

# Appendix



## Prototype and UI Design

[Smart Contract Deployed](#)

[Our Web Prototype](#)

[Landing Page \(Screenshot of Web Prototype\)](#)

[Manufacturer \(Screenshots of Web Prototype\)](#)

[Retailer \(Screenshots of Web Prototype\)](#)

[Consumer \(Screenshots of Web Prototype\)](#)

[Mobile App UI Design \(Further Development\)](#)



## Full Deck

[Let's Begin!](#)

[Problem Identification](#)

[Solution & Outcome](#)

[Market Analysis](#)

[Users' Reviews](#)

[Business Model](#)

[Future Development](#)

[Timeline](#)

[Meet Our Team](#)

## Credits

[Attribution](#)



# Smart Contract Deployed (On Ropsten Testnet)



## Smart Contract Address

0x8dCEDE30c2a8bD175654b67e010F898061fF0072



## Transactions Record – Etherscan

<https://ropsten.etherscan.io/address/0x8dCEDE30c2a8bD175654b67e010F898061fF0072>

All data and records are on Blockchain (except for Product Images)

## Testing Accounts

### 12-word Seed Phrase

churn drift kind explain jeans weird give pipe draw style speak vivid

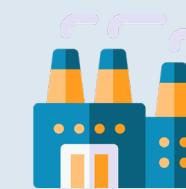
**⚠️** This account is created for demonstration purposes only, for your own safety, please DO NOT use it for other purposes.

0xDE37A3dce5249C31b12e45F46988fc30b50e19FD

0xEfA8901C15007db0b19B17cEF667120397143239

0x6c4d9360e36B1a59daCF7FB9d71AaFB68b9657b8

#### Manufacturer



0xDE37A3dce5249C31b12e45F46988fc30b50e19FD

#### Retailer



0xEfA8901C15007db0b19B17cEF667120397143239

#### Consumer



0x6c4d9360e36B1a59daCF7FB9d71AaFB68b9657b8

## Available Functions

Add New Product

Add Sales Record

Add Comment

Add Procure Record

View Sales Data

View Comments

View Products

View Comments

View Spending History

View Retailer's Inventory Level

# Webpage Prototype



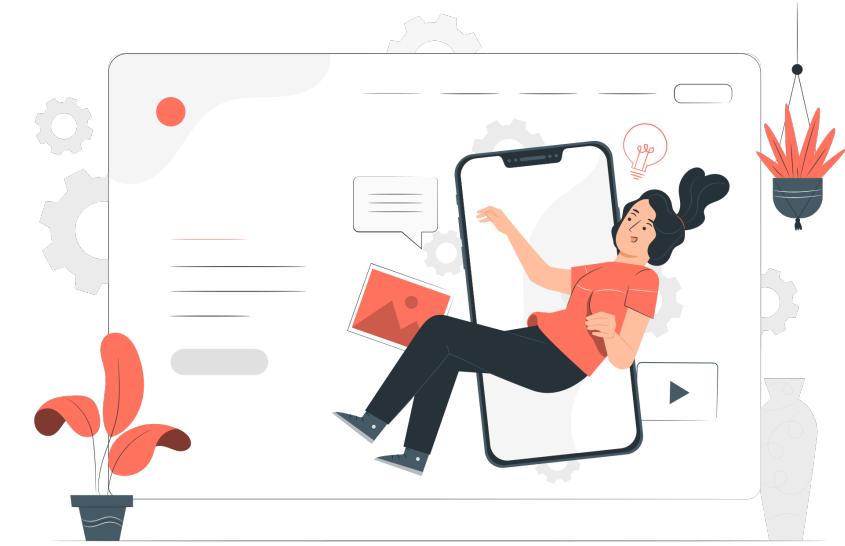
Visit Our Web Prototype: <http://tinkwaiki.pythonanywhere.com/SharpBargain/index/>



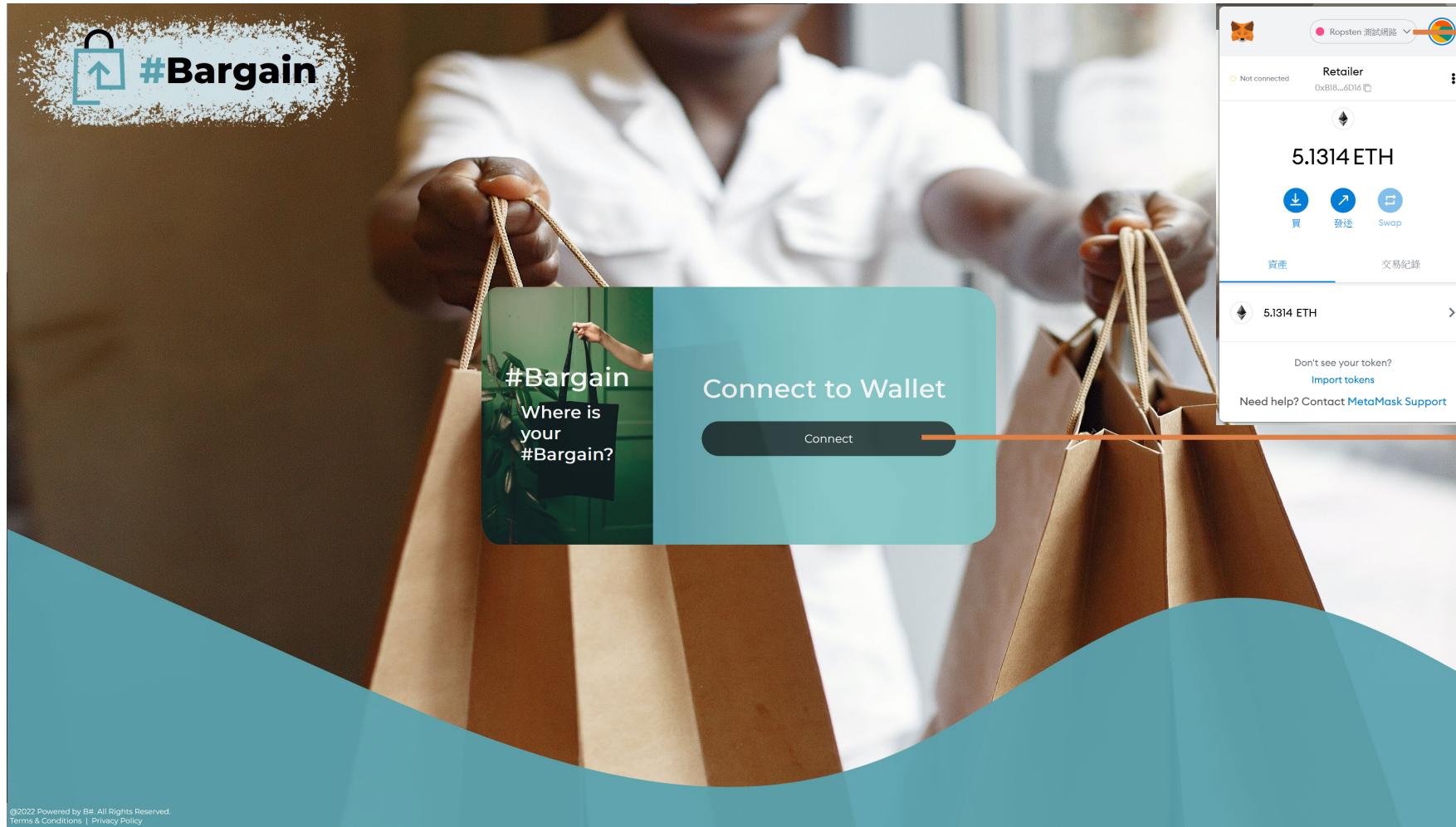
This website is currently designed for Desktop View only.  
The mobile version will be developed in Phase Two.



For MetaMask Test Accounts  
set up, please refer to the  
tutorial on README.md



# Landing Page



## Network

- The Web is on Ropsten Test Network currently for testing.
- All data and records are on Blockchain (except for Product Images)



## Connect to Wallet

- Current available wallet: MetaMask

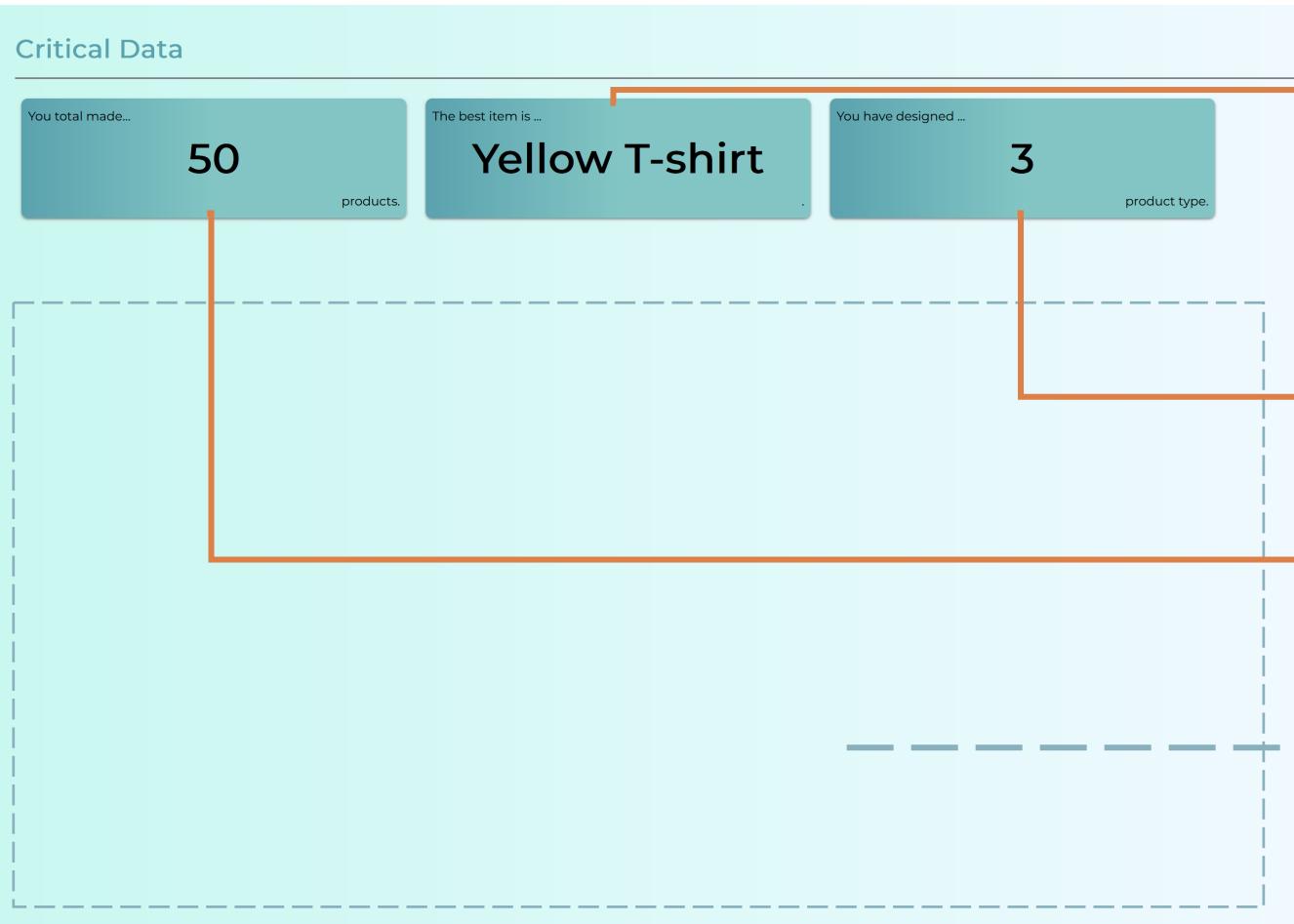


# Manufacturer's Dashboard



**#Bargain**

- Home
- Product Data Input
- Wholesale Sale Input
- View Data
- Logout



## Best Selling Item

- Manufacturer's Production Planning
- May need to produce more of this product (for Make-to-Stock Production)

## No. of Product Types Designed

- Production Variety

## Quantity Produced

- Keep track of production efficiency

## Customisable Data Presentation

- Further Development
- Charts and Graphs
- Any other relevant information

# Create New Product Entries



Product Entry System

The screenshot shows a user interface for a "Product Entry System". On the left is a sidebar with a logo, navigation links (Home, Product Data Input, Wholesale Sale Input, View Data, Logout), and a search bar. The main area has a header "Product Entry System". Below it are two forms:

- Top Form (Initial Input):** Contains fields for "Product Type", "Wholesale Price", and "Quantity", each with an input field and a "Submit" button.
- Bottom Form (Success):** Shows the entered data: "Product Type" (White T-shirt), "Wholesale Price" (30), and "Quantity" (20). It also displays a success message ("Success!") and a file upload field for "Prod img:" with placeholder text ("瀏覽... 未選擇檔案。") and a "Submit" button.

A large black arrow points from the top form down to the bottom form, indicating the flow of data entry.

## Product Type

- Product Description



## Wholesale Price

- Manufacturer's Price
- Will not disclose to Consumer/other parties.



## Quantity

- Total Quantity Produced in this Batch



## Add Product Image

- After data entry to the blockchain, Manufacturers can upload product image as reference (on database)



# Commit Purchase Order



#Bargain

Home Product Data Input Wholesale Sale Input View Data Logout

## Wholesale Sale Entry System

Retailer Address  
Product Type  
Quantity

Submit

### Retailer Address

- Identify who to sell to



### Product Type

- Product Description



### Quantity

- Quantity Sold to Retailer



# Product Catalogue



#Bargain

- Home
- Product Data Input
- Wholesale Sale Input
- View Data**
- Logout

## View Data



Product Type: Red T-shirt  
In Stock: 10  
Total Made: 20  
Sell Rate: 50.0%

[View Data](#)

Product Type: Yellow T-shirt  
In Stock: 5  
Total Made: 20  
Sell Rate: 75.0%

[View Data](#)

Product Type: Sport Shoes White  
In Stock: 5  
Total Made: 10  
Sell Rate: 50.0%

## Product Summary

- Manufacturer's Performance
- Inventory Turnover



## Button: View Details



# Details of a Specific Product



**#Bargain**

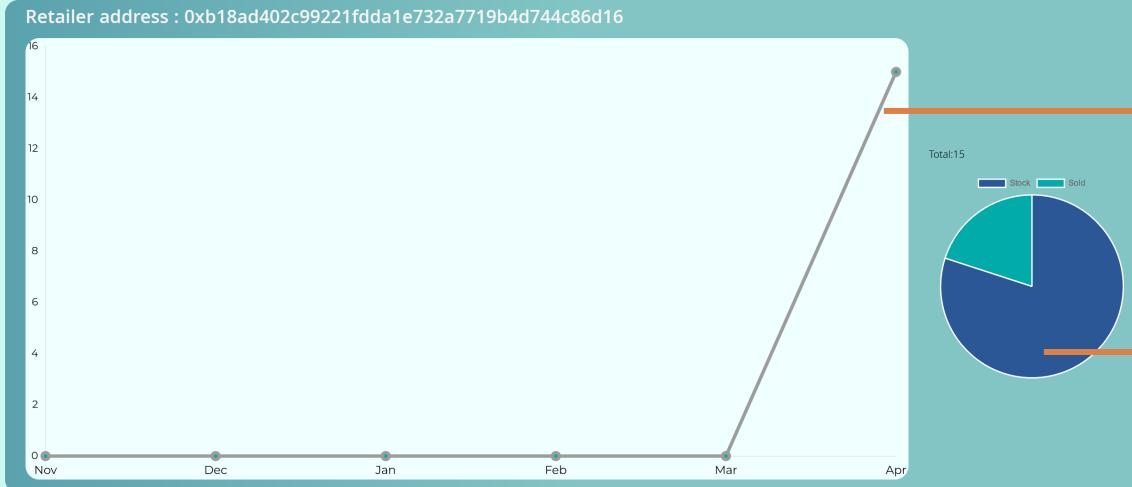
- [Home](#)
- [Product Data Input](#)
- [Wholesale Sale Input](#)
- [View Data](#)
- [Logout](#)

## Yellow T-shirt

### Overview



### Condition of Stock



### Product Statuses

- In Manufacturer Stock
- In Retailer Stock
- Sold to Customer



### Retailer Inventory Level

- For manufacturer auto replenishment



### Product Sold VS In Stock

- Retailer's Inventory Turnover Rate



# Retailer's Dashboard



**#Bargain**

- Home
- POS System
- View Data
- Logout

## Critical Data

You have got...

4

comments in last 30 days.

Your products have average...

3.7

Product...

Yellow T-shirt

have highest rate in last 30 days.

## Average Rating

- Retailer's KPI



## Best Rating Product

- Popular Product



## New Comments

- Reminder for checking comments



## Customisable Data Presentation

- Further Development
- Charts and Graphs
- Any other relevant information



# Point-of-Sales System



The screenshot shows a mobile application interface for a Point-of-Sales system. At the top, there is a header bar with the text '#Bargain' and some icons. Below the header, there are fields for 'Customer Address' and 'Product ID' with a placeholder value '0xF5EB01007e46c3296087063a155b5F68d9D72157'. There is also a button labeled 'Add'. The main area is divided into two sections: 'Carts' and 'Payment'.

**Carts Section:**

#	Product ID	Product Type	Price	Remove
1	49	Sport Shoes White	\$168	X
0	23	Yellow T-shirt	\$84	X

**Payment Section:**

Total: \$252

Payment methods shown: Cash, Octopus Card, Visa.

Change provided: \$48

Buttons: Confirm.

## Customer(Consumer) Address

- Record WHO bought the products
- Cashier scans Consumer's Public Key found inside MetaMask App



0x6c4d9360e36B1a59daC7FB9d71Aa  
FB68b9657b8

## Payment Method

- By Cash/Octopus Card/Credit Card
- Change provided for Cash Payment



## Purchase Products

- Simulate As-Is Point-of-Sales System



# Products Procured



**#Bargain**

- [Home](#)
- [POS System](#)
- [View Data](#) View Data
- [Logout](#)

**View Data**



**Product Type:** Sport Shoes White  
**Manufacturer Address:** 0xcEB45891F0b9761D9d7D950710aA5f9d785F87d6



**Product Type:** Red T-shirt  
**Manufacturer Address:** 0xcEB45891F0b9761D9d7D950710aA5f9d785F87d6



**Product Type:** Yellow T-shirt  
**Manufacturer Address:** 0xcEB45891F0b9761D9d7D950710aA5f9d785F87d6

## All Procurement Record

- All products that Retailers sourced
- Manufacturer's Address Indicates where the products sourced from



## Contact Suppliers

- Further Development



# View Comments



#Bargain

- Home
- POS System
- View Data**
- Logout

## Comment for Red T-shirt

Purchase Date: 4/4/2022

Very Good



Purchase Date: 4/4/2022

Poor Quality!



### Ratings and Comments from Individual Consumer

- Consumer's Genuine Feedback
- Real-time Updated



# Consumer's Dashboard



#Bargain

- Home
- History
- View
- Comment
- Logout

### Shopping Habits (In last 7 days)

You have bought... 6 products.

You have spent... \$532.0 HKD

You have ... 2 products to be commented.

### History (Recent Purchase)

Product Type: Red T-shirt |  
Product ID: 10  
Purchase Date: 4/4/2022  
Price: \$ 70

Product Type: Red T-shirt |  
Product ID: 11  
Purchase Date: 4/4/2022  
Price: \$ 70

### Timely Spending Summary

- Consumer's reminder



### Recent Purchases

- Purchase Record



# Lifetime Purchase History



**#Bargain**

Home  
History  
View  
Comment  
Logout

## Full History

Product Type: Red T-shirt  
Product ID: 10  
Purchase Date: 4/4/2022  
Price: \$ 70

Product Type: Red T-shirt  
Product ID: 11  
Purchase Date: 4/4/2022  
Price: \$ 70

Product Type: Yellow T-shirt  
Product ID: 25  
Purchase Date: 4/4/2022  
Price: \$ 84

### All Purchase Records

- Consumers can view what they have purchased
- Better Spending Management



# View Others Comments



View

Search by ID  Search



Product Type: Sport Shoes White  
Purchase Date: 5/4/2022  
Comment: I can run faster with this.

★★★★★

## Comment(s)

- Consumers can view other comments before purchasing



# Add Rating and Comment for Purchased Product



#Bargain

- Home
- History
- View
- Comment**
- Logout

## Comment System

Search by ID

Search

Status: Get product data! Please comment below!



Product Type: Red T-shirt  
Product ID: 19  
Purchase Date: 4/4/2022  
Price: \$ 70

## Comment Section



## Product Summary

- Consumer can refer to which product he/she is commenting on

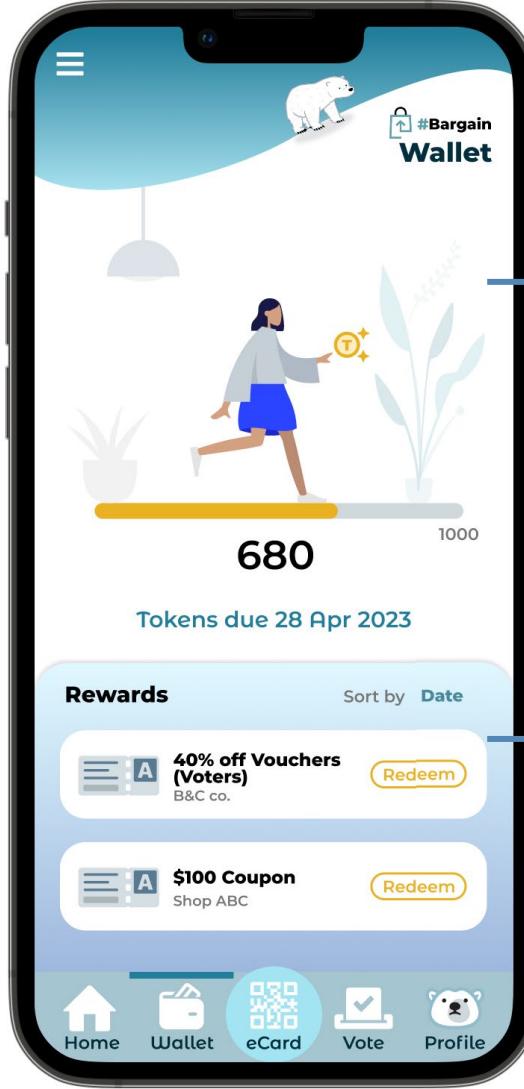


## Rating and Comment

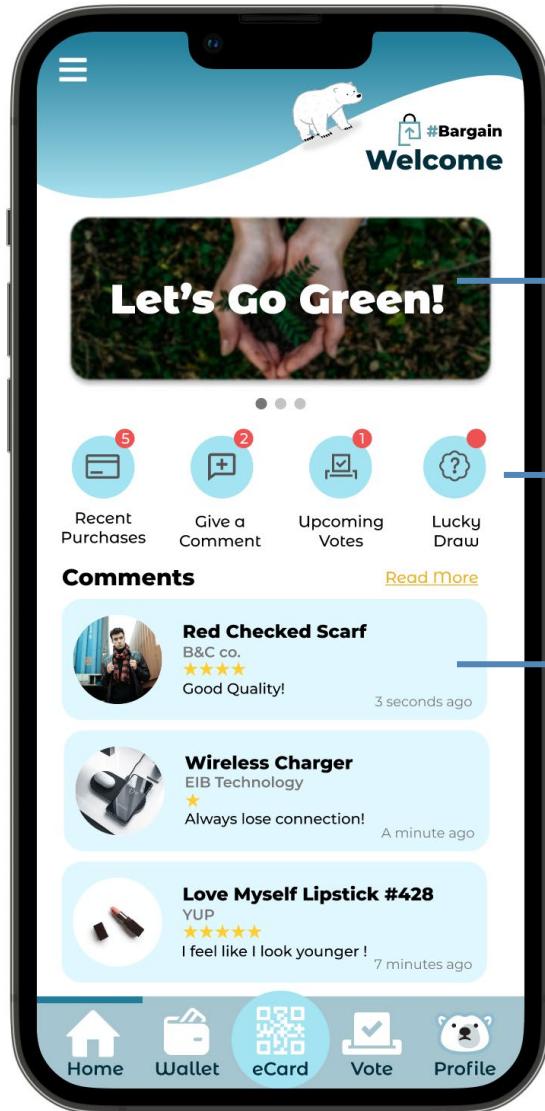
- Consumer gives his/her own rating and comments to the above product.



# Mobile App – Customer Loyalty System (Phase 2)



# Mobile App – Customer Loyalty System (Phase 2)

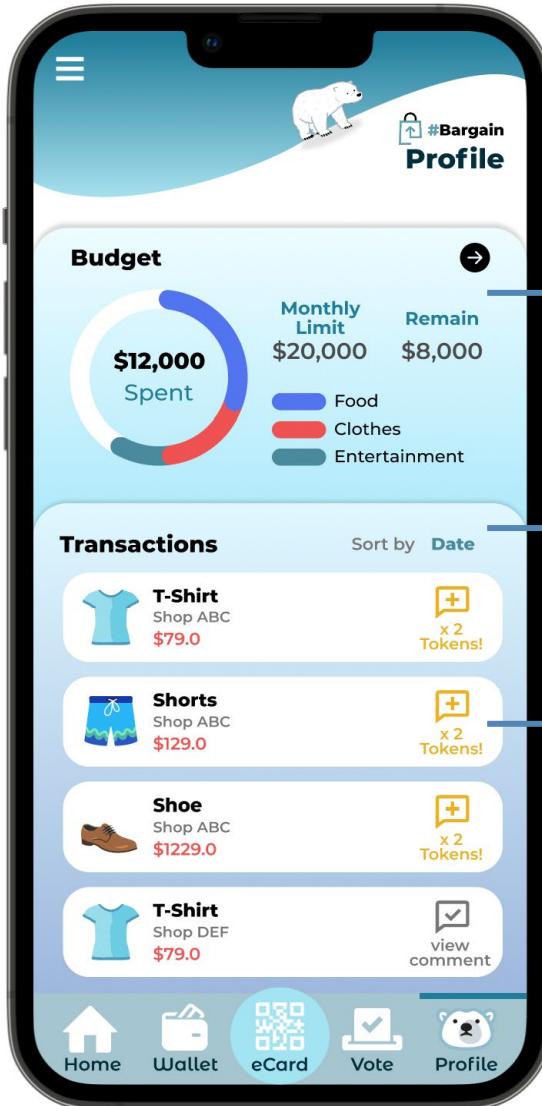


## Home Tab

- Promotion Banner
- Potential Ad Section
- Shortcut Keys



## Comments from other Consumers

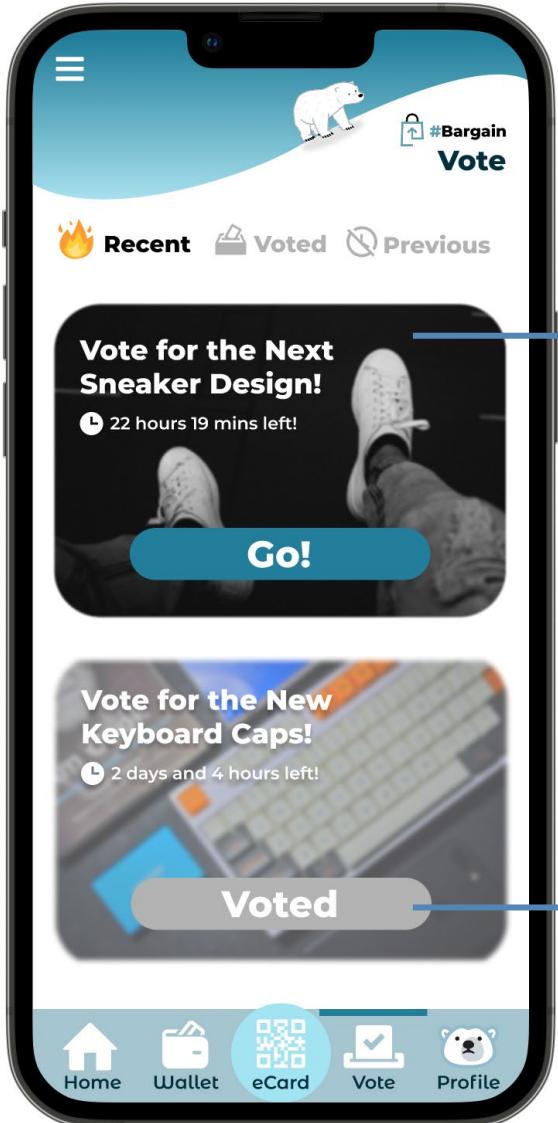


## Profile Tab

- Budget Planning (Integrate with the Spending Summary)
- Transactions Details
- Rewards for writing comments
- Token issuing



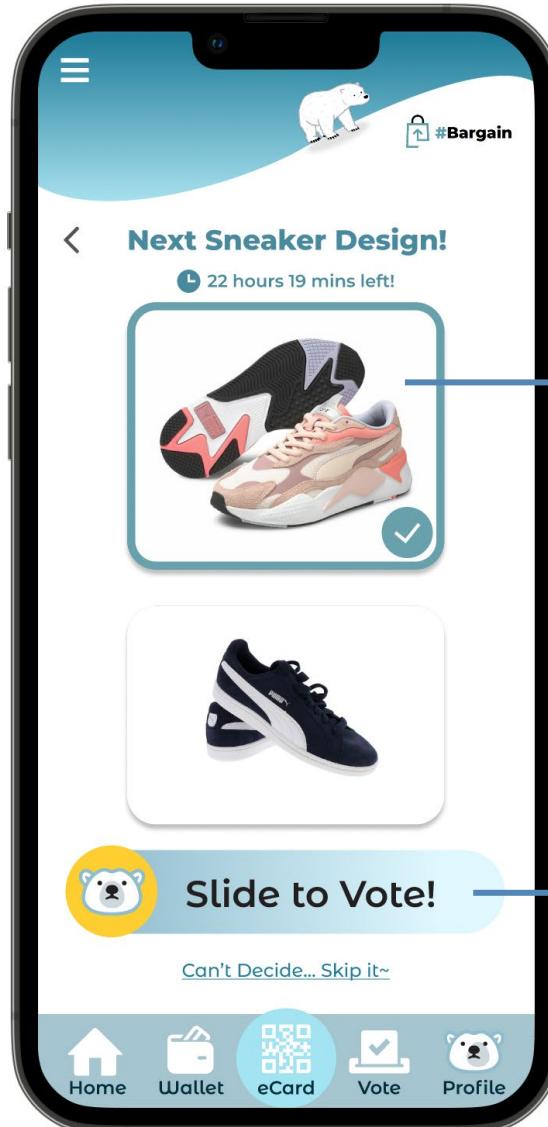
# Mobile App – Customer Loyalty System (Phase 2)



## Vote Tab

- Recent Voting Events Summary
- Countdown Feature

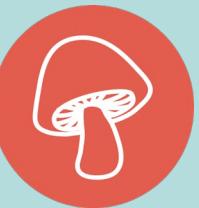
- Button Disabled for Joined/Outdated Voting Events



## Voting Event

- Chosen Candidate

- Confirmation of the designated choice
- More Tokens Earned = Higher Rating in the Voting Events



# #Bargain

REINVENTS SHOPPING EXPERIENCE

*Team B#*



# Problem Identification

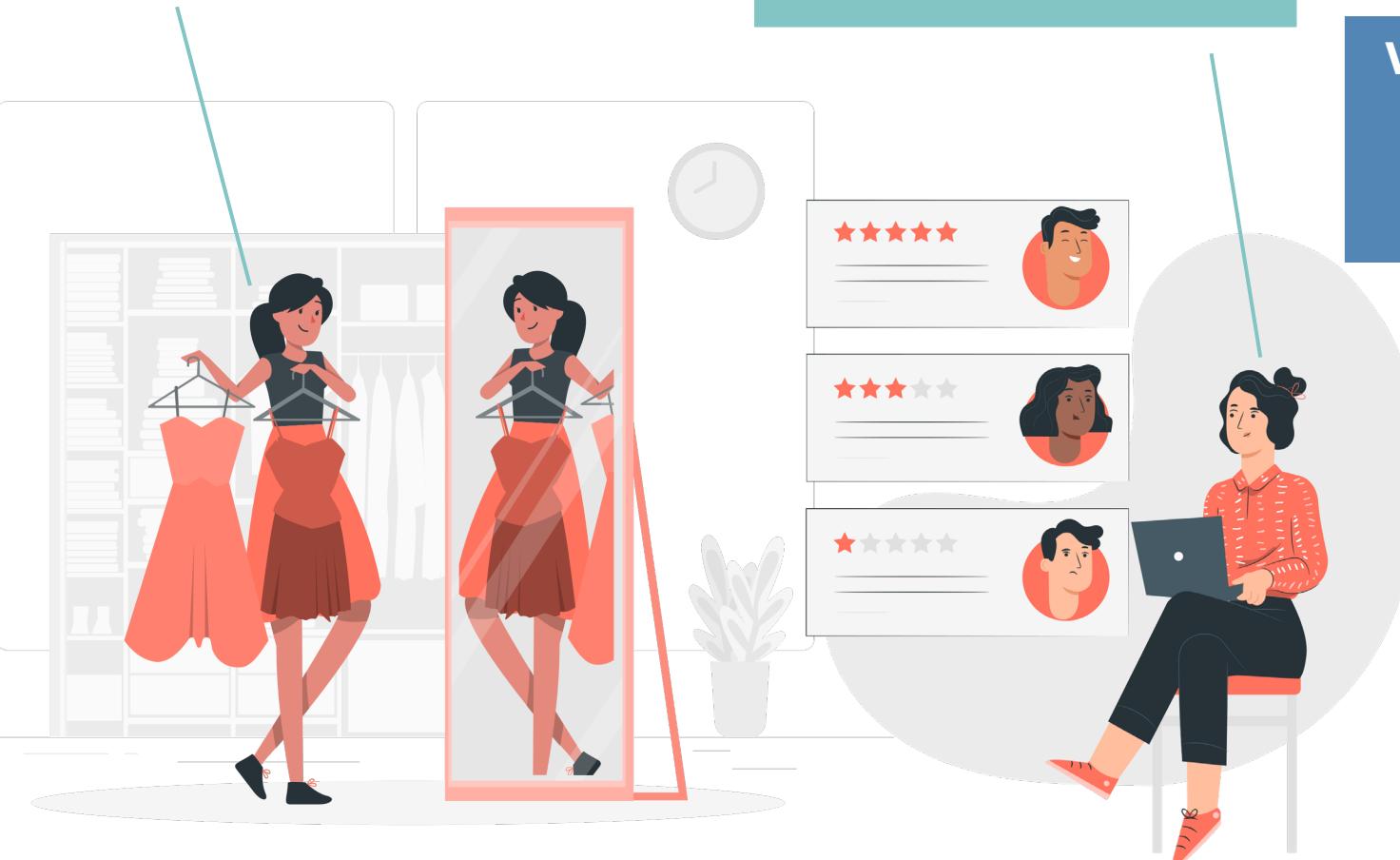


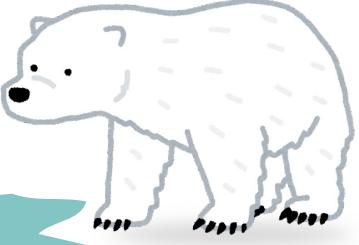
Do I have a similar dress at home?

Are Online Reviews reliable?

What kind of products should we launch in the next season?

What is the demand from my downstream customers? How much should we produce?





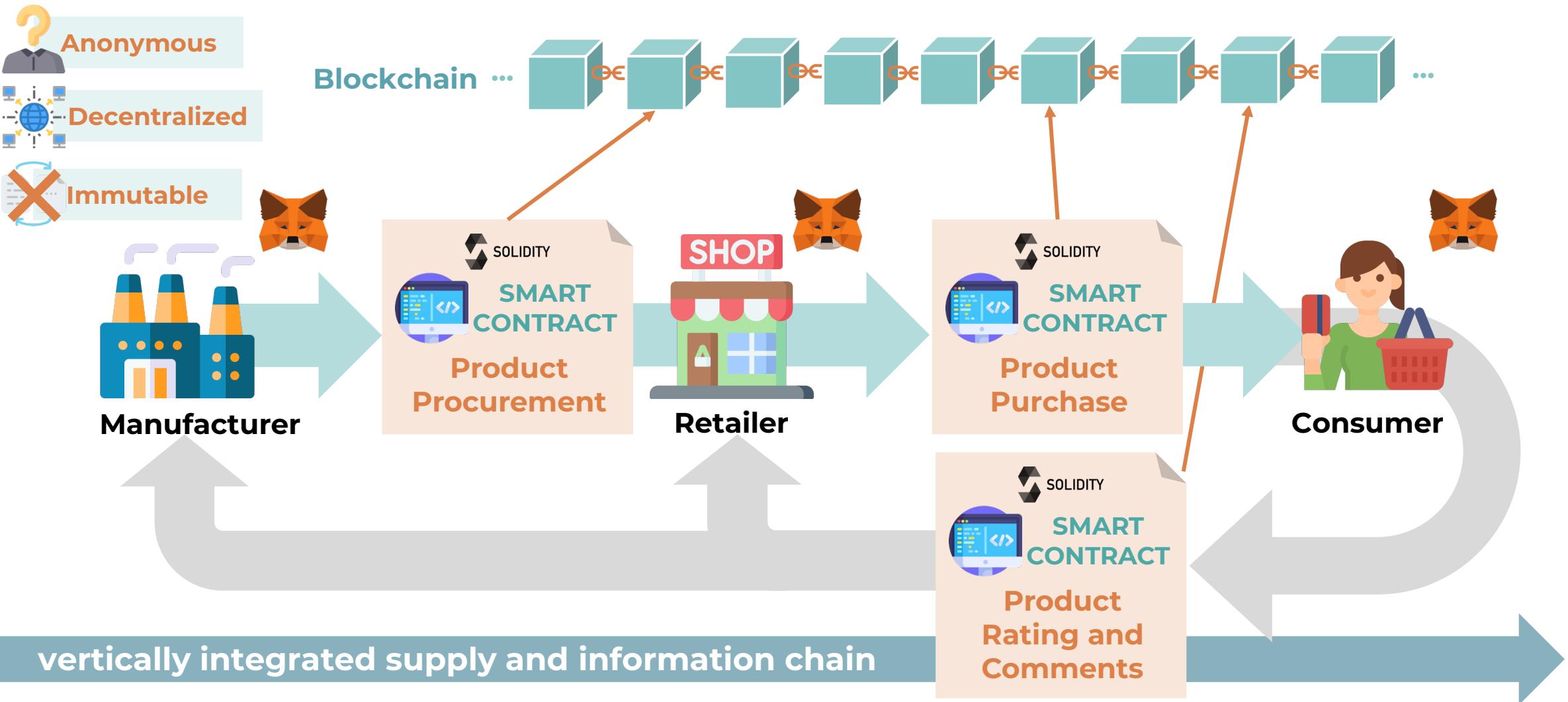
*Web 3.0  
initiated  
Smart  
Shopping  
Experience*



# Solution Overview



#Bargain is a Decentralised Supply Chain Management Application (SCM DApp)



# 1. Consumer Records Purchase History at Ease



## 3-step Approach



## Our Solution



## 2. Online Reviews become Reliable



### Online Reviews

Why are they important?

93%

of consumers say that online reviews influenced their purchase decisions.\*

### Impacts on fake reviews

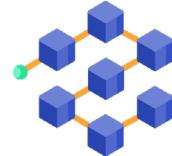
 Decrease reviews informativeness  


 Lose Brand Credibility

### After-sale Product Rating Mechanism



Consumer can only make 1 Comment on each product they purchased



All comments are recorded on Blockchain



Ensure Comments from REAL Consumers



Records are Immutable on Blockchain



Prevent counterfeit comments or “review spam”



Prohibit malicious modification of reviews



Reliable Online Reviews

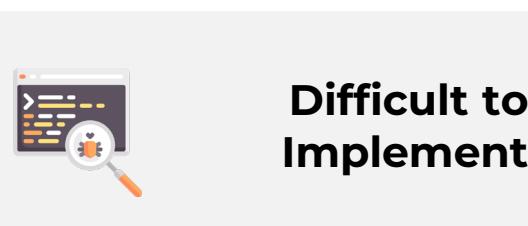
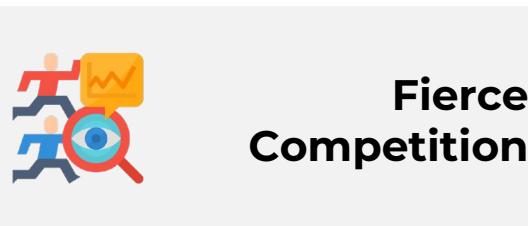


Improve future shopping experience

### 3. Business Data Disclosure minimise Information Silos



#### Current Obstacles



Low Incentive to Share

#### Supply Chain and Information Flow



#### Our Solution



Full Control on own data

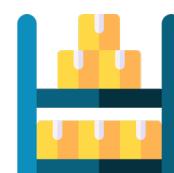


Data Security

Incentive to Share



Better Demand Forecasts



Capacity Utilisation



Minimise Overproduction

# Outcome



Manufacturer

Better Demand Forecasting  
Reduce Overproduction



**#Bargain**  
Synergy

Accurate market analysis  
with no counterfeit data  
  
Better Inventory  
Management utilises  
stocking spaces in physical  
stores

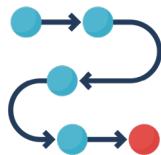


Retailer

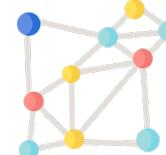


Consumer

Key Takeaway



Streamlined  
Process



No Information  
Silos



Reduce  
Wastage

# Market Potential – Prevalence of Web3.0



## MetaMask's Popularity



MetaMask is a crypto wallet & gateway to blockchain apps

30M\*

Monthly Active Users on



METAMASK

\*in January 2022

## Apply Pay Integration



from 29 March 2022

The new version of MetaMask app on iOS integrates Apple Pay to pay for crypto

High Market Potential in developing Decentralised Applications.

\* Roberts, J. J. (2022, March 29). Ethereum Wallet MetaMask passes 30m users, plans Dao and Token. Decrypt. Retrieved April 4, 2022, from <https://decrypt.co/95039/metamask-consensys-30-million-users>

^Thomas, D., James, R. (2022, March 30). iPhone users score Apple pay integration with popular crypto wallet MetaMask. BeInCrypto. Retrieved April 4, 2022, from <https://beincrypto.com/iphone-users-score-apple-pay-integration-with-popular-crypto-wallet-metamask/>

# Market Competition



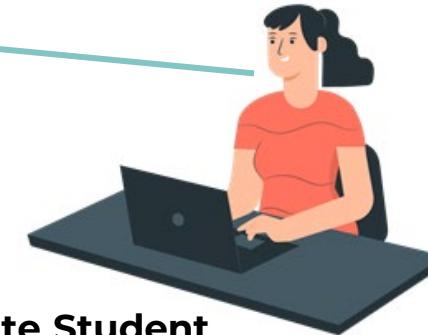
	#Bargain	SAP IBP	ORACLE NETSUITE	用友 yonyou	Competitive Advantages
External Partners Engagement	High (With Information Sharing and Consumer Feedback Features)	Mid (Collaboration with external partners)	Mid (Collaboration with supply chain partners)	Low (only Supplier Management)	 End-to-end Transparency
External Data Reliability	High (Tamper-free transactions on Blockchain)	Depends on Data Provided by the Partners	N/A	 Consumer Engagement	
Data Privacy and Ownership	Data fully owned by Users	Data owned by Users, having trust on the system vendors who are Centralised Parties		 Connected Community	

# Reviews from Target Users



## Consumers and Individuals

I need this application to manage my spending! Also, I love the user-only comments section!



(21, female)  
Undergraduate Student



(39, male)  
Office worker

I struggle less when choosing clothes with reference to reliable ratings.



(49, female)  
Housewife

The purchase record can help me to price out the goods I have bought before. Good money saver!

## Interview with Mr. Luke Ng, Esquel's Representative

### Current Common Production Practice



On-demand  
Production  
(Make-to-Order)



Smaller, more frequent  
batch replenishment

### Obstacles

Inaccurate Demand Forecasts

Difficult Materials Planning

Disclose Inventory Level to upstream partners

To Manufacturer/ Supplier



Real-time  
Production  
Planning

To Retailer



Save storage  
spaces and  
holding costs in  
the retail stores

# Revenue Model



## Usage Model

**0.5%**

**per transaction**

Recommended for start-ups, small-scale businesses

Maximum \$0.5/transaction



**Scales Cost**



**Pay only for what is used**



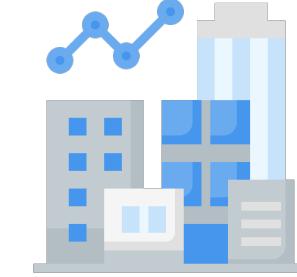
**Reduce Barrier to Try**

## Subscription Model

**\$25,000**

**per month**

Recommended for large-scale businesses, corporates



**Predictable Cost**

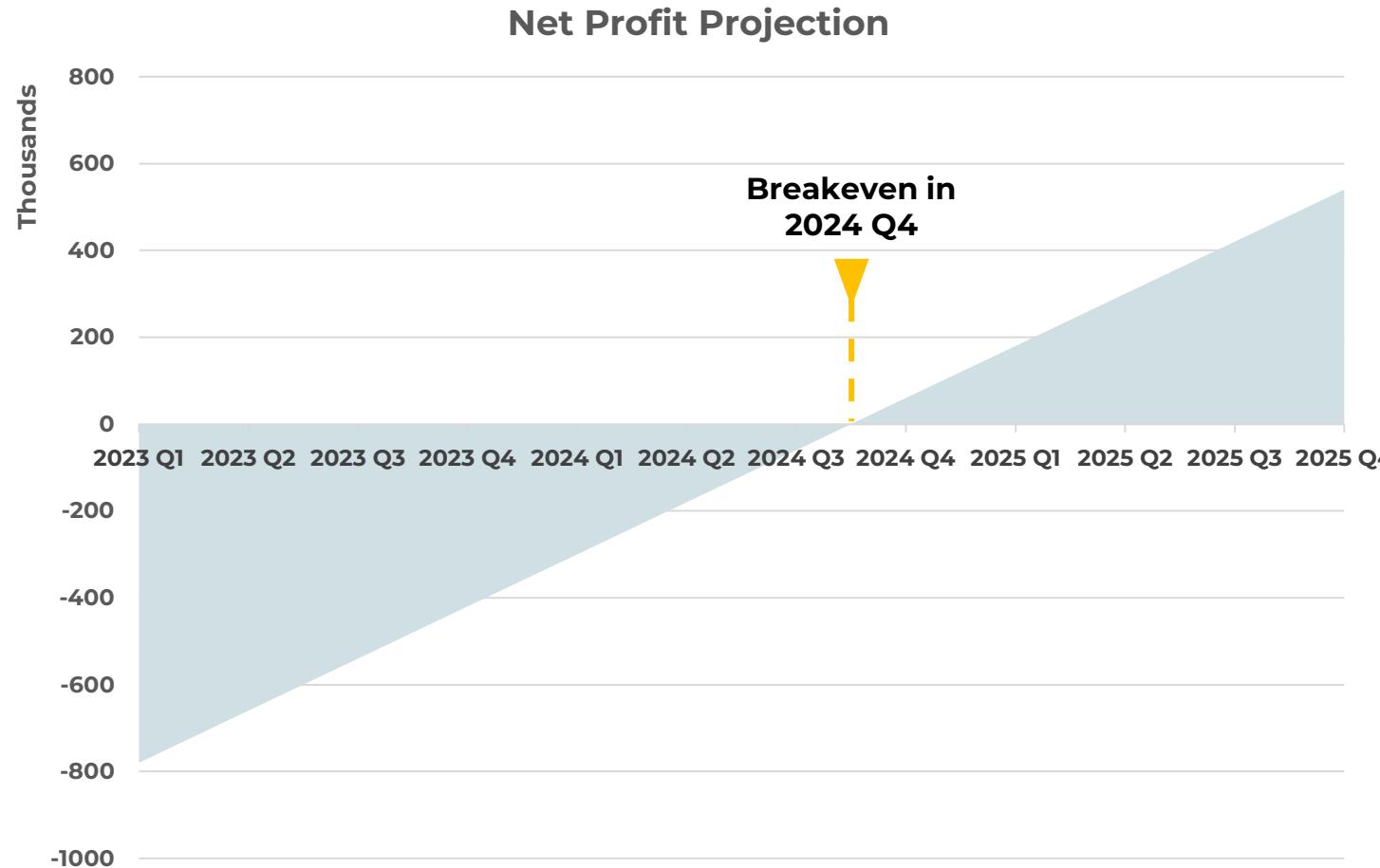


**Spreads cost over time**



**Buy a plan that fits**

# Financials



### *Key assumptions*

Predicted Revenue	300k per month
Predicted Operational Costs	180k per month
Predicted Set-up Cost	900k

#Bargain is expected to breakeven in 2 years

# Financials



## Predicted Revenue

	HK\$
Subscription Revenue	250,000
Per-Transactional Revenue	50,000
Total Monthly Revenue	300,000

## Predicted Cost (Operation Costs)

	HK\$
Maintenance Cost	120,000
Marketing	60,000
Total Monthly Cost	180,000

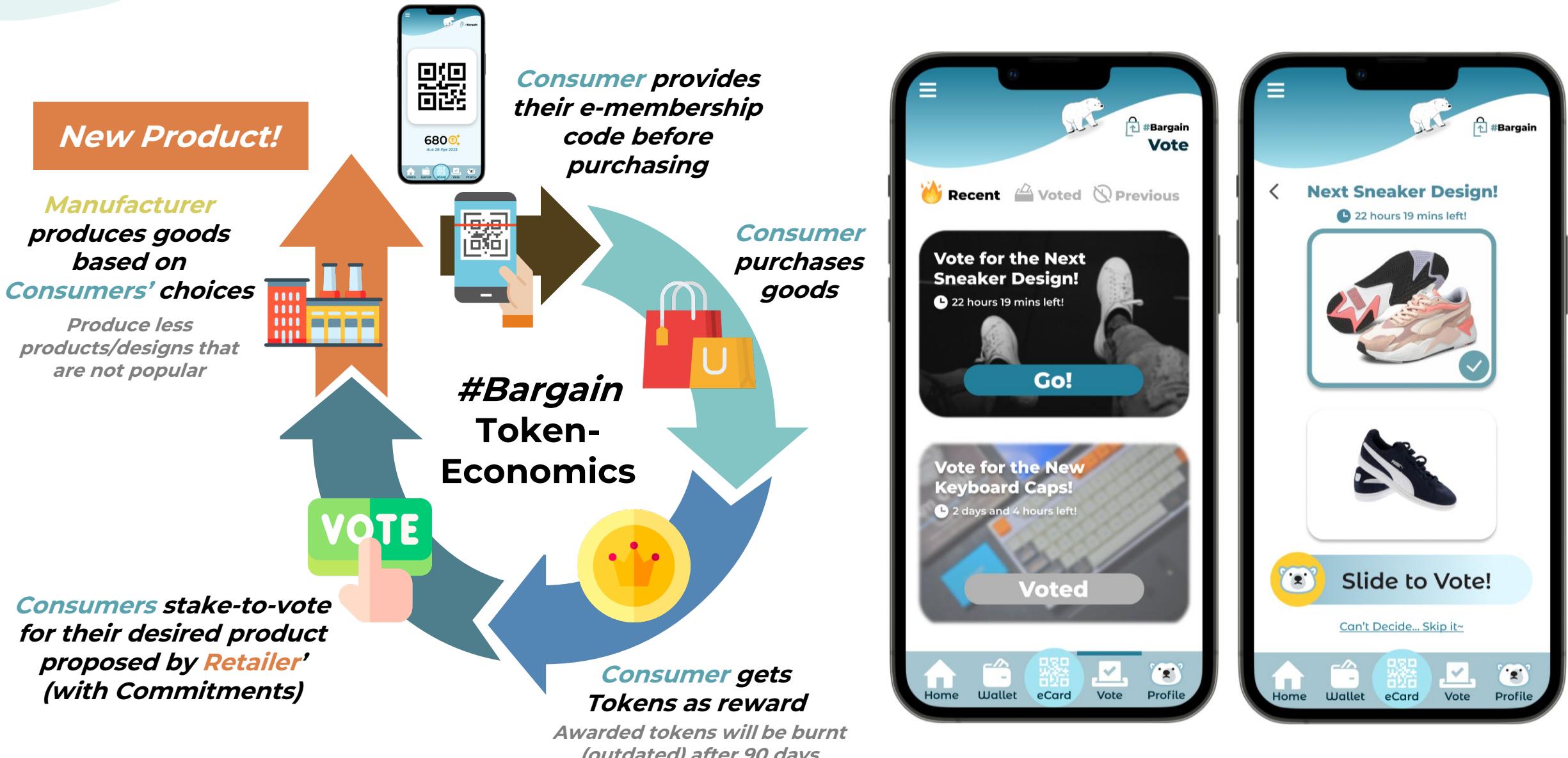
## Set-up cost projection

	HK\$
Strategic Analysis	50,000
Design Thinking	90,000
Web Development	280,000
App Development	420,000
Testings	60,000
Total	900,000

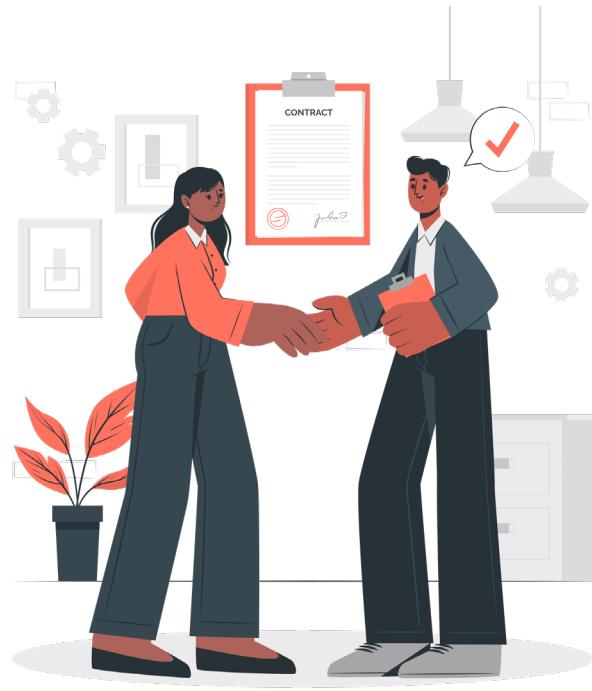
## Key Assumptions

10 Subscription Clients    100 Usage-based Clients    500+ Transactions per month

# Phase 2: Customer Loyalty System



# Phase 2: Online Shop Integration



## Online Shops Cooperation

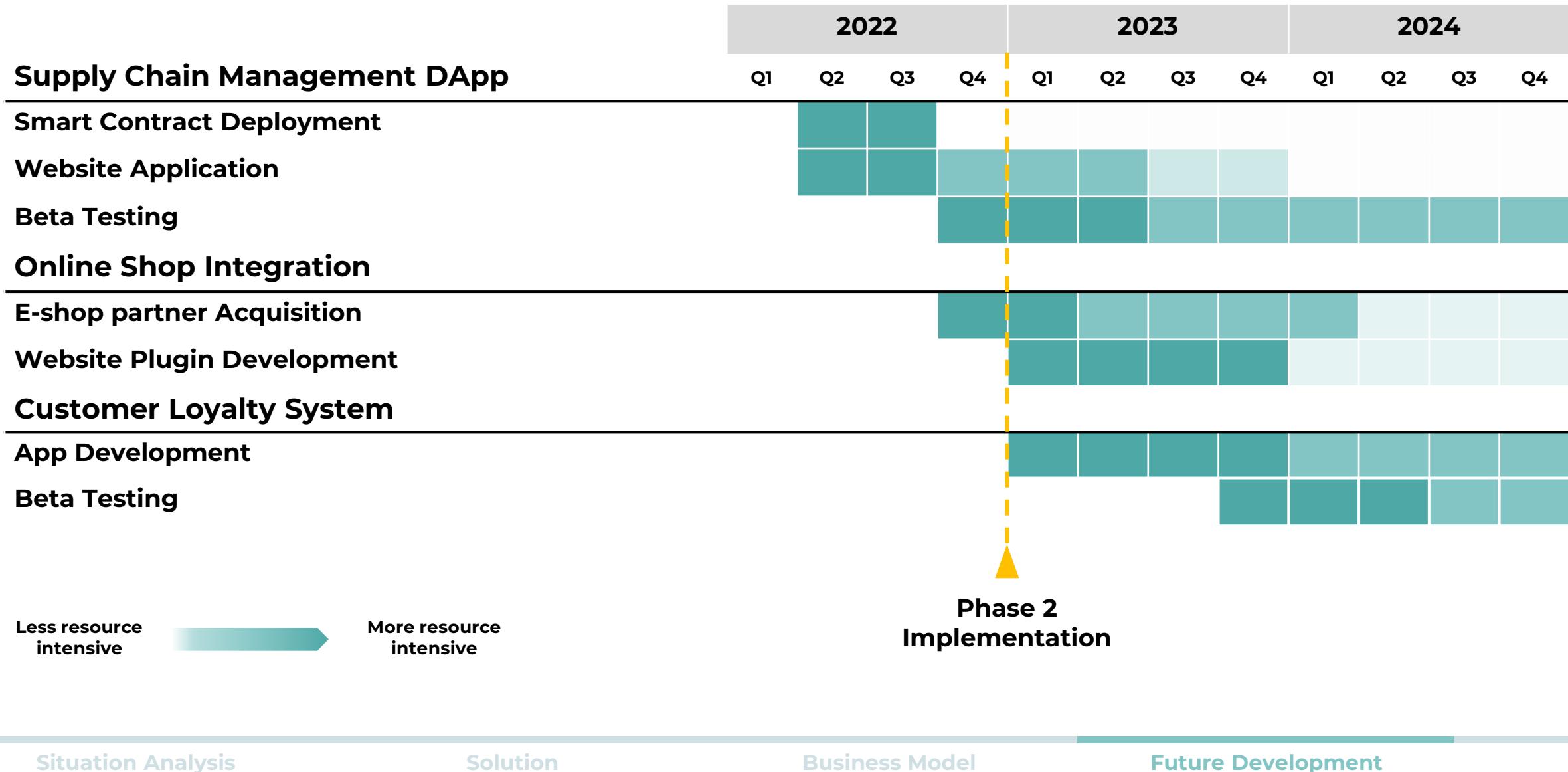


**Web Extensions/  
Plugins**



**Expand the smart shopping  
experience to online stores.**

# Timeline



# Team



**Chris Mok**

**HKUST**  
BEng in  
Civil Engineering

{Editor}



**Hayley Sham**

**HKUST**  
BBA in  
Information Systems and  
Operations Management

{Business Analyst}

{System Auditor}



**Gary Tin**

**HKUST**  
BEng in  
Computer Engineering

{Project Manager}

{Full Stack  
Developer}



**Kelvin Yau**

**CIHE**  
BS in  
Digital Entertainment  
Technology

{Web Developer}

{UI/UX Designer}



**Samson Chan**

**CUHK**  
BA in  
English

{Writer}

*Thank You*



B#  
**BE SHARP!**

# *Attribution*



**ILLUSTRATIONS  
FROM STORYSET**  
**ICONS FROM  
FLATICON**  
**POLAR BEAR  
ILLUSTRATION**  
**METAMASK ICON**