



# Lemon Process Book

Digital Service Innovation  
Professor Musaraca, Fall 2019

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# Introduction



# Ask

During this project for our **Digital Service Innovation class**, we were individually tasked with coming up with digital services that do not currently exist (or at least could be something we could expand upon). Students were given the opportunity to vote for the ideas that they were the most interested in and thus teams were formed to work on the **top ideas**. The end of the class culminated in an **investor pitch** and valuation, which served as an invaluable learning experience.



# Skills Summary

**Duration:** 15 weeks

**Skills Developed:** Data Collection, Customer Discovery + Interviewing, Pitching, Business Presentations, Product Development, Competitive Analysis, Identifying a Target Market, Iterative Feature Development, Poster Design, Branding, Storyboarding, Personas, Video Production + Development



# Team

**Ron Kang Chew**

Information Systems

**Shanice Lam**

Architecture

**Abbey Mui**

Information Systems

**Simran Jobanputra**

Human-Computer Interaction



# Ideation



# Problem Space

Our team was focused on the **food waste** problem and that is what attracted all members of the team to preference the initial idea. This space is important because:

In the United States, food waste is estimated at **between 30-40 percent** of the food supply.

**1 out of 9 people** do not have enough food available to lead a healthy life

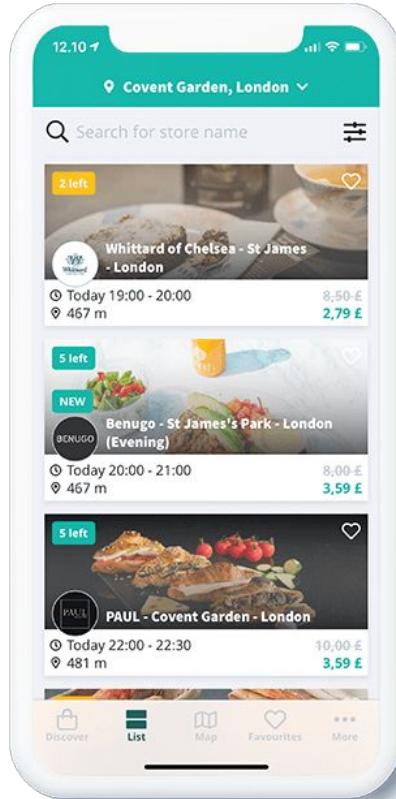
**31 percent food loss** at the retail and consumer levels.

This loss came out to approx **133 billion pounds** and **\$161 billion worth of food** in 2010.



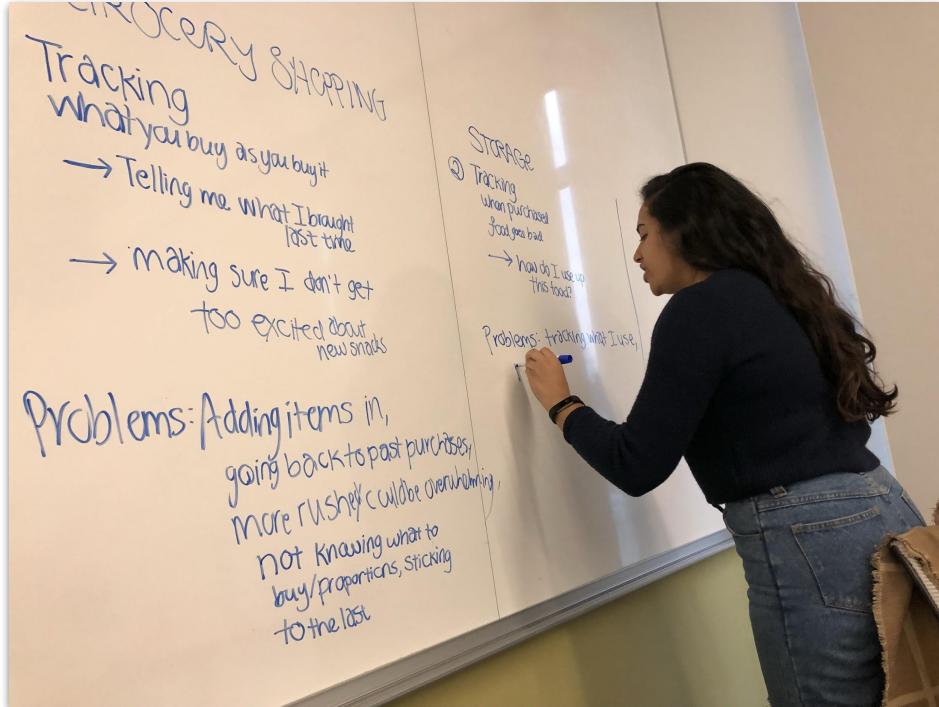
# Initial Idea

The initial idea that was pitched in class was based of Too Good to Go, a company originating in the UK. They **fight food waste** by **matching consumers with leftovers from restaurants**, reducing the daily food waste of restaurants while also providing cheap meals for customers.



# Dissecting the Restaurant Space

We first tried to validate whether **tackling food waste from the restaurant space** was the best way to go about the problem.



# Reversing Assumptions

Before going into interviews, we made sure to keep track of our assumptions and what opportunities there may be from them.



# Speaking to Restaurant Owners

We spoke to several restaurants of different types (buffets, fast food, fresh food, sit-down) and asked them about their waste/donation habits to see what they currently do at the end of business day. Please refer to the appendix for a full list of questions.

## Restaurants

- Panera
- Hello Bistro
- 412 Food Rescue
- Noodles & Co
- Golden Corral Buffet
- Roots
- Chipotle
- Lucca's

## Sample Questions

- What do you do with excess waste/meals at the end of the day?
- How do you predict how much stock to buy/keep?
- How often are you wasting produce/groceries?



# Restaurants are already optimizing waste

As we spoke to restaurants, we realized that there are a **few fundamental truths** to most restaurants, and trying to minimize waste for restaurants may be too difficult:

Restaurants **cook on demand**, leading to no excess waste at the end of the day

If certain restaurants have **extra food they often reuse** it the next day (this is the case with buffets)

**Fresh produce must be thrown out** by the end of the day (food safety)

**Restaurants already try to optimize** how much they're using and know customer patterns generally (Saturdays are popular, Thursdays are not)

Some restaurants prefer donation because **reselling food would require time and effort** beyond the already constrained hours of operation

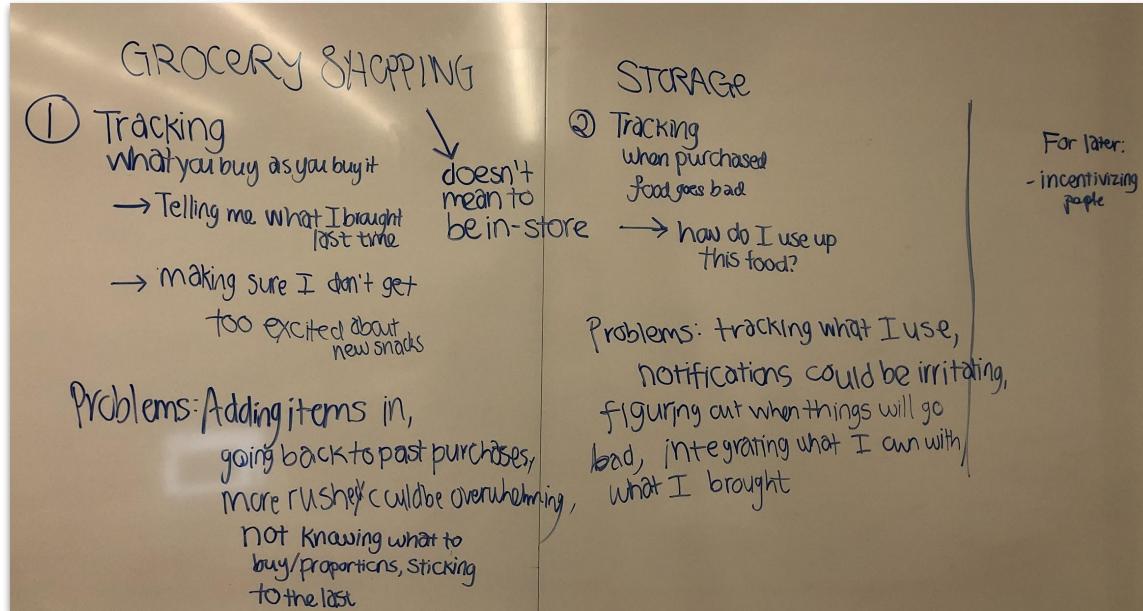


# Iteration: Pivoting to Personal Waste



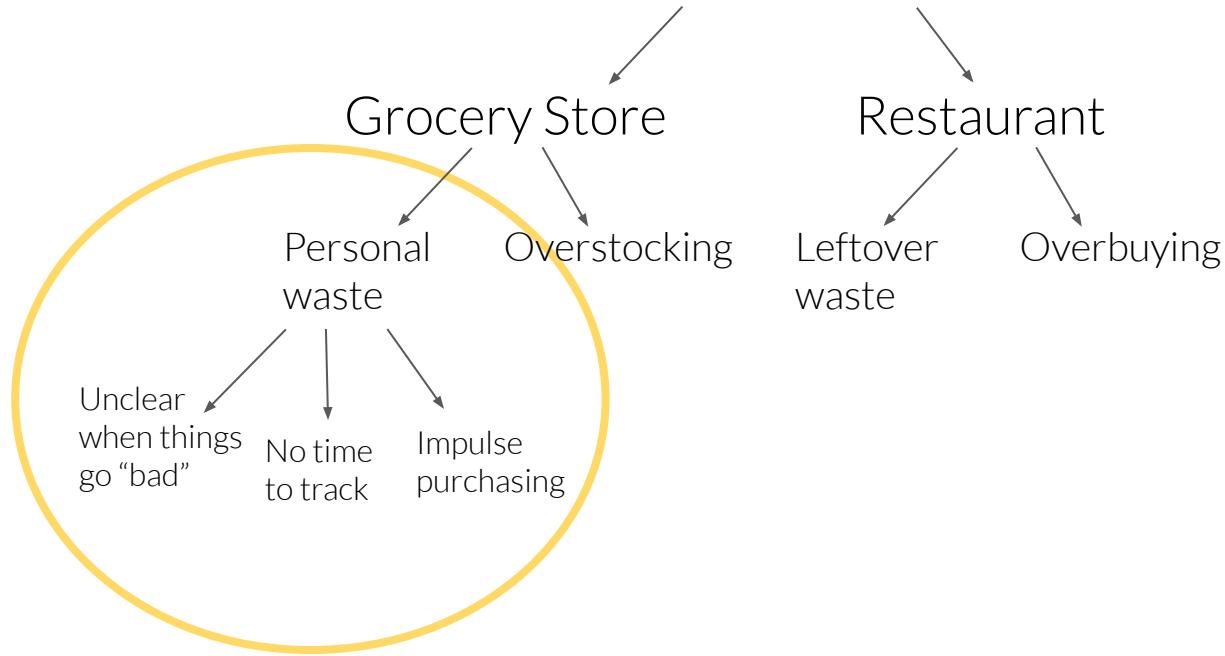
# Looking at Personal Food Waste

From our interviews, we realized the most commonly wasted type of food is produce. This is why we tried to pursue **opportunities in relation to grocery stores** or grocery shopping. We tried to identify any problems with personal waste.



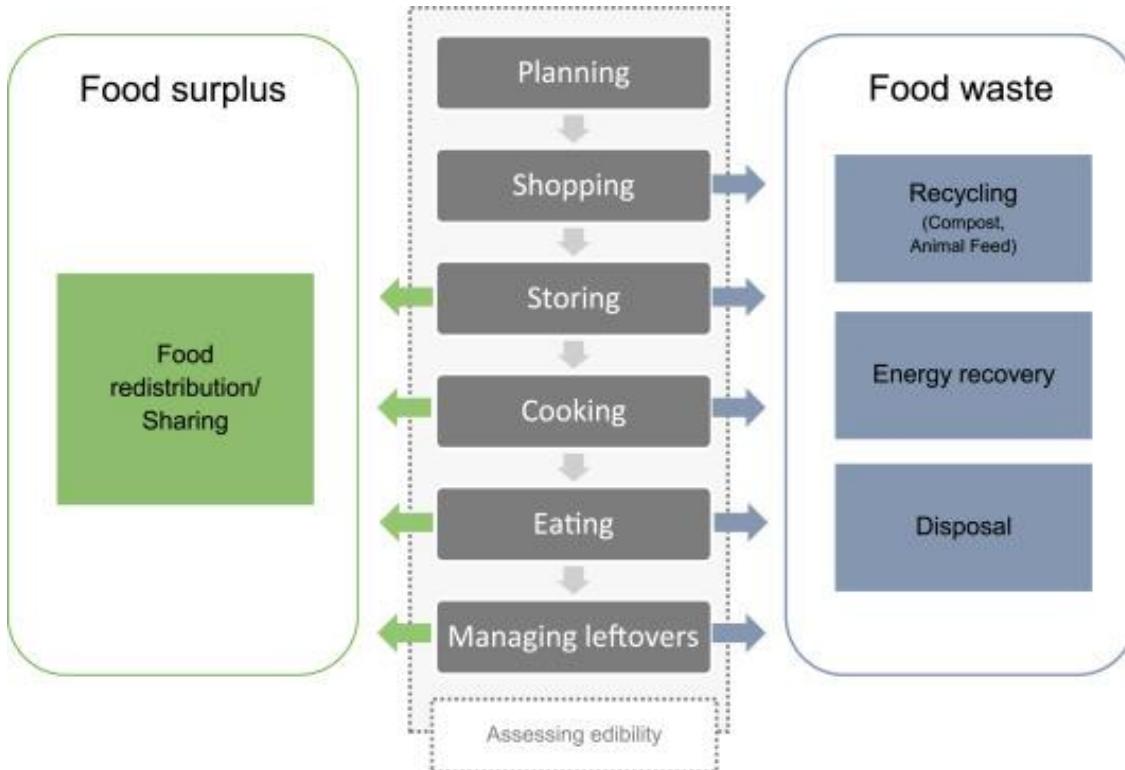
# Funneling the Problem

30-40% of our food supply is  
**FOOD WASTE**



# Problems with Grocery Stores

Armed with a desire to focus on food surplus within the residential sector, we thought about the parts of food **preparation channel** (i.e. shopping, cooking) where food waste could be reduced.

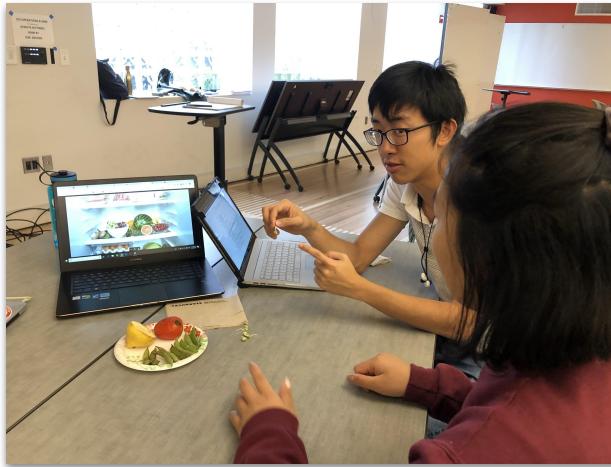


# Co-Design

We kicked off our second round of customer discovery with our new idea by interviewing around a simple artefact: **spoiled food.**

Using actual spoiled produce, we ask interviewees about their **shopping, storage and consumption habits.**

We found that **80%** of interviewees had issues keeping track of their food. We used their insights to identify specific pain points.



# Speaking to Grocery Store Customers

We spoke to different types of grocery shoppers and gained several insights into the personal waste problem.

## **Customers interviewed:**

- college students
- working adults
- moms

## **Insights:**

- people are motivated by money
- people are always in a bind for time
- people don't know when things expire/forget what they have purchased
- larger households and experienced moms still waste a lot
- impulse shopping is real



# New Concept

We attempted to create an **all encompassing platform** - one which tracked expiration dates, gave meal recipes, and also helped plan out your grocery shopping. We took inspiration from several of our competitors, like **Blue Apron and Hello Chef**, combined with some of the services that give you personalized shopping lists.



# Feedback from Pivot

Initial feedback for our pivot to the personal waste space was **mixed.**

Based on our feedback, we found that it was because we weren't focused on one direction to tackle personal waste.

We decided to select one method to reduce food waste: **focusing on tracking when things go bad - because that is the root of the problem.**

I'm unsure how useful body type is because I'm not sure people will want to check "fat"

There is waste in leftovers and **extra ingredients** - can you target leftovers in a safe way?

I question your customer needs - do people really have these issues?

So you are reducing food waste - what about sharing food that is about to go bad?

There are very many similar platforms. Target clearly the area that other competitors didn't do.

FDA - how are you going to comply? (if you plan to store/donate features)

what's the monetization plan? who are your users/customers?

-understanding the user (do people care enough about this to even use it?)

Is there a way to target this at children and teens? If you want parents to change, convince their kids!

Provide low-cost food kits like Blue Apron/Giant Eagle/Wegmans?

Tackling personal waste is a very stubborn problem that has existed for long. how can you innovate new solutions?

Food safety - monitoring recipes and legitimacy

food sale recovery!  
I like the pivot to personal waste

would there be a way to incentivize grocery stores to provide smaller portions/make smaller portions cheaper

I like the meal prep kits idea

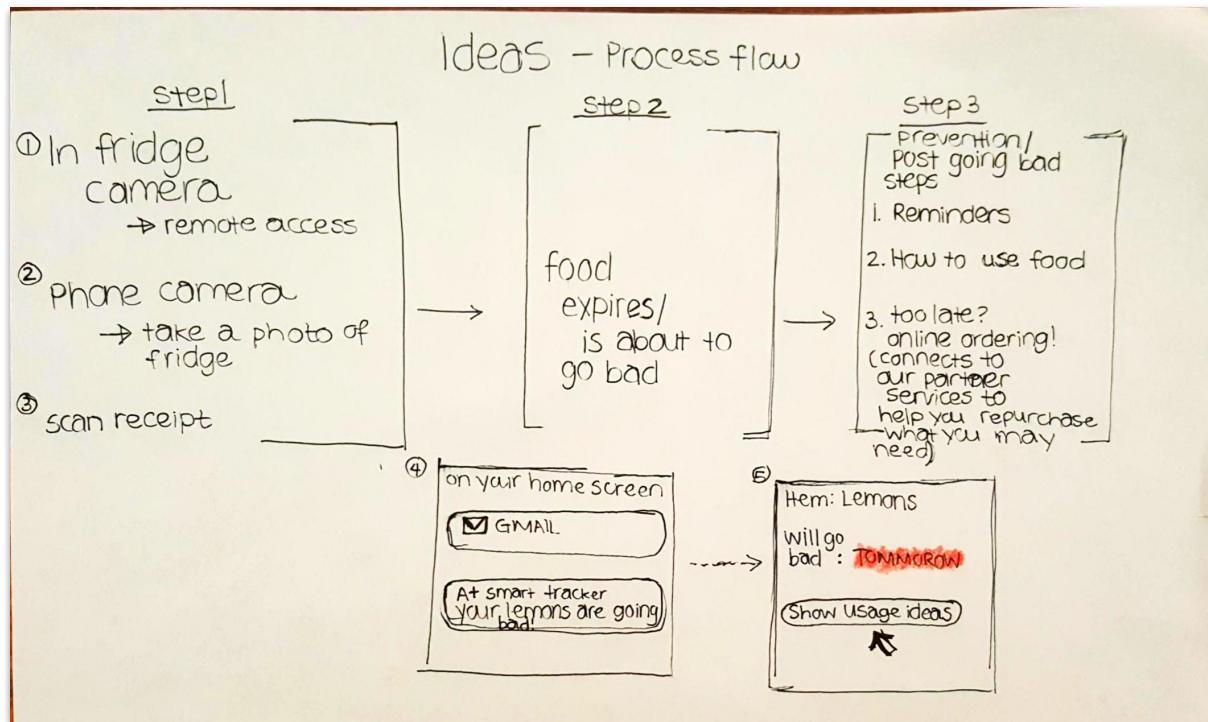
Sounds like I'm going to spend a lot of time on inventory entry - can this be integrated with the checkout process?



# Iteration: Making MVP #1



# Storyboarding + New Idea

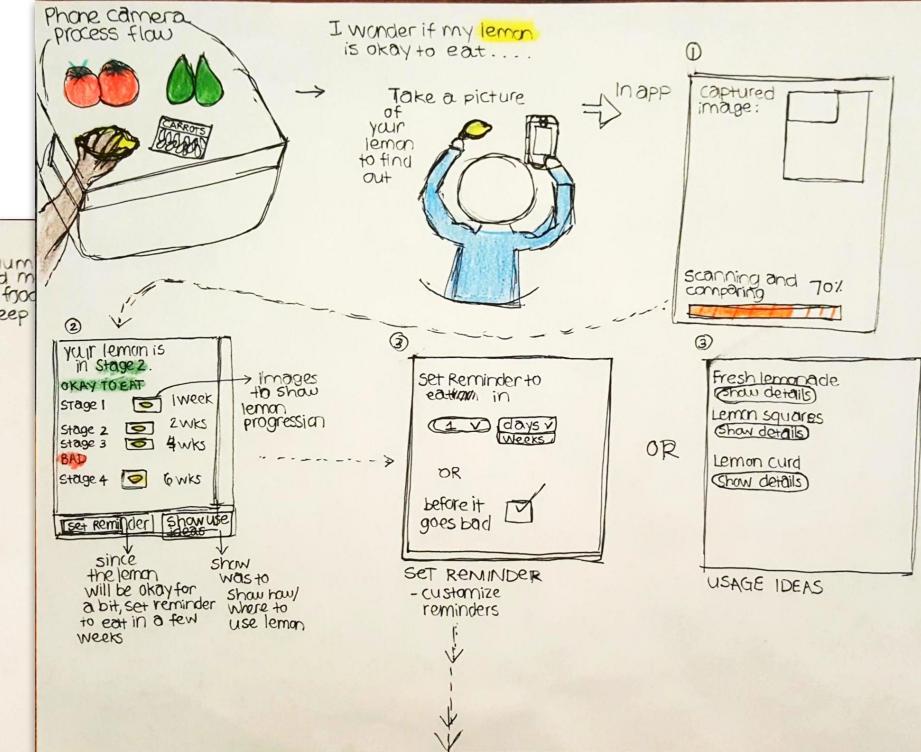
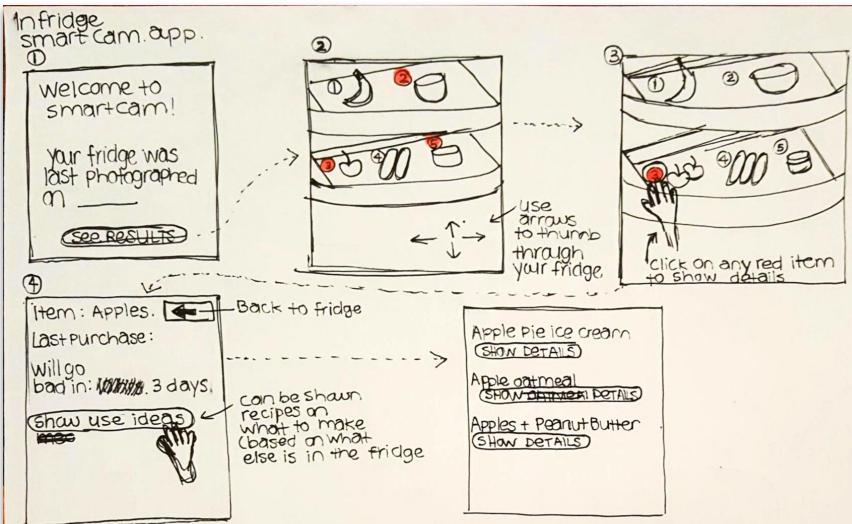


We decided to switch to a new name to reflect our new ideas:  
**Lemon!**

There were **three original MVP ideas** we tested. We created a process flow to help us think about how each MVP differed.



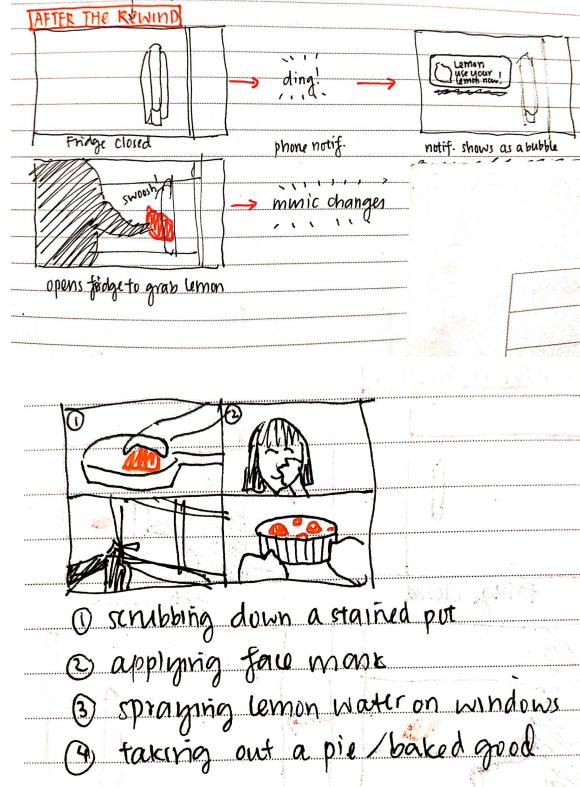
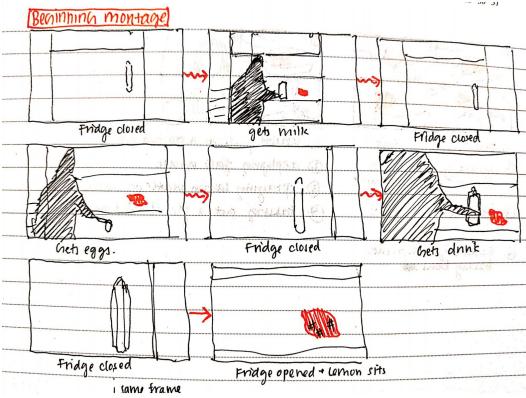
# Storyboarding



Then, we created storyboards to help us visualize and set the context of how Lemon would be used for each MVP.



# Storyboarding for the Video



We came up with a **video concept** that showed a before/after scenario with humorous montages!



# Producing the Video

Our team had lots of fun filming and producing our video!



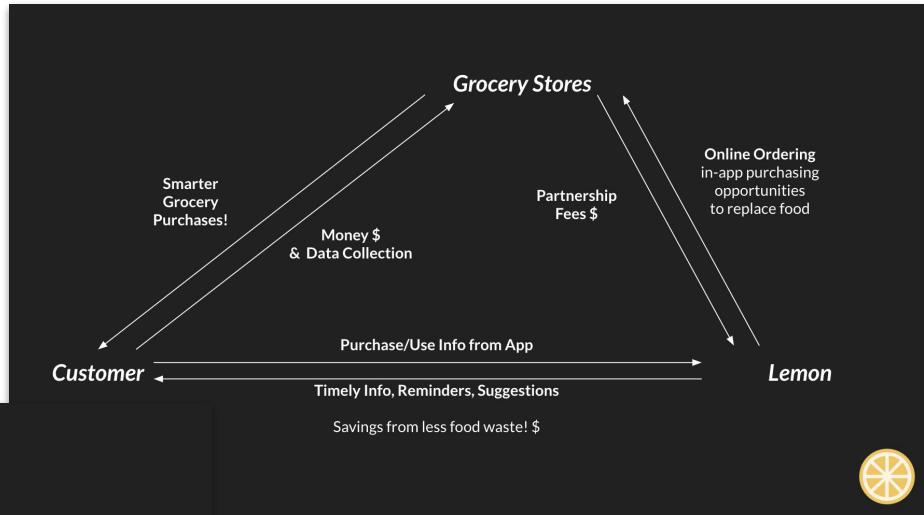
# Poster Iterations

We worked on refining our poster to serve as a backdrop to and quick summary of our pitch.



# Feedback on MVP #1

We received feedback that our idea was more **focused and understandable.**



## Initial Idea

An application that helps you **use food** before they **go bad** and helps you make **smarter purchase decisions** in the future

### Step 1: Tracking

Option A  
In-Fridge  
Smart Camera



Option B  
Phone Camera



Option C  
Grocery Store  
Receipt



### Step 2: Alerts + Notification



Spoilage  
Alerts

### Step 3: Prevention + Education



Usage Ideas



Smart  
Proportions

Moving forward, we had to make sure our pitch highlighted the **ease of use**, and the **value** that Lemon delivers to the customer. We also needed to figure out a **revenue model** that would work.



# **Final Design + Analysis**

## **MVP #2**



# Final Concept



The final concept is a **digital service**, that can...

- tracks current purchases by **scanning receipt**
- recommends grocery **proportions** for the future
- **sends reminders** to check on produce spoilage
- food use ideas (DIY cleaners, cosmetics, recipes, etc.)



# Competitor Analysis

Our main competitors were **other food tracking apps**. We thought about how our product would compare in both convenience and features. **Lemon** would **be the only app would require only one picture**, while most other apps required barcode scanning of every single item.



Fridge Pantry

BEEP



Expiry Date Tracker



Fridgley



Lemon

↑ Features Beyond Tracking

→ Convenient



Best Before



# Target Market/Persona

## Sample Persona

28 year old, post-grad software engineer

Single, lives with roommates

Occasionally shares food, cooks every few days

**Frustrations:** wasting money from throwing out food, not knowing how to use up food

**Needs:** a quick convenient way to keep track of ingredients in the fridge, a way to be reminded of the food sitting in the fridge



The market we wanted to focus on were people who weren't organized but went food shopping regularly. This tended to be **young professionals**, often traveling significantly during the week.



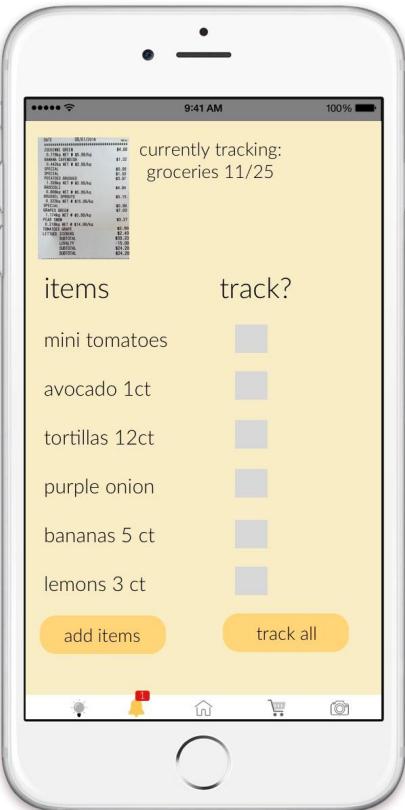
# Final Mobile Walkthrough

Using Figma, we created a prototype of the look and feel of what using the Lemon app might look like.

<https://drive.google.com/file/d/1YlmmXrq3ltk9y9tVXyJLYCYyy0vS3Yz/view?usp=sharing>

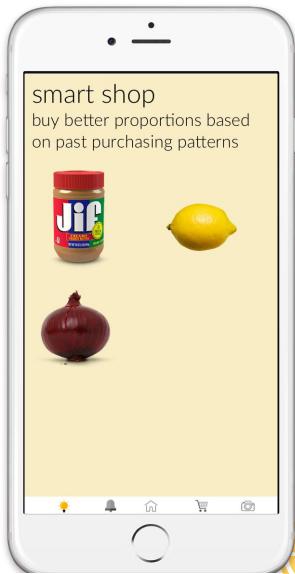


# Mobile Screen Features



From left to right:

Welcome screen, taking a photo of the receipt, tracking items, notifications, ideas to repurpose produce, smart shopping suggestion.



# Final Concept Poster

Our final poster design focused on the simplicity of the app, with **one picture of a receipt, we can deliver great value to the user at home.**

The poster features a large, stylized yellow lemon graphic on the right side. On the left, a smartphone displays a grocery receipt from Giant Eagle. The receipt includes items like Sirloin Tip Roast, Sweet Onions, and Lighter, along with their prices and quantities. Below the phone, three circular icons represent the app's features: a bell for food tracking, a lightbulb for repurposing ideas, and a shopping cart for smarter shopping.

With just **one** picture of your receipt...

food tracking

repurposing ideas

smarter shopping

# Final Video

Our final video focused on injecting **humor** into the daily food waste scenario, and showing **how easy it is** to use your produce effectively before it goes bad!

<https://drive.google.com/file/d/1nHt8dg1L8UTxDyg8PARKJwFqUYHw0tSW/view?usp=sharing>



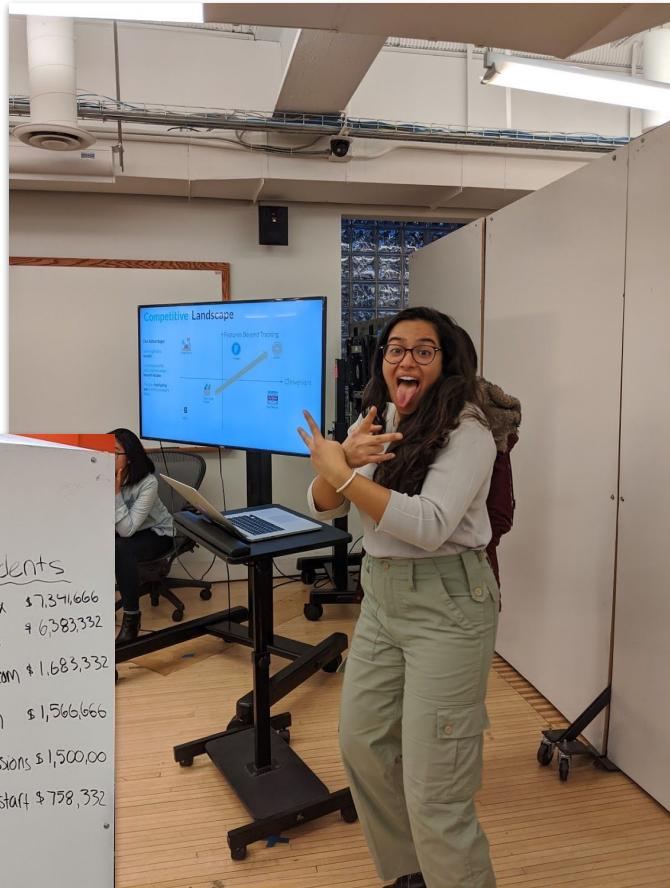
NEXT TIME WHEN YOU  
COME BACK FROM SHOPPING



# Pitch Day + Results!

Our team **came in 3rd** in terms of the value of Andrew Dollars given to us by the guest investors at the showcase! We were happy with the results, but also **received good feedback in terms of pricing structure and needing to further validate our results** to ensure that consumers would effectively use the product.

Investors	Students
BolFox \$2,400,000	Memobox \$7,341,666
Impressions \$2,125,000	BolFox \$6,383,332
Lemon \$2,050,000	Paystream \$1,683,332
Paystream \$1,075,000	Lemon \$1,566,666
Jumpstart \$975,000	Impressions \$1,500,00
Memobox \$925,000	Jumpstart \$758,332



# Reflection



Overall, the team felt that we did well in responding to the challenges of this pitch: we identified the need to pivot from restaurants to personal waste, and discovered a space for opportunity and quickly developed an idea to tackle it.

Given more time in the future, we would want to perform more customer discovery, so that we can ensure we are truly delivering value to our customer.



# Appendix



# Sample Interview Questions

## **Restaurants to Call/Talk To:**

**\*we should try to hit a mix of old and new, along with upscale**

- Chipotle
- Roots
- Panera (they already do food donation, would they be interested in making money)

## **Questions to Ask**

### **On Waste:**

- What do you do with the excess waste/excess meals at the end of the day?
- How often are you wasting produce/groceries?
- How do you predict and keep stock of how much ingredients to buy?

### **Profitability:**

- Is your company making money regularly?
  - \*If they are struggling, what are the fundamental issues?

### **Customer Satisfaction:**

- How happy are customers with your meals?
- What is your customer retention rate? (in this case, how often do customers come to your restaurant?)
- What types of customers visit your restaurant?
- What percentage of customers are dining in/ordering on a meal delivery service?

### **Ideas/Thoughts:**

- Can use extra food for employee meals
- Mealkits to go
- We still have to ensure health standards/some cities companies may not be allowed to sell food that isn't completely fresh
- There is an app that does this right now: Food for All



# PESTLE & POG

<b>Political</b>	Green New Deal
<b>Economic</b>	willingness to spend money on SaaS, myfitnesspal, etc.
<b>Social</b>	consumer shift towards environmentalism, consumer willingness to track
<b>Technological</b>	IoT advances, Samsung coming out with smart fridge
<b>Legal</b>	n/a
<b>Environmental</b>	Greta Thunberg, COP25 in Chile, Paris Climate Agreement

The PEST(LE) was a tool useful for identifying relevant opportunities and challenges, and generating ideas to address them. We looked at factors that might influence the needs and wants of today and if there are any opportunity gaps to fill.

