

An aerial photograph of a vast landfill. The foreground is filled with piles of discarded materials, appearing as a mix of earthy tones and metallic scraps. A winding road cuts through the waste, leading towards a small, isolated town visible in the distance. The town has a few buildings and a church with a prominent steeple.

AMERICA
Runs on Waste

Integrated Product Conceptualization: Team Gylt

Phase One

Initial Problem Statement:

Given the accessibility of food and the ease with which it can be stored and forgotten, food waste is a prevalent issue. This issue is particularly relevant to young adults ranging in age from 20-27. This is because there is a general lack of understanding on how to manage food and a lack of fully developed food habits given the transitory nature of this age range. That said, we must find a cost effective, lifestyle-flexible solution for young adults that helps train food management behaviors, thereby minimizing food waste.

Social



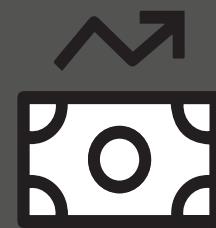
Normality of aesthetic quality of foods

Out of sight out of mind
Increase in take out food

Increase in cultural DIY foods

Busy lifestyles leading to less time at home

Economic



Low food prices from subsidizing

Average Americans spending 12-33% of income on food

Food prices related to gas (transport system)

Produce has the biggest profit margins so loss does not concern businesses

Tech



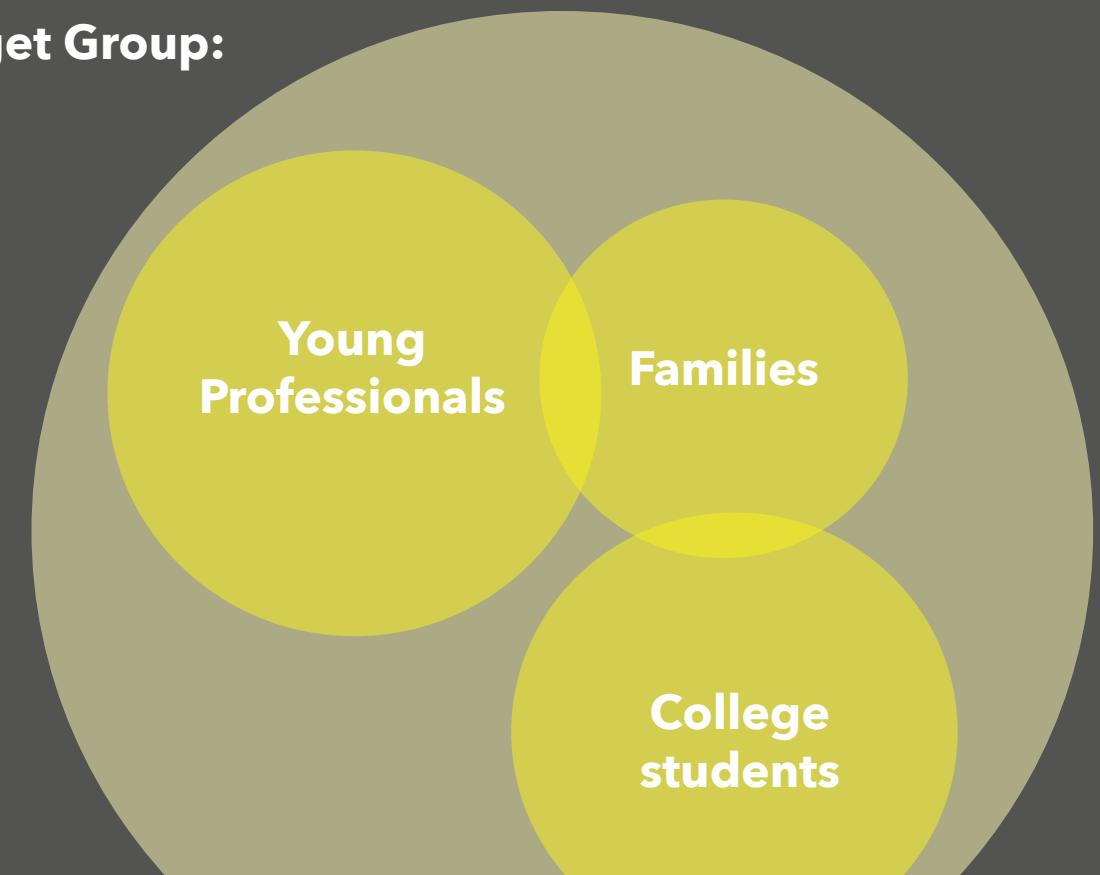
Accurate testing of food
Energy efficiency

Instant notifications

Home IOT

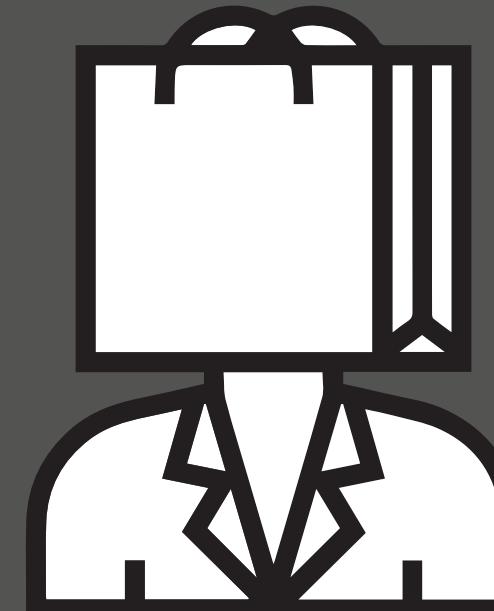
New material sciences for preservation of food

Target Group:



Phase One: POG

Most perishable items are kept in the fridge. However, while this in and of itself is a food optimization tool, the level of organization needed to store and keep track of food items kept in the fridge is a key component in solving and understanding young adult food waste habits. Therefore, our gap lies in manipulating the physical or digital environment of the fridge and/or various technologies to optimize the awareness of food items placed in the average young adult fridge.



Phase Two Research Methods: Interview and Observations

"I think takeout in our fridge ends up spoiling, like, two or three times a week... *We just forget about it.*" -J/J

Insight: A lot of people around our age aren't good at managing food (it's their first time usually) and are prone to just buying food/takeout spontaneously and forgetting about it.

"Leftovers tend to be the most wasted food item...only buy what you need. We won't just *spend \$500 on food* or *half will go bad*. Go frequently when you need to." -Kayla and Uni

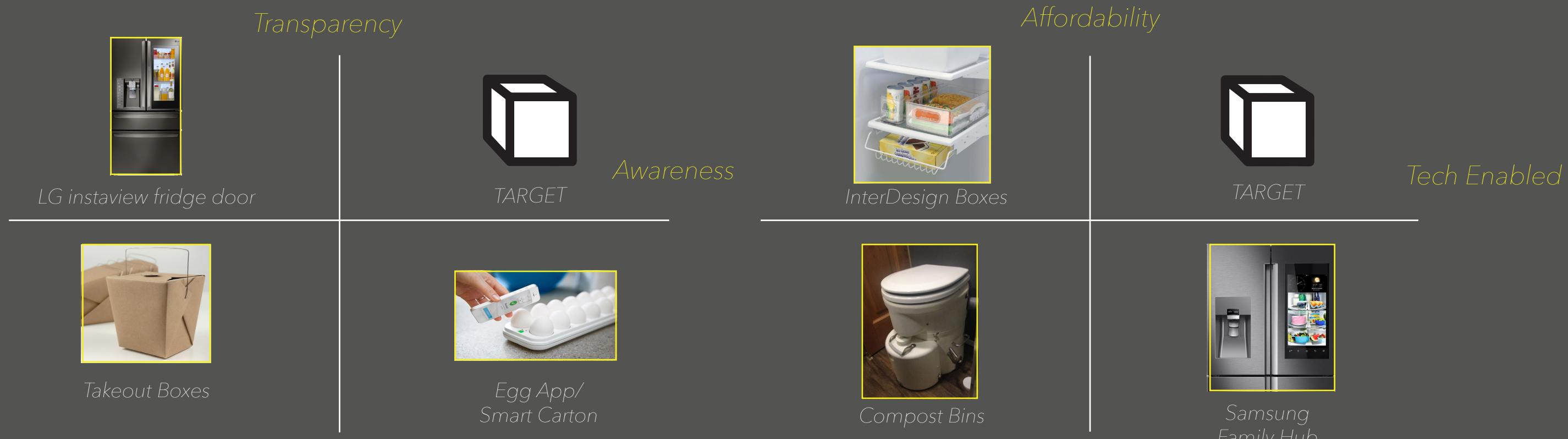
Insight: Leftovers, both home cooked and takeout, are a major source of waste. In addition, optimizing kitchen space while maintaining food safety precautions can be a frustrating balance.



Meats take up the right side of the fridge. Chicken goes to the bottom to prevent potential contamination from dripping. Above is beef. Separation of certain foods.

This fridge is shared by multiple people. Overall, food is disorganized but loosely categorized by person and type.

Phase Two: Perceptual Mapping



Must

Should

Could

Holds different types of food

Durable

Affordable for our target demographic

Low maintenance

Easy to clean

Fits into standard sized fridges

Food safe material antimicrobial

Interactive/ Easy to engage with

Optimize space

Dishwasher safe

Physically visible from most angles and heights

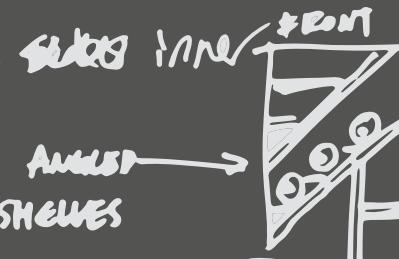
Transparency you can see your food easily

Phase 3 Ideation: 4-4-5

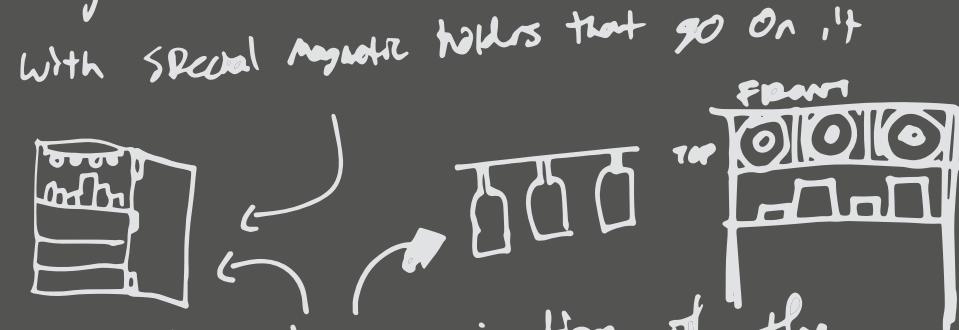


Ideation: 4-4-5 Sketches

- Sticking Stuff to the sides inner
sides of the fridge



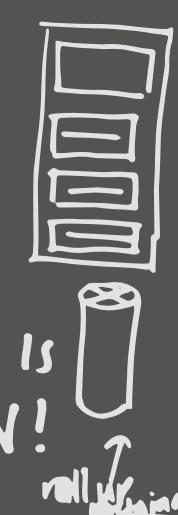
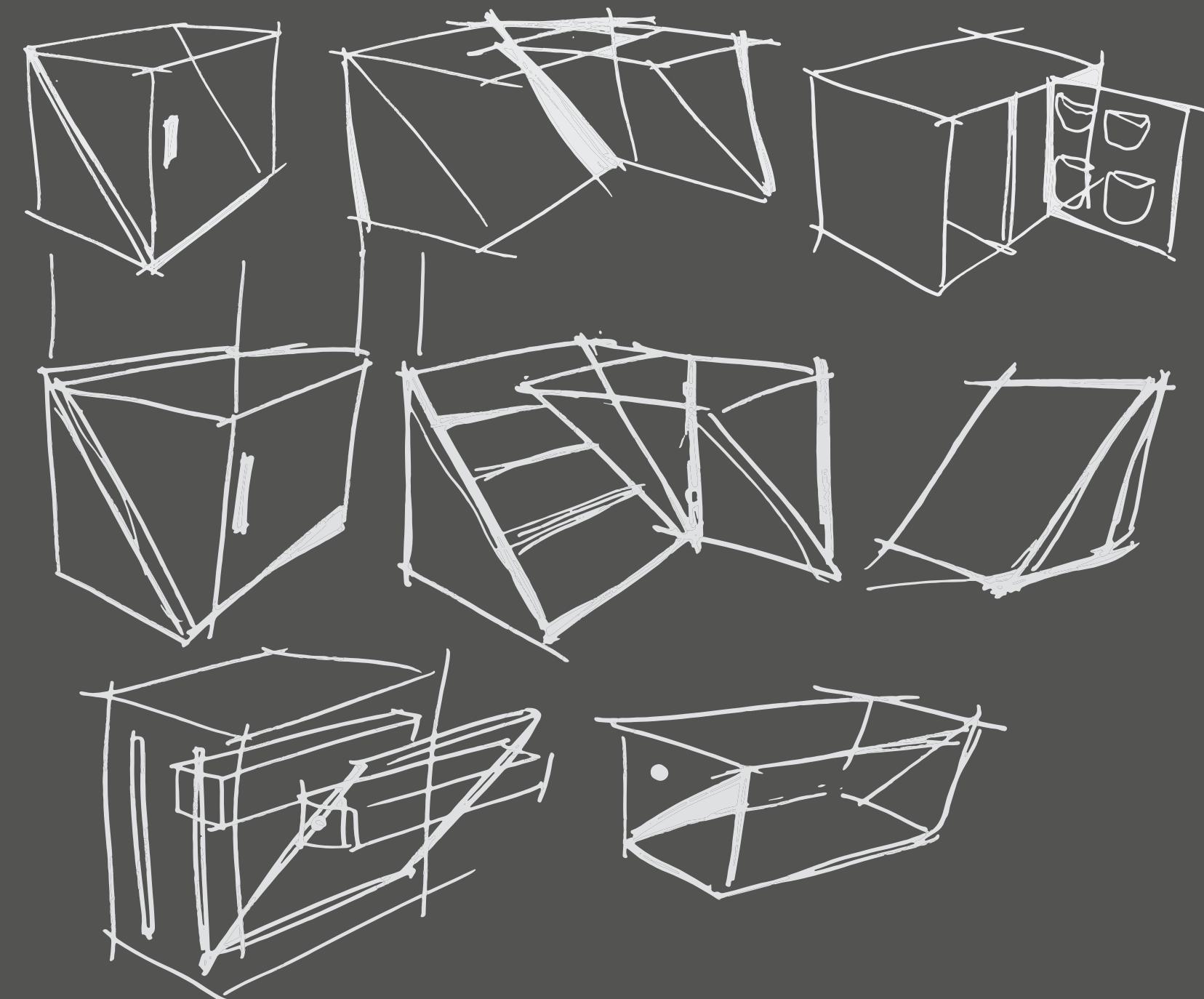
- Magnetized panel that goes on the TOP panel



- More efficient
fridge:
↳ Magnetic
holders.

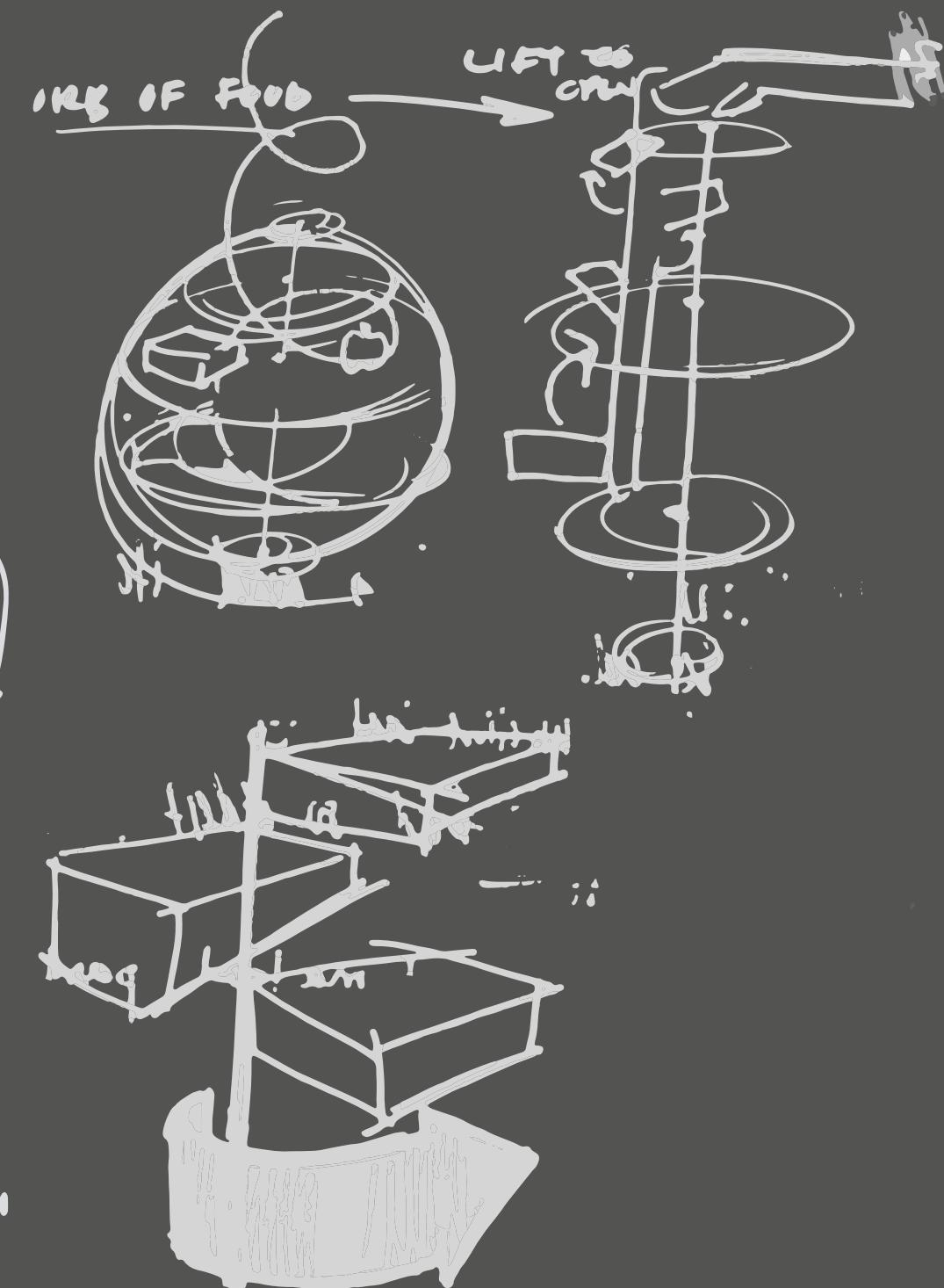
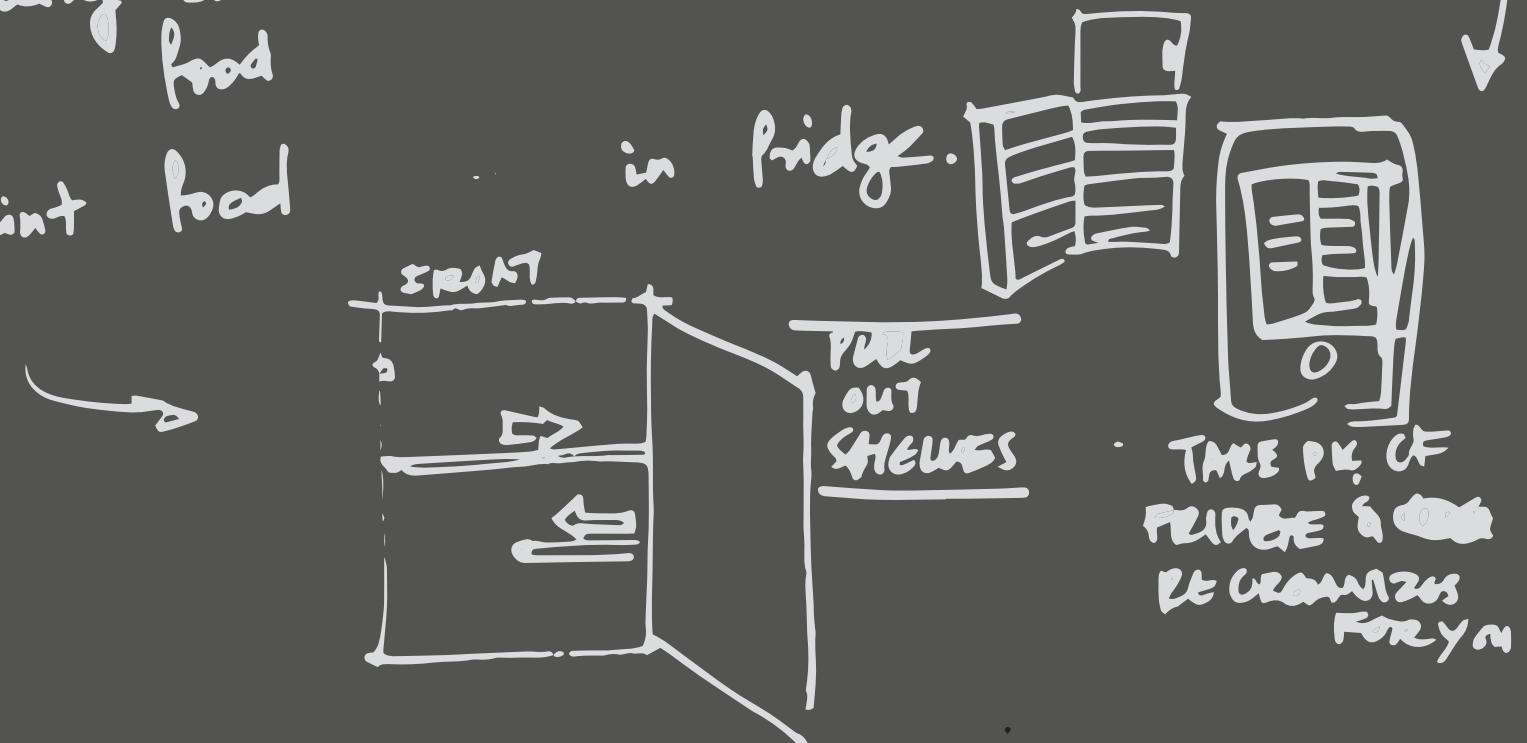
- ↳ Magnetic
- ↳ Cubic
- ↳ Partitions

- BETTER LIGHTING SYSTEM SO ALL Food IS
SEEN!

Ideation: 4-4-5 Sketches

- ① ML + Hardware to learn habits & provide recommendations.
- ② variable temp. across the fridge (more than the 2 offered rn)
- ③ AR app to organize & label foodstuffs.
- ④ something similar to Dash Buttons but for local food
- ⑤ 3D print food



Early Evaluation: 100 to 50 Feasibility Test

74. Info could be sent to a mobile app and could be used when grocery shopping. Scans approximate size of wanted item and apps tells you where it will fit.
75. Pressure actuated LED lights that shine brightest on heaviest portion of shelving to call attention to food in those areas
76. Shift the plane of shelving perspective - instead of a column of lengths of shelving directly facing you, you instead see two columns of widths of shelving so you can see more items
77. Circular shelving - cut out piece of rectangular shelving
78. Transparent fridge sides - see everything all the time
79. In fridge freeze dryer
80. Sticker on trash cans, "Are you sure?" or something like that
81. Fridge magnet that is a dry erase version of the layout where roommates write where their stuff is
82. A magnetic mirror that goes on the door to make you see yourself wasting food and maybe are less likely to do it
83. Fold down counter space from fridge door
84. Containers that lock for the office / shared fridges to prevent others from using your stuff
85. Swelling containers like swelling cans for when food is going bad
86. Smart food containers that link to your phone and remind you when stuff is going bad
87. Reverse vending machine shelving - every time you enter something it pushes to the back and falls into a chute where the user has to either use the older food or put it back in the front
88. Scan interior of fridge and get 3D rendering of fridge contents on phone app
89. Collapsible fridge so you never have to overbuy
90. Vertical fridge dividers for shelving that are color coordinated

Early Evaluation: Categorizing

Containers

seperate containers that holds certain types and sizes of food

Shelving

adjustable racks, elongated shelf pockets, rotating shelves,

Quirky

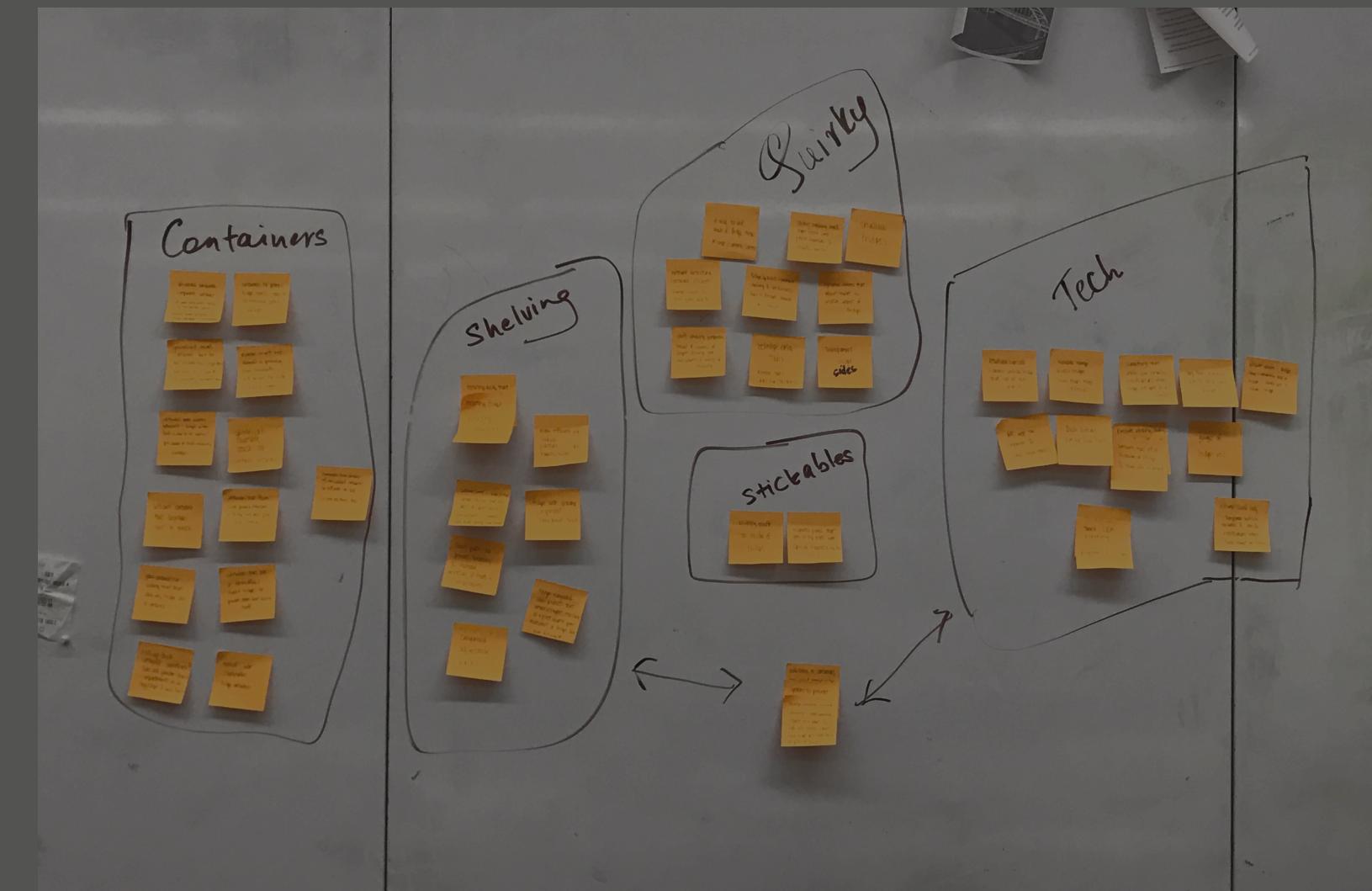
shallow fridges, mirrors, shift shelf perspective

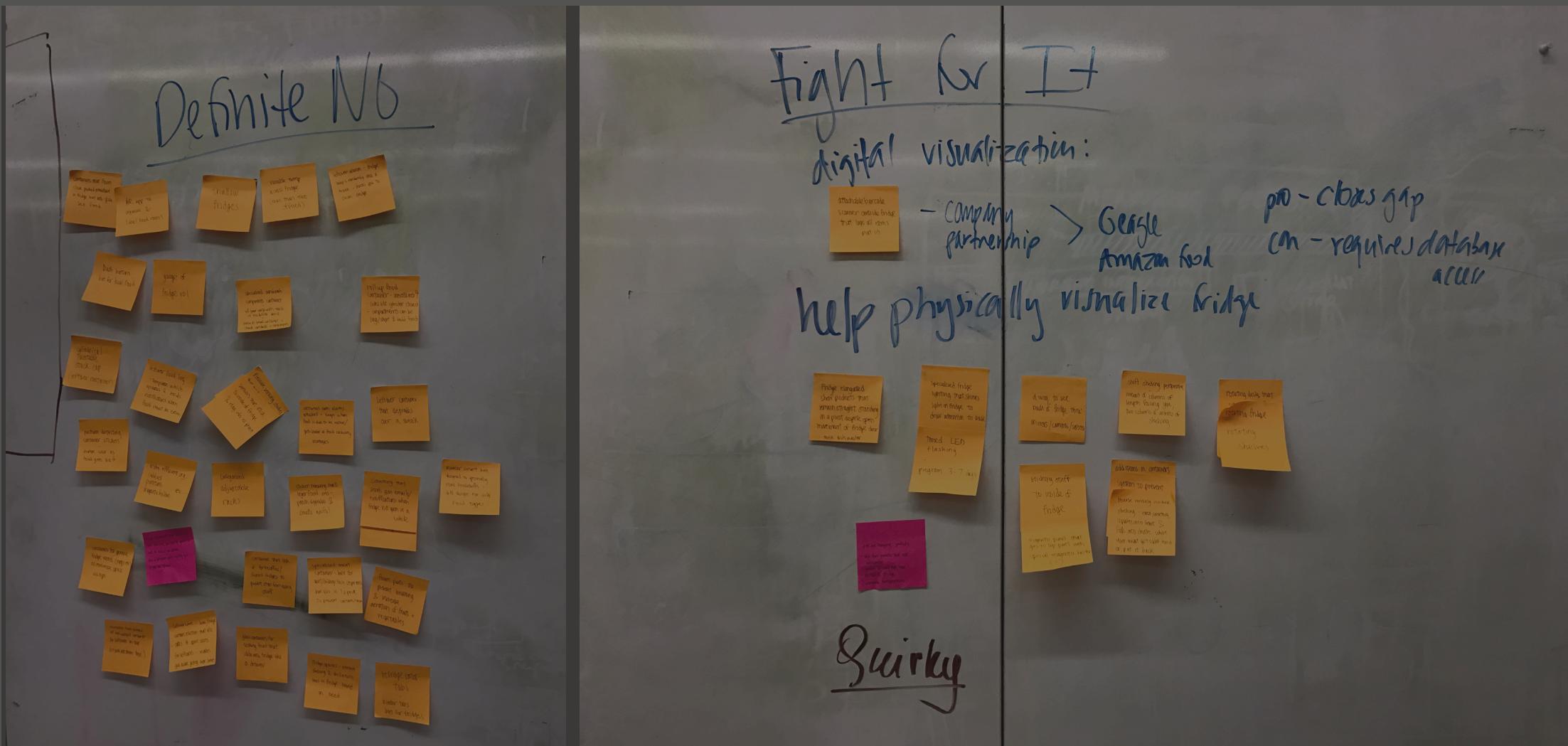
Stickables

magnetic panel, sticking things on fridge walls.

Tech

barcode scanner, leftover food log, timed led flashing





Evaluation:

Barcode Scanner App

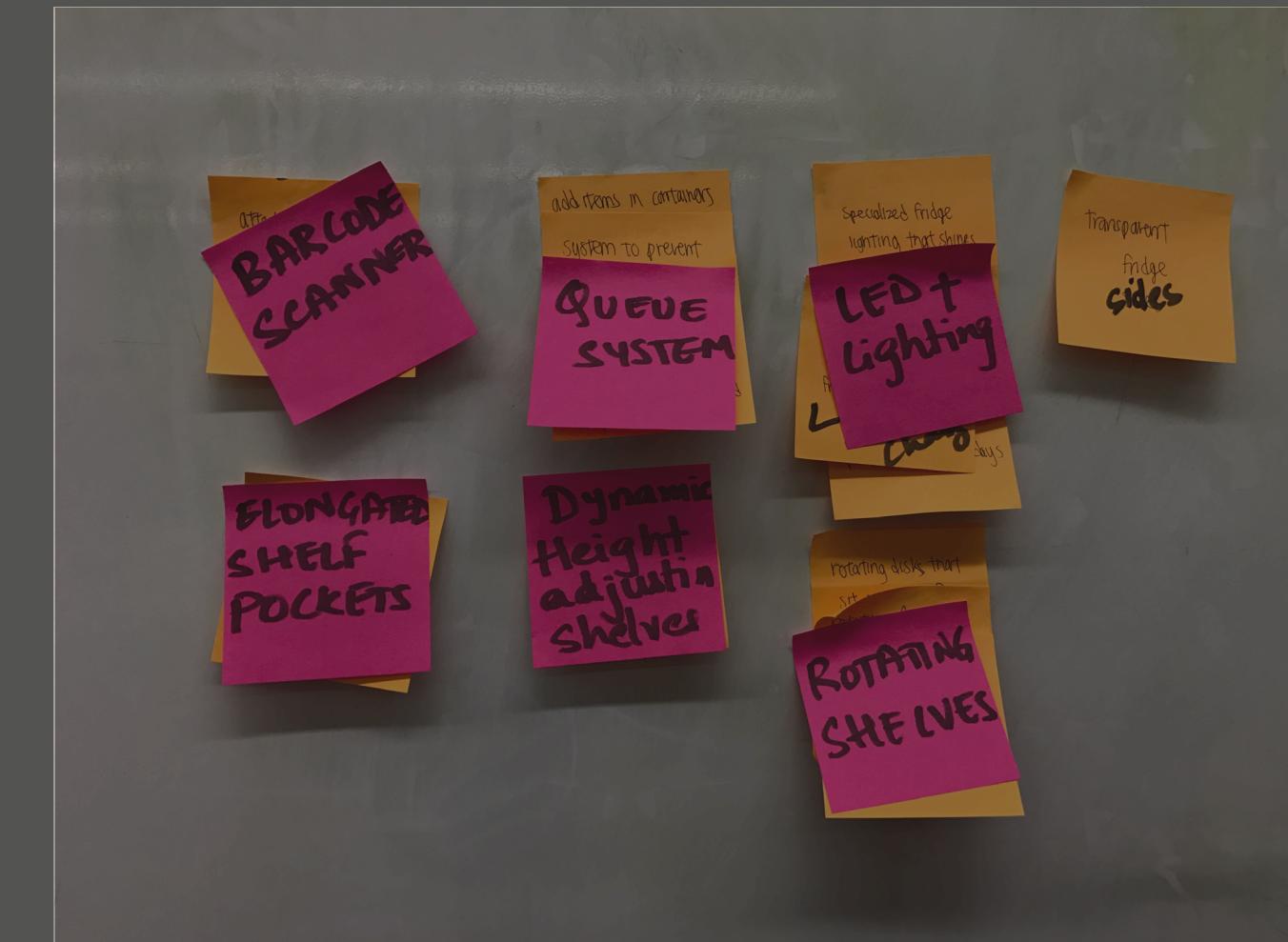
Elongated Shelf Pockets

Queue System + Rotating Shelves

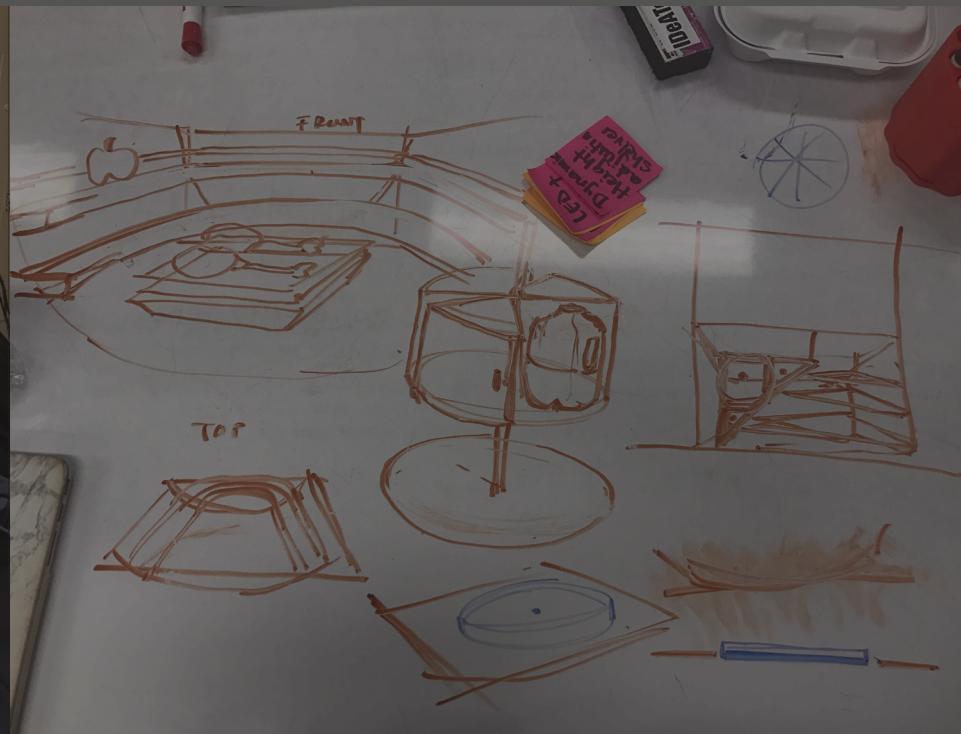
LED Lighting + Mirroring

Dynamic Height Adjusting Shelves

Transparent Fridge Sides



Final Evaluation: Last Four Concepts



Queue System + Rotating Shelves
Elongated Shelf Pockets
Barcode Scanner App
Dynamic Height Adjusting Shelves

Sketching out ideas and making pro and con charts we were having a hard time deciding which concept that could be feasible as well as practical. We debated back and forth but ended up at a stall. To solve this we decided to ask outside sources what their thoughts were to gain new insight and perspective.

Final Evaluation: Feedback from Target Group and Research

"I don't know if I would use that because I think I would get lazy and pile stuff on top." Rachael P.

Insight: People were not open to a physical product for their fridge

"I've thrown away storage bins for my fridge because they get dirty and they are hard to clean." -Elaine

Insight: Anything more complicated than a simple interdesign box in your fridge is a hassle.

Inofridge - Phil Rindlisbach (BYU MET)



Hitachi R-S42EMS F Series

Final Concept: "gylty" App

The "gylty App" has **three main features**

1. Has an constant inventory of the fridge
2. Hints at how to organize your fridge
3. Notifications when food is likely to go bad.

Satisfies Product Requirements:

Low Maintenance: An app is lower maintenance than something physical

Easy to Interact With: Use it anywhere anytime on your phone

Food Safety: Hints at how to organize your food in the fridge

Transparency: You have inventory of your fridge all the time

Affordable: Apps are much more affordable and accessible

Holds different types of food

Durable

Affordable for our target demographic

Low maintenance

Easy to clean

Fits into standard sized fridges

Food safe material antimicrobial

Interactive/ Easy to engage with

Optimize space

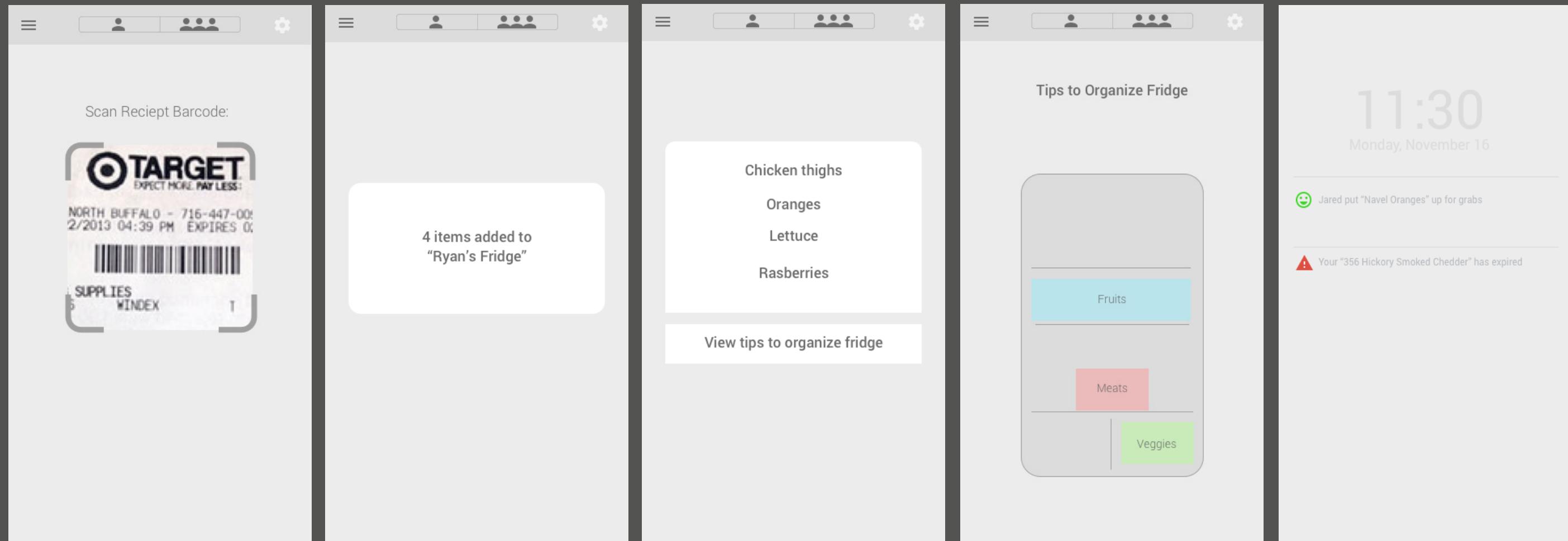
Dishwasher safe

Physically visible from most angles and heights

Transparency you can see your food easily

* Not Applicable

Prototype: Wireframes

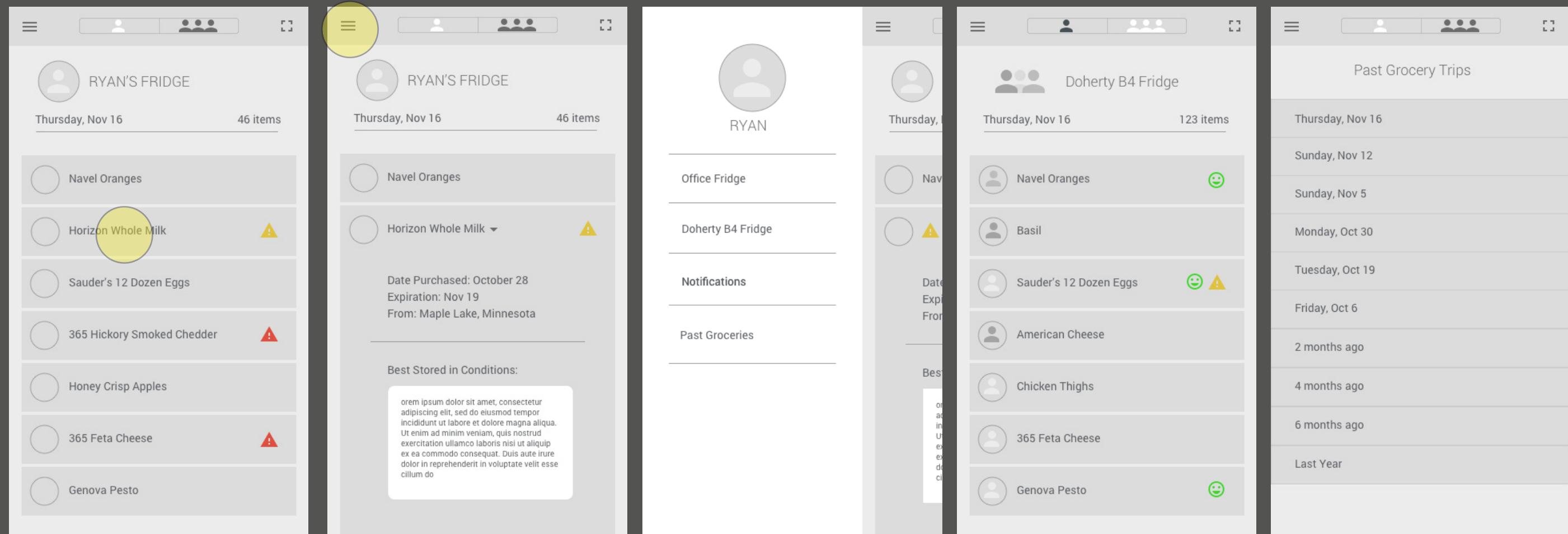


Two Food input methods

1. QR Code on grocery store receipt
2. Scan Barcode on food item / taking a picture of food and entering in its data

Notifications

Prototype: Wireframes



Constant **Inventory** of food.

Metadata on items that inform users on basic data.

Group Sharing
Know what your Roommates/Co-workers have in the fridge
Put food that you no longer want "up for grabs"

Feedback on scanner

Obi - CMU Junior living on campus:

"With the barcode scanner, what if you with the RFID scanner, similar to when you check out a book at the library, you have to go through the gates and there are like buzzers...something like that for the food so that you put the food [in] and so instead of having to scan it, you can take a gallon of milk and it could scan it, store it in your fridge, and keep track of when it expires and every time you take it out, it keeps track of something. It tells you like 'Ok, you have 10 days left on your milk.'

Chris - CMU Sophomore living in an apartment:

"I'd use it even living in Webster cuz, I've spent way too much money on food, and it's straight up gone to waste. For example, last week, I was cleaning out my refrigerator, and I definitely had a month old bread in there, and I was very upset cuz I was like 'Dang, I really wanted to eat that bread,' but then I just had to get rid of it. That has happened three times this semester. So, yeah, I definitely think that something like that would be useful."

Justin- CMU Junior living on campus:

"I would use it. Not here but during the summers and stuff."

Cathy - CMU Sophomore living in a house:

"I keep buying fruit and vegetables, and I'm like 'I'm gonna eat them' and then I never f***ing eat them, and when I wanna eat them they're bad, and I'm like 'F*** this s***'.

Scenario

Two weeks ago you went to Whole Foods to stock up on munchies for the next couple of weeks. Upon paying, you quickly scan your bill into Gylty, instantly adding all your shopping. Upon getting home, as you're putting your purchases away, Gylty gives you helpful advice based on your purchases as to the arrangement of your food. Feeling confident in your ability to handle your food - you put it away and stop worrying about it. A few days later, you get a notification that your guacamole is going to expire, with a variety of different recipes you can use it in, using only items there in your fridge! Wow, so cool! On the side, you see your roommates box of similarly opened Guac about to go bad as well you walk back to your room holding a rotisserie chicken sandwich with bacon and guacamole thinking "Thank goodness I downloaded Gylty - my guac was going down the trash otherwise! I should probably tell my roommate about it maybe he'll stop wasting so much food then."



Overview

Ideation

Evaluation

Final

Prototype

Feedback

Scenario

Questions?