Taking Food-Delivery a Step Forward

Design Sprint

Product Manager: Marija Pavlova

Product Requirements Document

Background
Solution tool for food delivery challenges and getting the best out of the middle mile, in the middle of the journey

Problem
Automate the middle Mile and monitor and remotely operate the robot

Goals
Increase delivery efficiency and lessen the computational burden om the software

Users
Immediate users are the robots themselves, as this is just a tool. End users are restaurants

Routing and delivery

How might we prevent the robot from crossing at red light?

How might we confirm that the robot is at the right address?

How might we adjust the speed in real-time according to the given circumstances?

How might we make routes more efficient?

How might we teach robots to avoid obstacles?

How might we see real-time traffic on the route?

How might we avoid direct collision with pedestrians?

How might we establish preferred routes?

How might we program robots to address delays in deliveries?

How might we have robots signal distress when something goes wrong?

How might we prevent tipping over?

How might we make robots not scary for dogs?

How might we keep vermin away from the robots?

How might we make our robots tamperproof?

How might we prevent freezing of certain parts at minus degrees outside.

Routing

Issues on route

Environmental Factors

When things go wrong

How might we allow users to help us with tracking and feedback?

How might we alert consumers if their delivery is delayed?

How might we program robots to address order cancellations?

Delays, Missing Items, and Cancellations

How might we maintain the temperature of the food along the way?

How might we keep robots odor free, even when carrying smelly food?

How might we prevent the robot from shutting down due to low battery?

How might we anticipate mechanical failures?

Maintenance and mechanical issues

How might we alert operators of need for robot intervention conveniently?

How might we deal with accidents that might occur?

How might we ensure food gets delivered without incident?

How might we get food to people quickly when the robot fails?

How might we prevent the robot from sliding on ice in winter and ending up on the street?

How might we detect when a robot needs help?

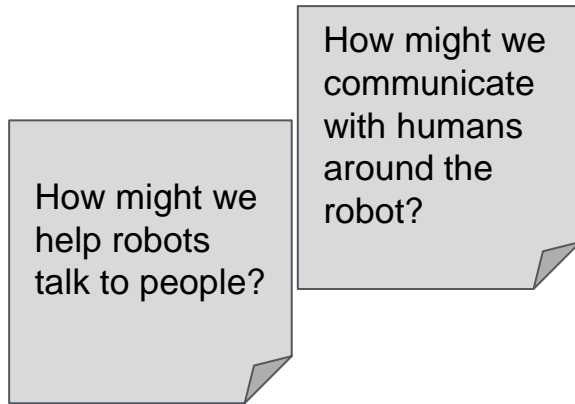**Incident Prevention and Recovery**

How might we control robots?

How might we track each robot?

How might we monitor robot progress?

Tracking and Remote Control

Human/Robot Interaction

How might we help robots talk to people?

How might we communicate with humans around the robot?

Communication
with people

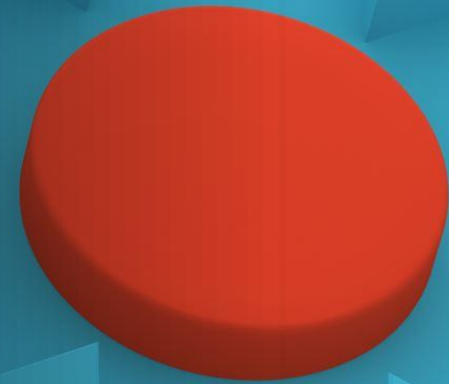|		
🔍	Focus	Routing and delivery
💬	Slide #	4
❓	Why this topic?	It is the most important part of the construction phase, for the robot to go live

Define

The Doordash Middle-Mile Delivery Robot has hit the Streets
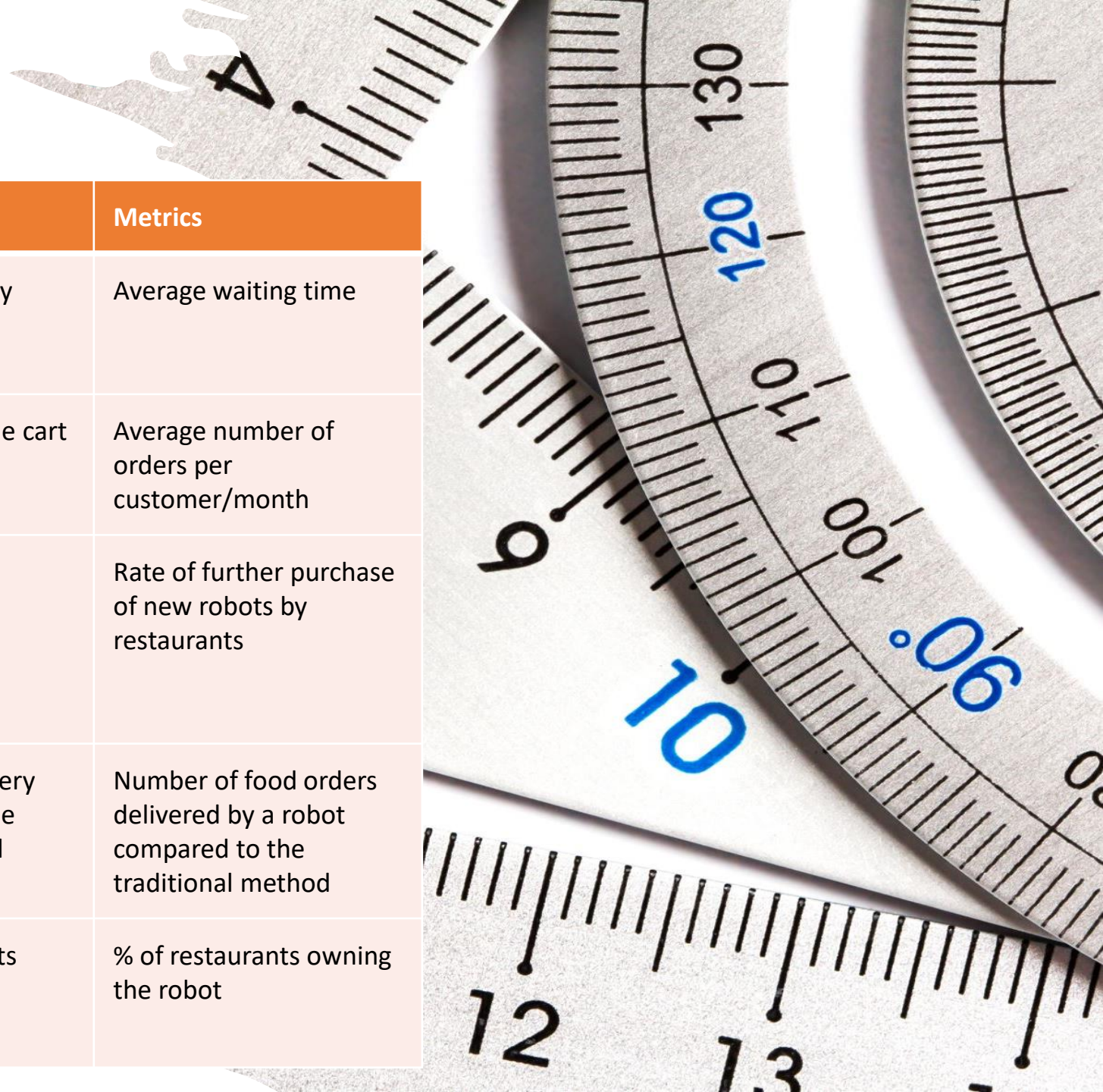## The New York Times

September 1, 2024

- **Four months ago launched Doordash, the food delivery giant, its first food delivery robot. It is currently rolling the streets of New York, with the intention to go nationwide.**

- **After years of research and trials of different methods, Doordash has opted out for a simple solution to automate and optimize the middle mile: hub-to-hub solution. Therefore, helping thousands of restaurants** in their everyday operations and saving them operational costs and time.

- The middle-mile robot never gets stuck in traffic-it uses the pavement-just like us-the mortals! It loves the nature and although does not have direct contact with the end customers, it sure does indirectly tackle their numerous delivery problems, thus relieving stress and anxiety while waiting for the order.

- NY Times already interviewed some customers, and their reactions were: late orders, cold food, missing items, order non-traceability now belong to the past! For those who love to chit-chat with the delivery person-you can still do that! Doordash is keeping their Dashers for the last mile. They care about their loyal employees as well!

Success Metrics

	Goals	Signals	Metrics
Happiness	Efficient delivery	Waiting for delivery	Average waiting time
Engagement	Order food	Dishes added to the cart	Average number of orders per customer/month
Adoption	From restaurant aspect: acquisition of new robots Customer aspect: acquisition of new customers	Referral to other restaurants	Rate of further purchase of new robots by restaurants
Retention	Customer sets delivery by a robot as a standard setting in the app	Choosing the delivery robot instead of the traditional method	Number of food orders delivered by a robot compared to the traditional method
Task Success	Faster delivery	Saved delivery costs	% of restaurants owning the robot

Sketch

Incoming orders

Order No. | Select when done ✓

CONTENTS — panels with checkboxes labeled 1, 2, 3

Continue

Assign order to robot — Select

RO 1 | RO2 | RO3
RO10 | | RO4
Order 1
RO9 | | RO5
RO8 | RO7 | RO6

Send robot to hub

NW Hub (North-West) | N Hub (North) | NE Hub (North-East)
W-Hub1 (West 1) | RO2 | E-Hub1 (East 1)
W-Hub2 (West 2) | | E-Hub2 (East 2)
SW-Hub (South-West) | S-Hub (South) | SE-Hub (South-East)

TRACK — GO

RO1 | RO2
RO3 | RO4
RO5 | RO6
RO7 | RO8
RO9 | RO10

Delivery to hub

Time remaining

7 Minutes

Incident notification

Robot RO2 needs your attention!
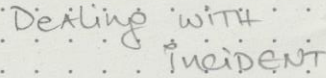
ASSIST NOW

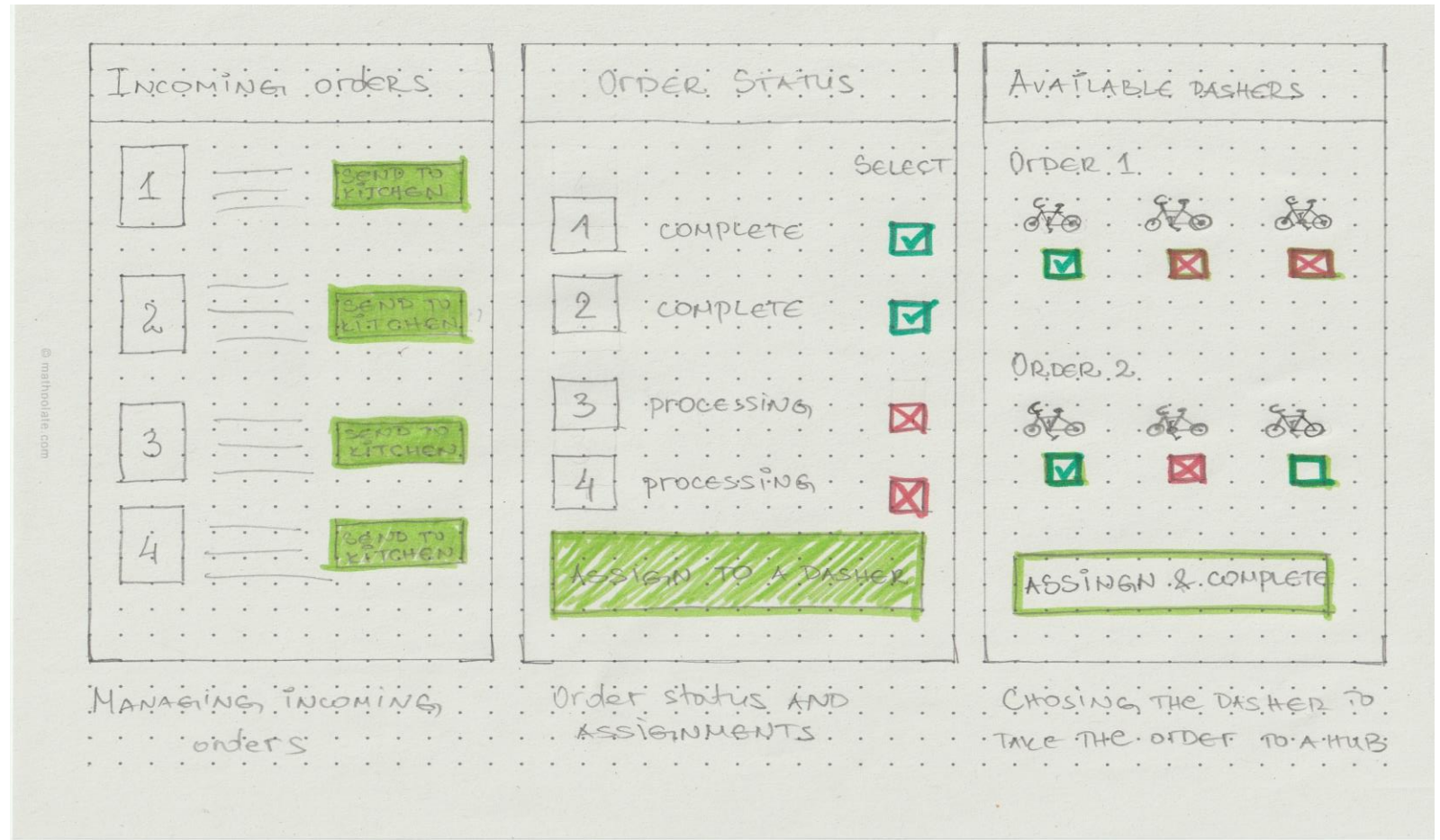**Middle-mile tracking**

NE-Hub — RO2 — Hub 2

Last-mile tracking

Hub 2

Solution Sketch 1

Solution Sketch 2

Decide

Decision

Decision

- Solution sketch 2

Rationale

- It summarises the gist of the problem

Storyboard
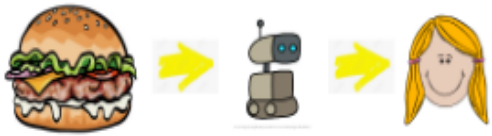
SCRIPT   1

A hungry customer placed an order via DoorDash, which goes directly to the partner restaurant. The task of the restaurant is to have this order delivered using the Doordash semi-atomated robots.

SCRIPT   2

Order was completed, it landed in the system and accordingly the restaurant has been notified in the app. The employee can see the list of orders and their contents.

SCRIPT   3

The employee selects the orders and sends them to the kitchen to be prepared.

SCRIPT   4

The employee receives a notification as soon as the order is completed

Storyboard

SCRIPT   5

The employee selects the ready order/orders to assign it/them to a dasher.

SCRIPT   6

The employee then selects the available dasher and assigns the order to them.

SCRIPT   7

The dasher then picks up the order and sets off to the hub. They can be at any time tracked via the app.

SCRIPT   5   8

Odred successfully handed over at the hub for further transport to a hub.

Prototype

Description

This prototype presents a realistic version of what the semi-automated tool for the delivery robot should look line and how it functions.

Assumptions

- We want to jump from one screen to another with minimum effort and loading time
- We want the app to be easy to interact with

Tasks

- Register a restaurant
- Manage incoming orders
- Send orders to the kitchen
- Assign orders to dasher
- View order status

Validate

[Food Delivery Robot-Tool] Research Plan

PM: [Marija Pavlova]
STATUS: DRAFT

Objectives

How often do people order food at that specific restaurant, what is the average number of items that people order per order, what dishes do they order the most, has the restaurant used automated delivery so far, how did it go? What is the average distance of deliveries, which dishes are not intended to be delivered by a robot, if any, do you know a restaurant that uses automated delivery and how is their experience, would you find it beneficial if you use robots for your deliveries, in terms of costs, time, customer satisfaction etc. What problems do you expect to encounter?

Methodology

2 hour sessions

Participants

5 restaurants (monthly average of orders per restaurant is 224 (https://askwonder.com/research/average-online-orders-does-independent-restaurant-receive-per-day-week-month-us-4bmqbgf1p#:~:text=The%20average%20weekly%20will%20be,would%20get%20a%20lower%20average.

	1	2	3	4	5
Orders per month	< 100	$> 100 < 224$	224 average	$> 224 < 300$	> 300
Type of restaurant	Fastfood	Normal restaurant	Vegetarian/Vegan	Bakeries	Super foods restaurant/bio

[Food Delivery Robot-Tool] Interview Sessions

Introduction

Hi, my name is Marija and I am a product manager at Doordash. We are building a tool for our semi-automated delivery robot and would like to hear your feedback. We have a few questions regarding how this tool could be useful in your everyday restaurant and delivery operations, your everyday delivery practices, types of customers. Since this conversation includes sensitive business questions for you, such as profits, demografics etc. we are obliged to sign this NDA with you. It serves both to protect you and your business, as well as us as a company which is placing a brand new product on the market. Do you agree and do you have questions before we get started? Is it ok if we record this session? It will be used only for the purposes of research and development and stays confidential.

Background Questions

How long is the restaurant in business and the background story of the restaurant. What kind of food does the restaurant offer, what are the demographics of the customers, how often does the same customer order food, what are the churn rates, how much money does the restaurant spend on deliveries per month (personel and other costs), what is the average distance of the orders, what is the average cost of one order.

Task 1

Can you show me how you go into the system to see the incoming orders?

Can you tell me what you think should happen once you are in?

Task 2

Can you show me how do you select an order and send it to the kitchen to be prepared?

What do you think should happen after the order has been completed?

Task 3

How do you assign it to a dasher to take it to the hub?

Do you think you should be able to track the order? Can you show me how do you do that?

Wrap Up

Do you think this kind of robot and tool would be beneficial to your restaurant? Do you have any further remarks or proposals? Thank you!
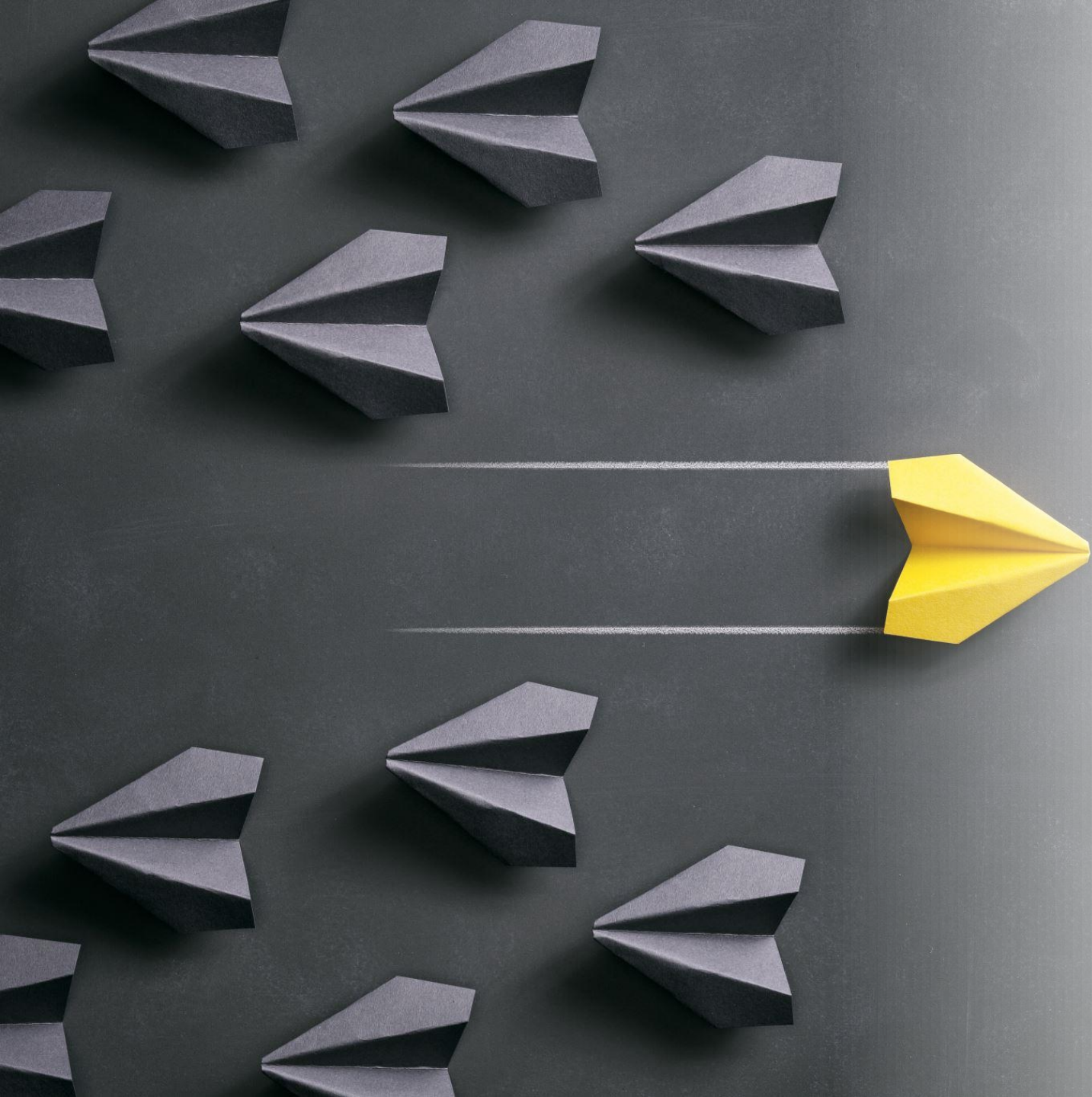
User Testing:
Participant 1 Key Findings

What worked well?

- *Registration of the restaurant*
- *Log in*
- *Selecting orders and sending them to the kitchen*

Where participants got stuck?

- *Assigning order to a dasher*

HANDOFF

Updated PRD

Fast Food Deliery	DoorDash Food Delivery Robot PRD

Marija Pavlova   Status: Draft

Background

The food delivery service has been growing enormously in the last couple of years, reaching its peak during the Covid pandemics. The pandemics has forced us to search for new and sustainable solutions to the old and new challenges in this area. The mainstream food delivery, as we know it, is not functional to its fullest potential and is becoming more expensive as years go by. Work force costs more and gas prices are continuously increasing.

Online ordering has seen its rise also in the food industry, with more and more restaurants offering deliveries. DoorDash, as a food delivery platform, has been trying to improve this process. The idea is to help the dashers in their everyday work and improve the customer experience throughout the DoorDash community by introducing s tool for the pickup and delivery robots to enable the robot to complete the whole journey from pickup to delivery on its own, with minimum human rerouting intervention. It shall cut costs, save time, is environmentally friendly and more hygienic than the mainstream food delivery.

Goals

- Create a functional tool for restaurants for operating the semi-automated food delivery robot;
- Create an app enabling the restaurant staff to manage orders;
- Reducing the time and cost of food preparation and delivery for the restaurants;

Success metrics

- Partner awareness should be 100% before launch.
- Ratings from business partners/restaurant
- Retention after trial period at least 80%

Key features and scope

Priority	Feature	Description
P0	Restaurant registration	The restaurants should first register themselves into the system, after acquiring the food delivery robot from DoorDash.
P0	Log in	After registration, the restaurant should log in with their business credentials.
P1	No logging in once a device has been registered	This feature should enable the business users to register a device in the system so that they are not prompted to log in every time.
P1	Multiple log ins on different devices	The business user should be able to use the same licence/credentials on different devices at the same time.
P0	Managing incoming orders	When an order lands in the system it should be immediately visible to the restaurant in the app
P0	Sending order to kitchen	The user selects an order and sends it to the kitchen to be prepared.

Priority	Feature	Description
P1	Sending multiple orders to kitchen at once	The user may select multiple order at the same time to be sent for preparation in the kitchen.
P0	Notification when the order is ready	Once the order is ready to be shipped, a notification is received in the app
P0	Assigning order to a dasher	Once a notification has been received, the user assigns it to the available dasher
P1	Tracking from restaurant to hub	The business user should track the order on its way to the hub and from hub to the customer
P1	Tracking of the order for the customer	The customer/end user should track the order on its way to the them

Core UX Flow

Mocks