FIELDFRESH

Empowering Local Buyers
and Sellers

AGENDA

01 PROBLEM & CONTEXT

02 SOLUTION & APPROACH

03 UI JOURNEY

04 MODEL & VALIDATION

05 NEXT STEPS & IMPACT

OUR TEAM

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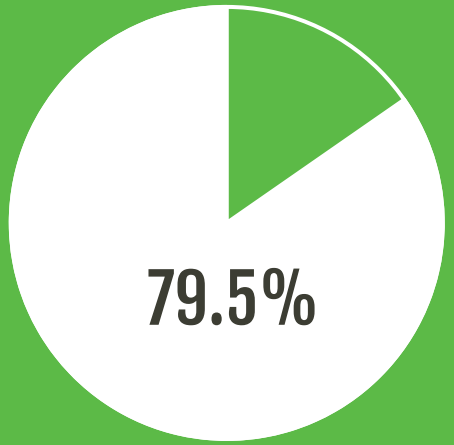
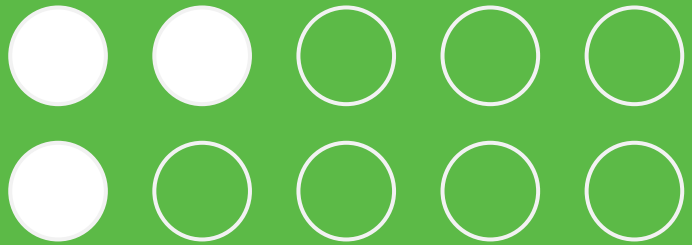
FACTS



OF CONSUMERS ARE WILLING TO PAY A PREMIUM FOR LOCALLY GROWN FOOD**

$13.7 BILLION

AGRICULTURE CONTRIBUTES TO ONTARIO'S GDP ANNUALLY*

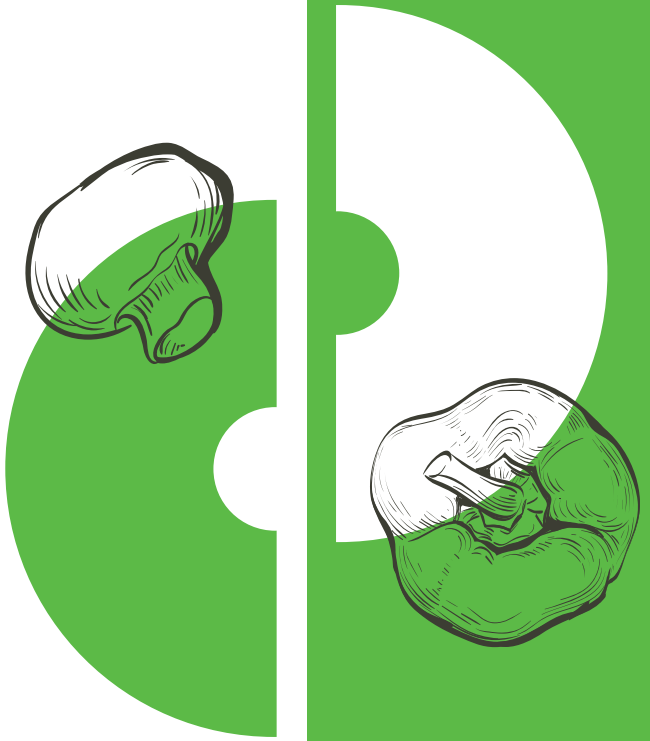


3 OUT OF 10 CONSUMERS SHOP AT LOCAL FARMERS MARKETS***

*Ontario Federation of Agriculture 2018 **Dalhousie University 2020 ***Pearl Strategy and Innovation Design 2019

NETWORK

Connecting with other buyers and sellers, especially with the added challenges of the pandemic.



Knowing the market value and trends for products of interest.

INSIGHT

OUR SOLUTION

FieldFresh is a multipart solution to connect users and empower them to buy and sell local food at the prices dictated by the market.

PRODUCT OVERVIEW

MATCHING ENGINE

Matches buyers and sellers, and sets the optimal market price for goods.

MOBILE APP

An iOS and Android application that allows users to interact with the matching engine.

JOURNEY

PROBLEM DISCOVERY

JUNE 2020

REQUIREMENTS GENERATED

JUNE 2020

DESIGNS COMPLETED

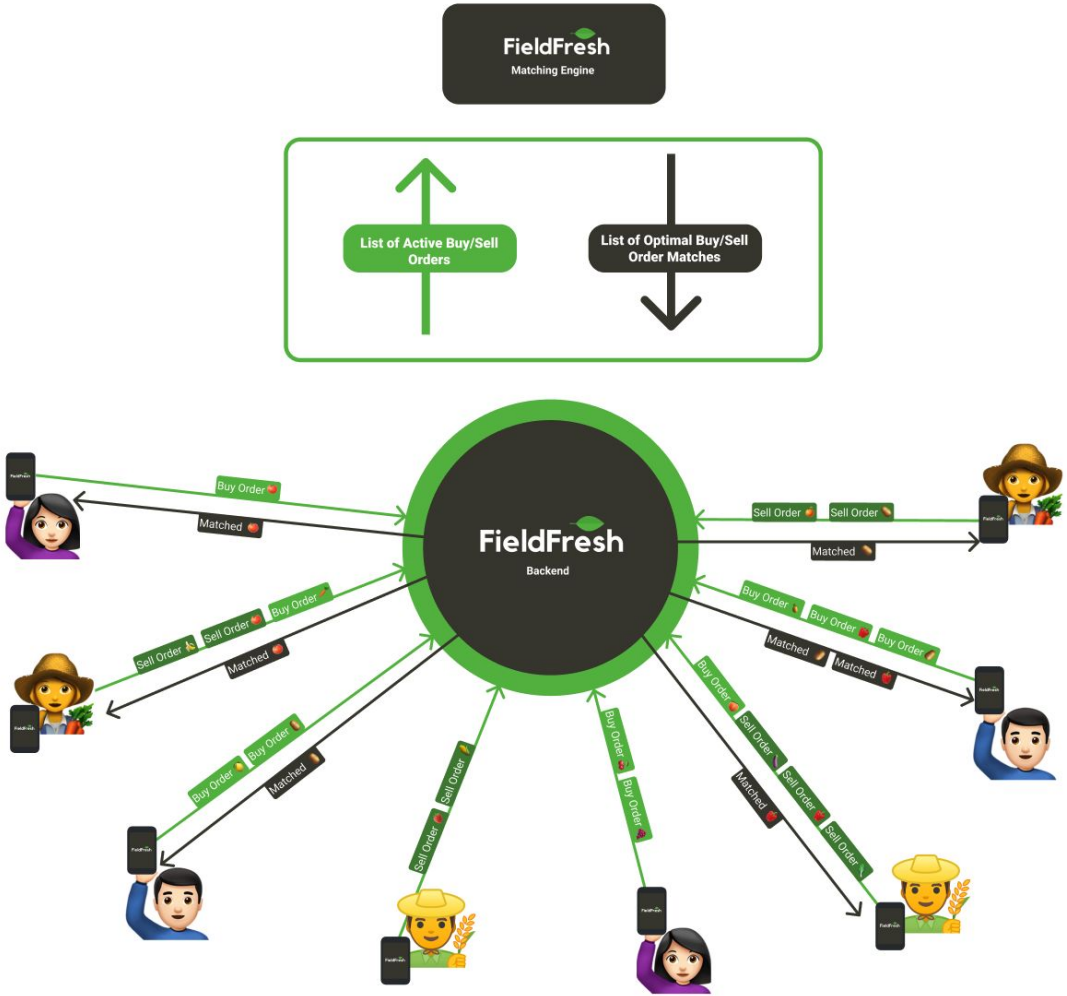
FEBRUARY 2021

VALIDATION & VERIFICATION

MARCH 2021

INITIAL DEVELOPMENT COMPLETE

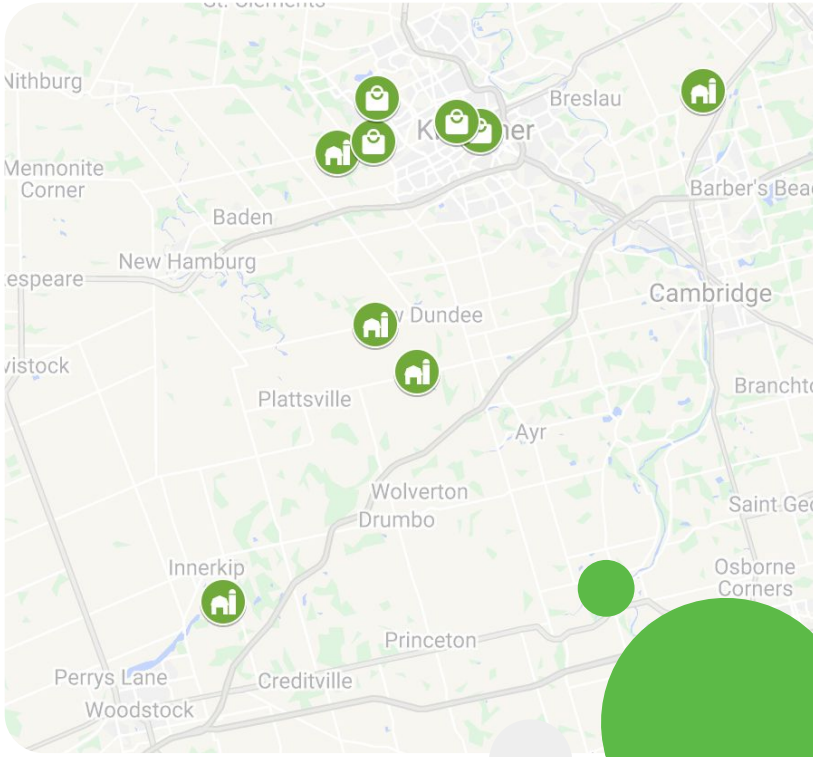
MARCH 2021


FieldFresh
Matching Engine
List of Active Buy/Sell Orders
List of Optimal Buy/Sell Order Matches
FieldFresh
Backend
Buy Order
Matched
Sell Order
Buy Order
Matched
Sell Order
Sell Order
Matched
Buy Order
Buy Order
Buy Order
Matched
Buy Order
Buy Order
Matched
Sell Order
Sell Order
Sell Order
Sell Order
Matched
Sell Order
Buy Order
Buy Order

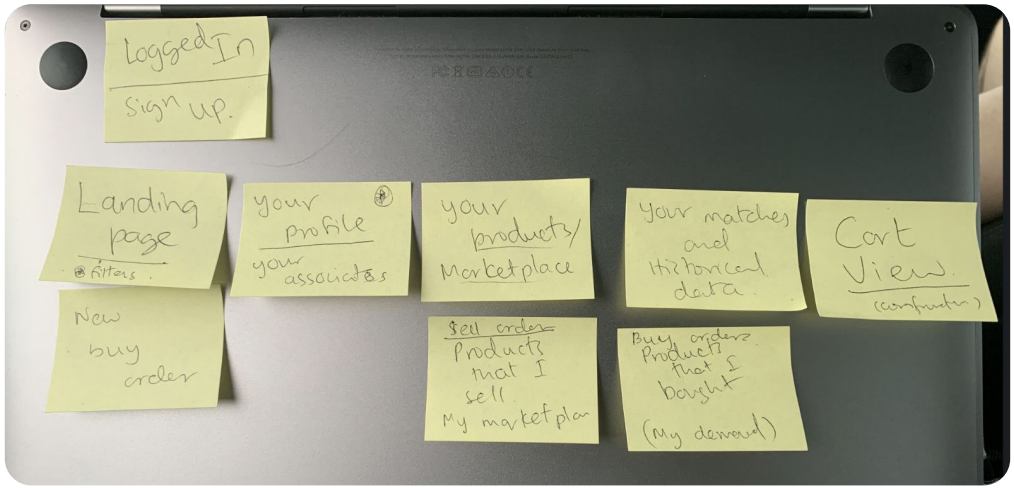
Back-end (Matching Model):
Python
Gurobi Optimizer
Matching Cycle Runs Daily
Back-end (Database):
PostgreSQL
Back-end (API):
Spring Framework and Kotlin
Front-End (Android and iOS):
Flutter and Dart

OUR UI

- Collected requirements from going to 4 stores and 5 farms
- Farms are not satisfied with the existing solutions
- Existing solutions lacked a focus on design and usability



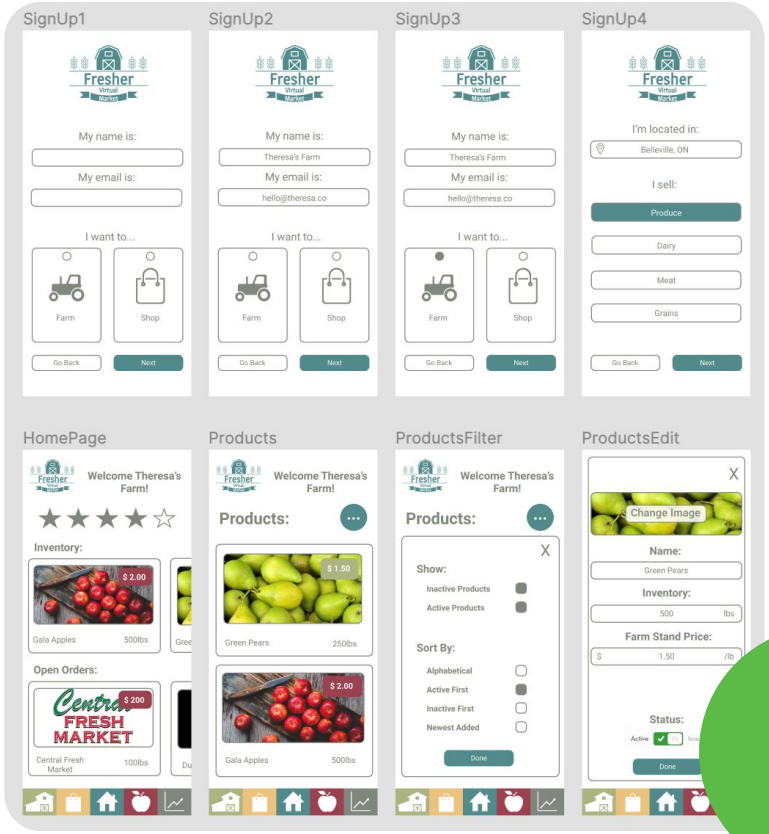
OUR UI



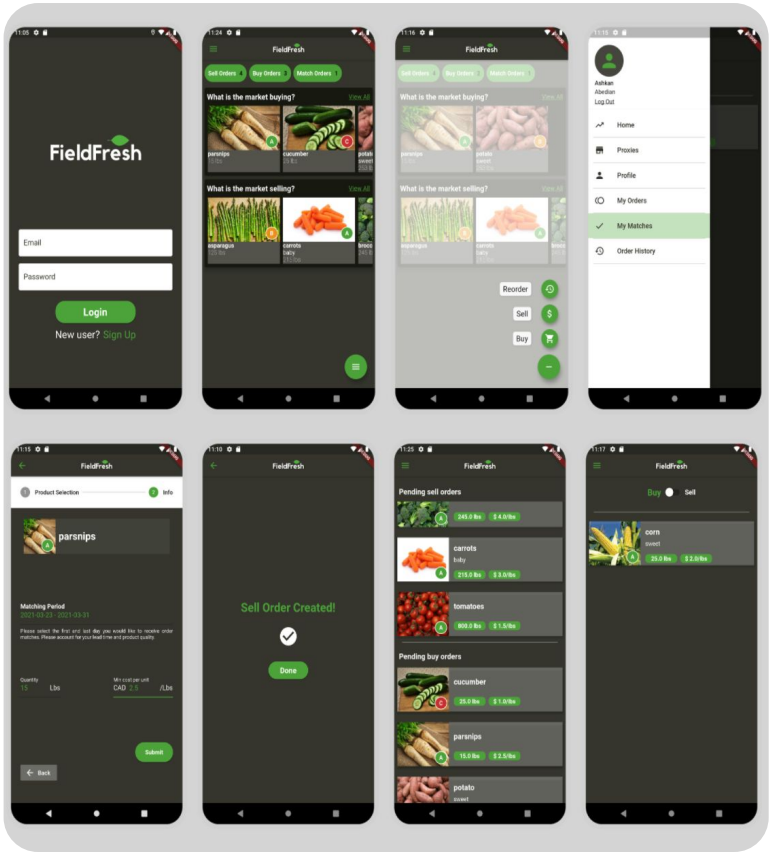
- Decided a mobile solution was best
- Created user flows and wireframes
- Validated requirements and assumptions with farmers

OUR UI

- Created first Figma prototypes
- Determined that iOS and Android must be supported
- Conducted AB testing and cognitive walkthroughs with users



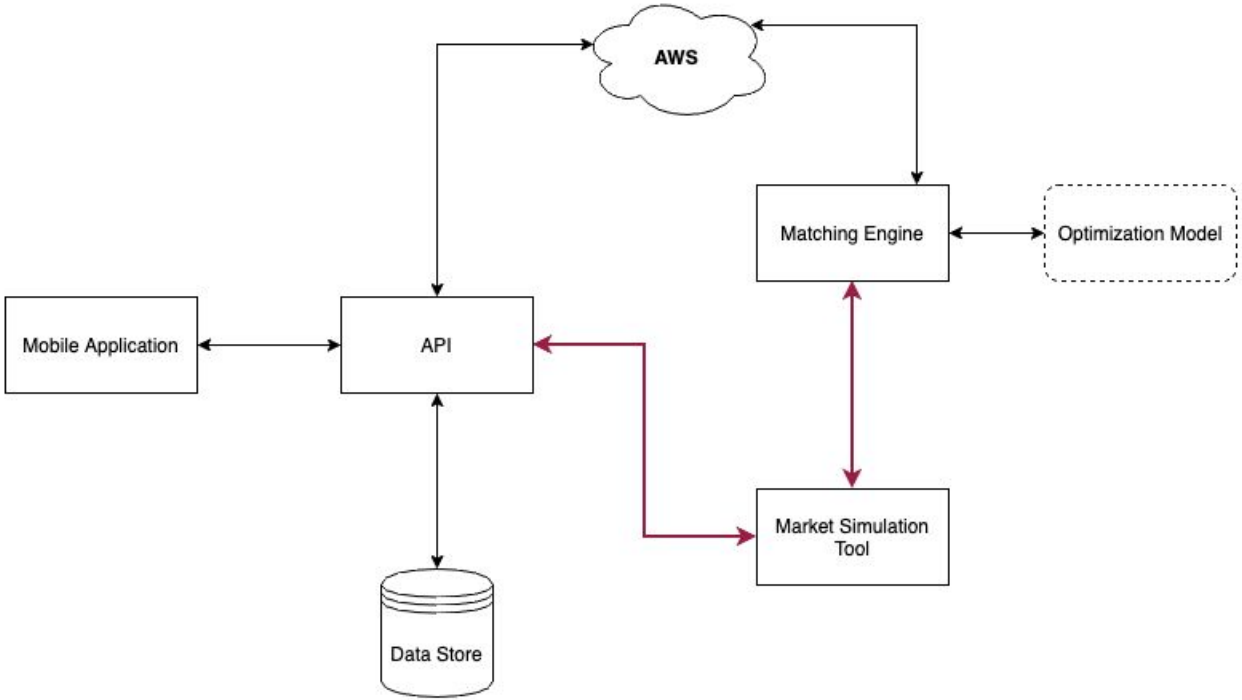
OUR UI



- Rebranded the app by creating a logo and color scheme
- Created a “Happy Path”
- Validated application with farmers

DEMO

ARCHITECTURE



OUR MODEL

- Order matching model
- Sets
  - Buy orders
  - Sell orders
- Parameters
  - Price upper bound
  - Price lower bound
  - Quantity demanded
  - Quantity supplied
  - Fixed transaction cost
  - Match feasibility
- Decision Variables
  - Quantity matched
  - If a match occurs
  - If a buy order is matched

STEP 1

Generate hypothetical buy/sell orders based on market data

STEP 2

Run optimization model with the buy/sell orders

STEP 3

Calculate and graph validation metrics based on decisions

MARKET SIMULATION

VALIDATION AND VERIFICATION

DEVELOPMENT

Changes were made to the UI and model

VERIFICATION

Market simulations were done using our tool

VALIDATION

Walkthroughs were done with stakeholders

IMPACT

INCREASE PROFITS FOR FARMERS

BOOST LOCAL ECONOMY

REDUCTION OF FOOD WASTE

THANK YOU!

This presentation was modified from a Slidesgo template, including icons by Flaticon and images/infographics from Freepix.