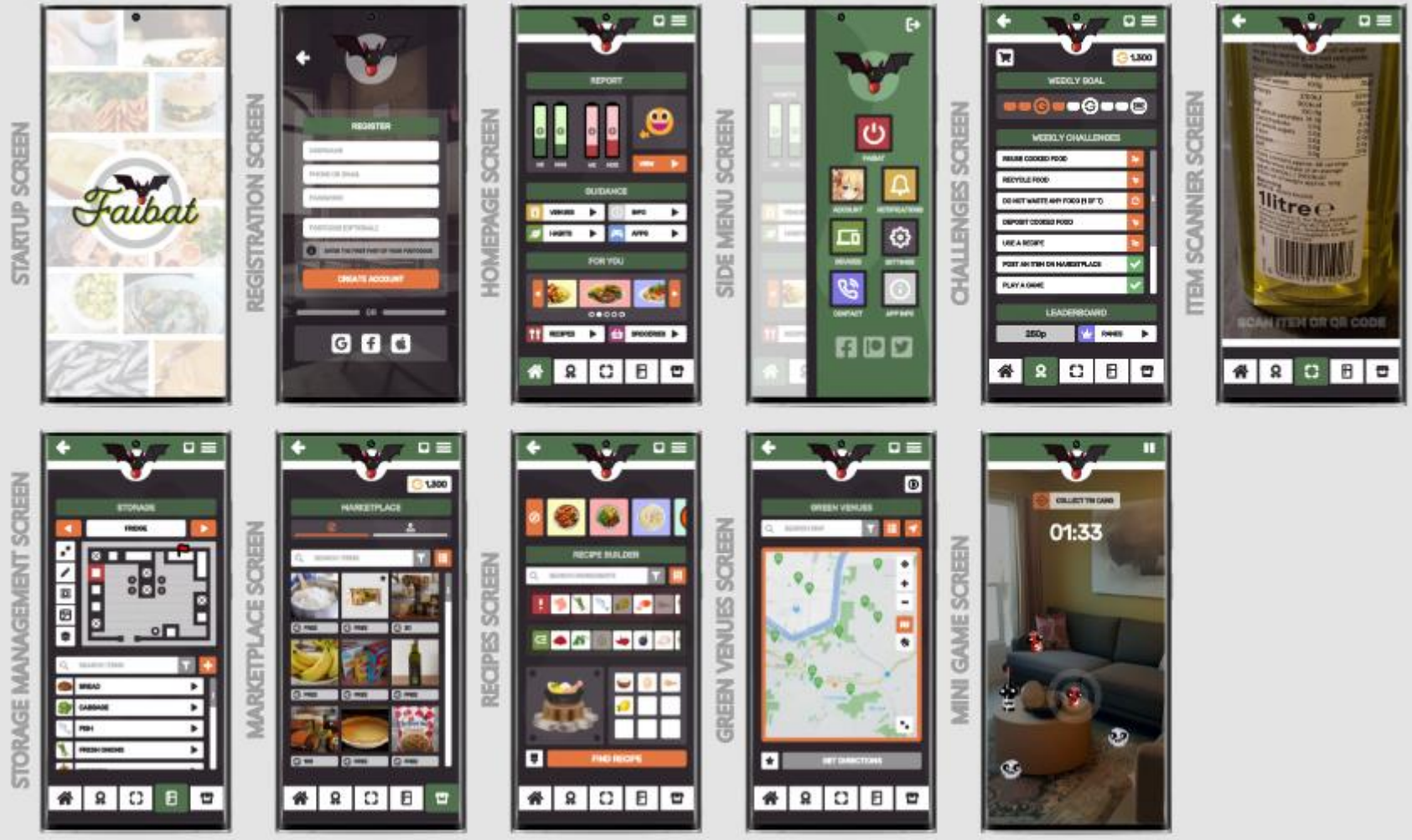
Data is exchanged between the central unit and to app and vice versa

PROTOTYPING

An interactive high-fidelity prototype was produced, bypassing preceding development stages to permit the team to clearly envision the concept and the potential requirements at hand. The team focused on the development of a recognizable and well-grounded theme, encompassing playful interactions to encourage the involvement of the potential younger audience. Three themes were considered; Basic bat theme, comic bat theme, and food blog post theme.



HIGH-FIDELITY PROTOTYPE SAMPLE (FAIBAT APP)



REFLECTIONS

WHAT WENT WELL

Our design involves children taking part in sustainability actions.

Group environment was good. Discussions were critical but friendly.

WHAT WENT LESS WELL

Personas and scenarios did not coordinate with our design very well at first.

We sometimes tend to overthink technology details.

WHAT WE LEARNED ABOUT SHCI

It is important to emphasize the need for graphical approaches in engaging individuals with complex sustainability concerns related to food waste.

We may prompt changes at a fundamental level of daily lives of people, by making it more accurate and offering instant positive feedback/reward

Visualization only is not enough. People would be more active if they see their actions made positive effects.

Designs should consider the incentive to keep users using the product.

Aa Name	Week1	Week2	Week3	Week4
Ming-Hong	Background research	State of the art review	Persona Branding	Pictorial design
Madura	Background research	State of the art review	Use cases Concept sketching	Pictorial design
Yiwen	State of the art review	Concept refining	Scenario Storyboard	Concept overview sketch Pictorial design
Michalis	State of the art review	Concept refining Alternative tech research	Further research Concept sketching	Pictorial design Digital prototype

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