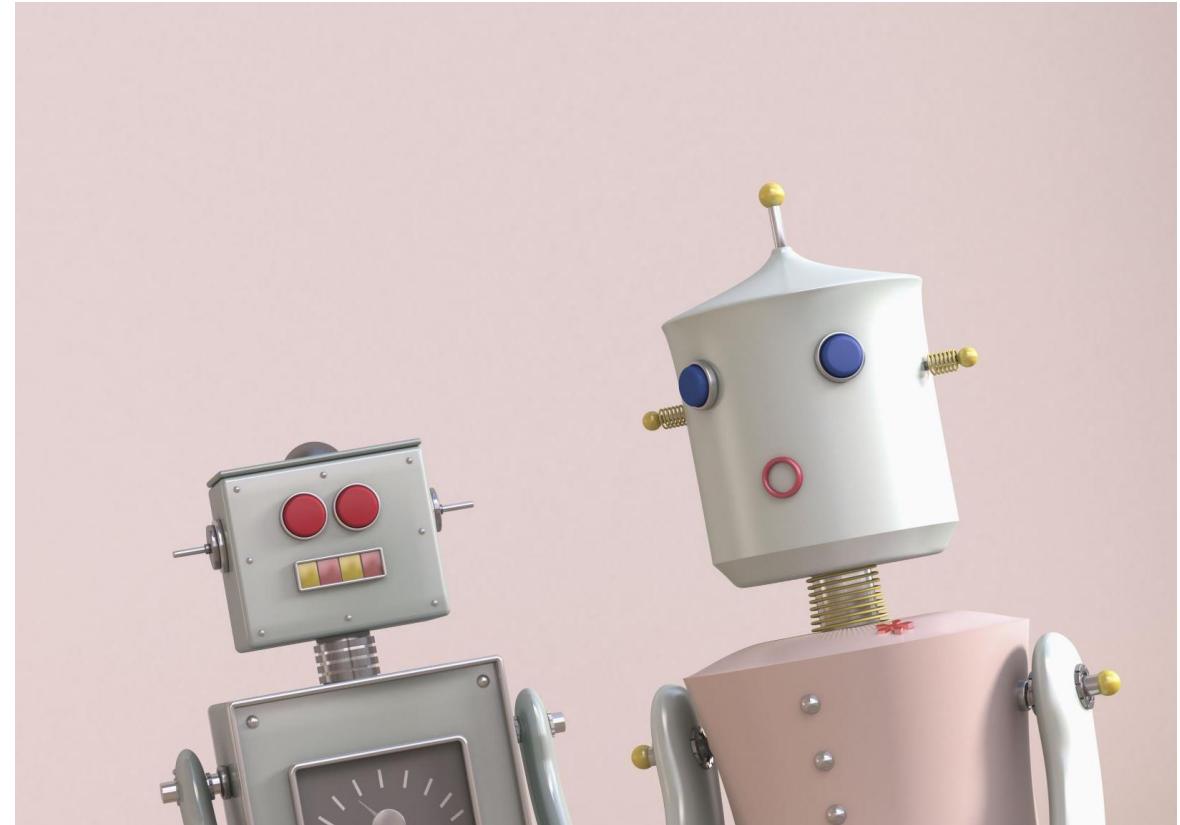




Taking Food-Delivery a Step Further

The Autonomous Food-Delivery Robot for the Middle Mile

Product Owner: Marija Pavlova



Introduction

State-of-the-art solution for food-delivery challenges. Getting the best out of the middle mile, in the middle of the journey.

Meet me halfway!

Company Goal

The idea is to help the dashers in their everyday work and improve the customer experience throughout the DoorDash community.

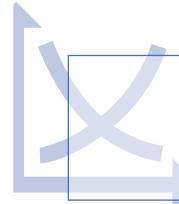


What is it all about?

Semi-automated tool for the food delivery robot is a top priority for the company, since it cuts costs in delivery enormously, is time-saving, environmentally friendly and more hygienic than the mainstream food delivery.

Current State of Platform Food Delivery Market

Business Aspect



Unstable market prices



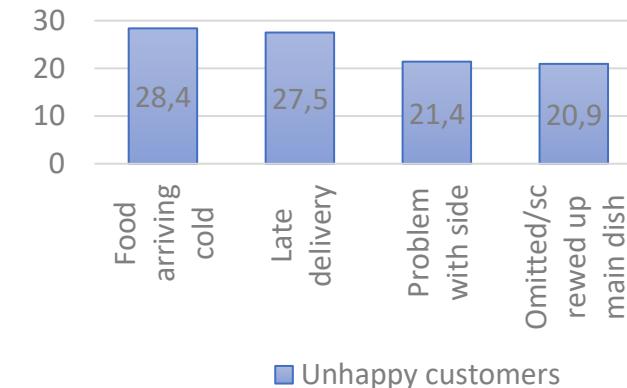
Food quality standards and
improper food handling



Logistics

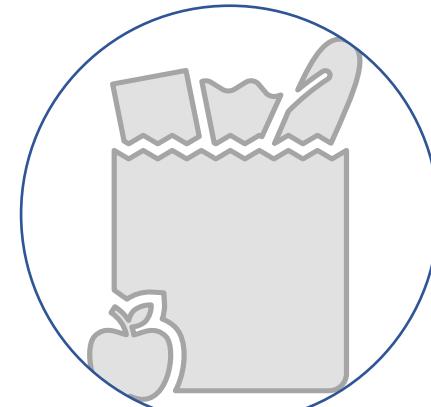
<https://www.posist.com/restaurant-times/restro-gyaan/food-delivery-challenges.html>

Customers View Point

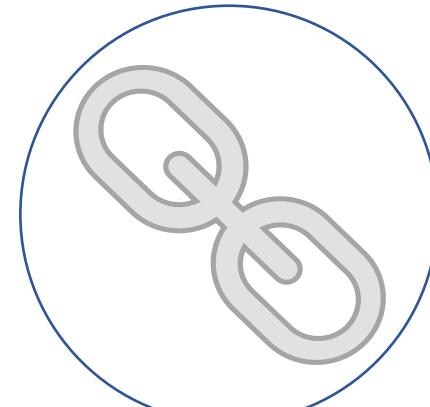


<https://www.restaurantbusinessonline.com/topics/nearly-25-third-party-deliveries-disappoint-study-finds>

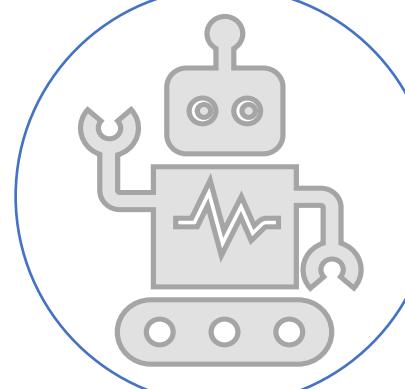
Challenges



**Unprofitable
delivery
process**



**Stagnant
logistics chain**



**Gap in existing
automation
applications in
serving our
customers**

What we want to achieve

A tool to:



Automate the middle mile



Monitor and remotely operate the robot



Enhance the delivery through automation



Improve human networks, not replace people

The Middle Mile?



An illustration of DoorDash's proposed hub-to-hub delivery model. / Courtesy of DoorDash



Market Potential

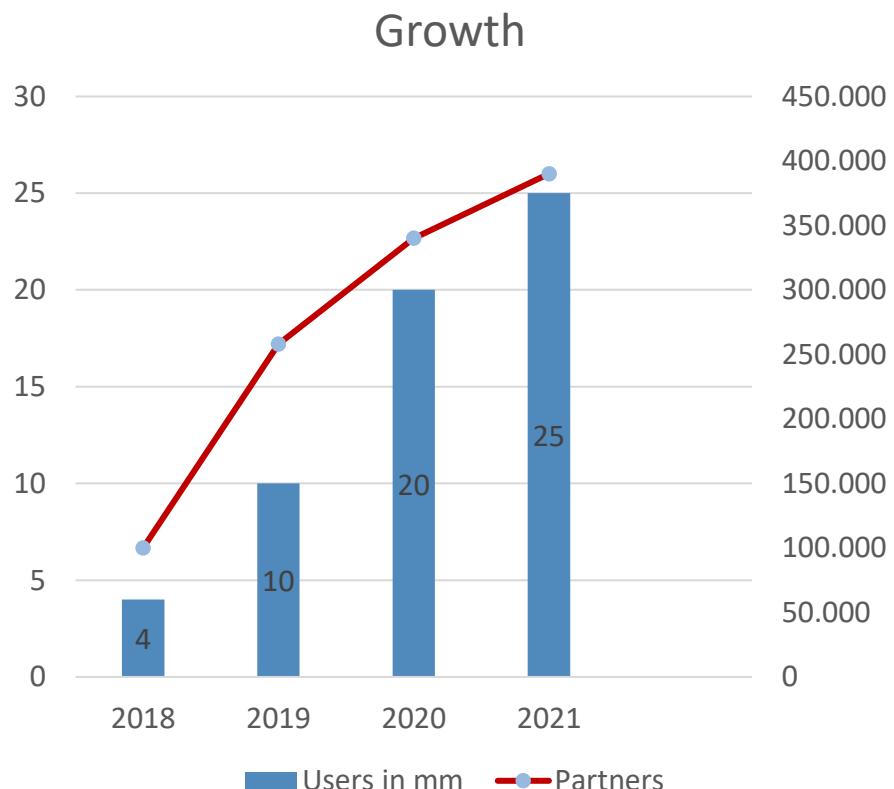
DoorDash Statistics

over one million dashers

delivery radius between five and 30 miles/order

900 million orders since 2013

<https://entrecourier.com/delivery/delivery-contractor-taxes/mileage-and-car-expense/does-doordash-track-miles-mileage-tracker-tax-deduction/>



According to **Statista**, until March 2022 DoorDash had a **59% share** on the platform food delivery market in the US, or a total of **390.000** partner restaurants.

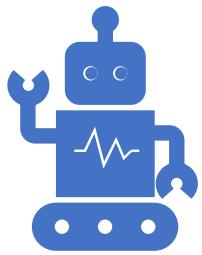
One restaurant needs at least **5 delivery vehicles**, and these 5 vehicles are potential market for the integration of the tool. This makes up **1.950.000 potential users** of the tool.

TAM:

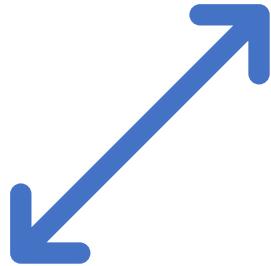
\$80 x 390.000 users = 31.200.000

<https://www.businessofapps.com/data/doordash-statistics/>

Proposal



A tool for the pickup and delivery robots to enable the robot complete the whole journey from pickup to delivery on its own, with minimum human rerouting intervention. The in-built algorithm should calculate the shortest route possible along the way.



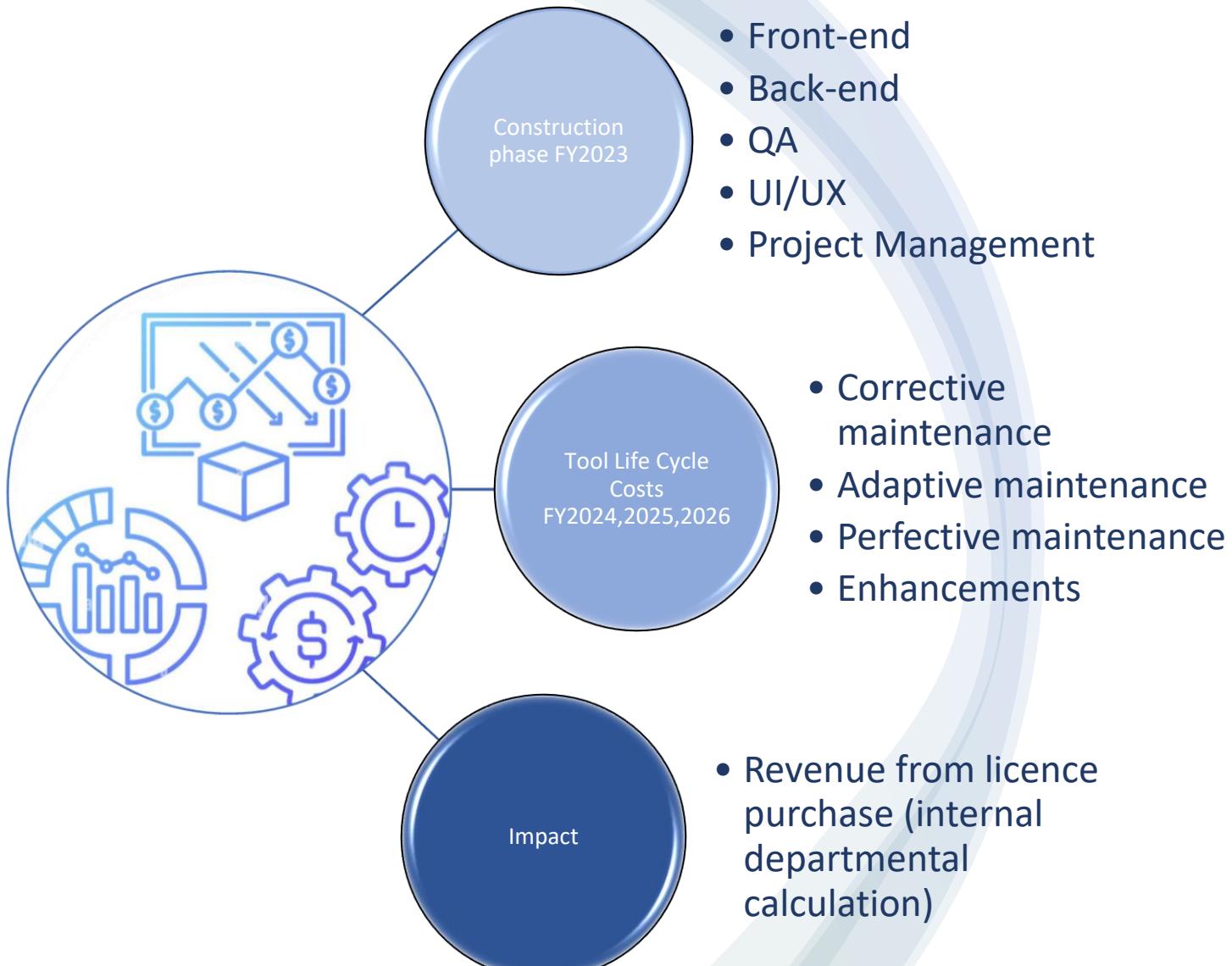
Our goal: increase delivery efficiency and lessen the computational burden on the software.



Return on Investment



Cost Breakdown – 5 Year-Period



FY1 Building		Made in the USA	
Made in the USA		Made in the USA	
Option 1-Optimistic		Option 1-Pessimistic	
Total cost	\$ 123.600,00	Total cost	\$ 195.350,00
Outsourced in Eastern Europe		Outsourced in Eastern Europe	
Option 1-Optimistic		Option 1-Pessimistic	
Total cost	\$ 55.560,00	Total cost	\$ 84.890,00

FY2 Maintenance	FY3 Maintenance	FY4 Maintenance	FY5 Maintenance
Optimistic: 78140	Optimistic: 78140	Optimistic: 78140	Optimistic: 78140
Pessimistic: 175815	Pessimistic: 175815	Pessimistic: 175815	Pessimistic: 175815
Mean: 127000	Mean: 127000	Mean: 127000	Mean: 127000

Mean values	
Grand Total in USA	\$ 794.476,00
Grand Total in Eastern Europe	\$ 705.225,00

Return on Investment



The ROI analysis (50% participation of the potential users in the first year)

Outsourced in Eastern Europe		Made in the USA	
per software licence	\$1	per software licence	\$1
Planned licences	195.000	Planned licences	195.000
Mean value of building costs	\$70200	Mean value of building costs	\$159475
ROI = 177,7		ROI = 18,1	

Payback Period	
4 months	10 months

Current costs per human labour unit

Human delivery		
Working hours per day	16	
Gas price/mile + maint.	\$0,6 x 100 miles	\$60
Labor costs/Hour	\$15 x 16 hours	\$240
Total a year/5.849 hours	\$300 x 365 days	\$109.500

Projected costs per robot unit

Robot delivery		
Working hours per day	16	
Electr. price/mile + maint.	\$0,13 x 100 miles	\$13
Labor costs/Hour	\$0	\$0
Total a year/5.849 hours	\$13 x 365 days	\$4.745

Average 100 miles/16 working hours a day per driver

Average miles/order = 3. The introduction of the robot will cut costs as following:



1 Mile = 33%
(\$36.135)



2 Miles = 66%
(\$3.132)

\$39.260

Cost savings = \$70.240/year per dasher

Gas/electricity and labour costs are estimates

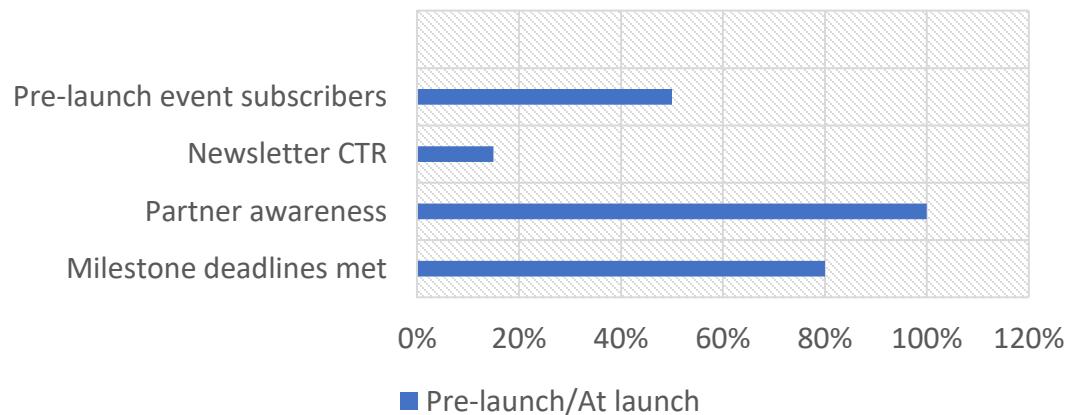
Have we
succeeded?



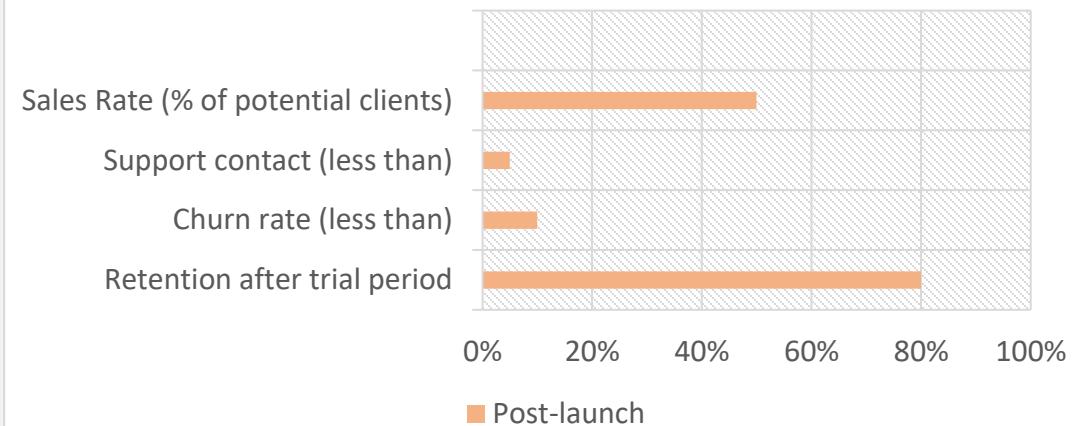


Important KPIs

Pre-launch/At launch Goals



Post-launch Year 1 Goals



Other KPIs of
Importance

Business KPI

Percentage of restaurants buying additional licences

Product KPIs

Average time to deliver an order compared to the conventional method

Number of orders compared to the traditional method

Average goals completed per month

Quality KPIs

Ratings from business partners/restaurant

Feedback from maintenance team

Actual online/app ratings from end-customers/the people

Competition Overview

Uber Eats

GrubHub

Partnered with Serve Robotics

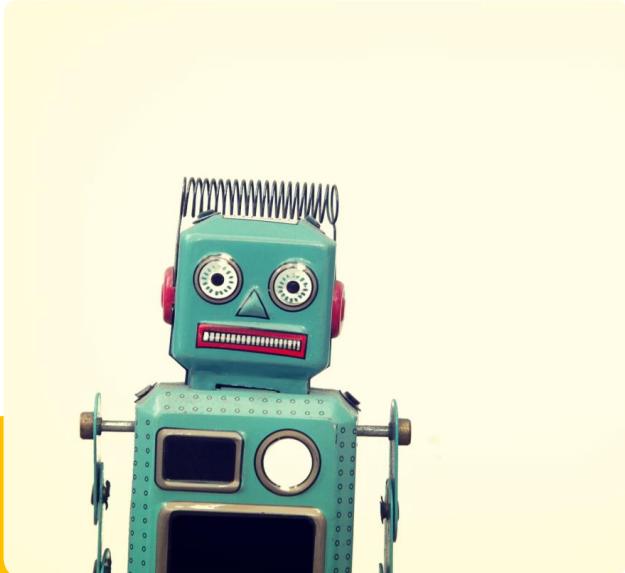
- Last-mile delivery: final journey of the order to the customer
- Autonomous delivery
- Level 4 autonomy, sidewalk robot
- Availability: West Hollywood
- Customer may choose to opt out or opt in
- Order tracking via Uber App
- Notification on the phone to meet the Sidewalk robot outside
- Unlock the vehicle via passcode
- Collect meal by lifting up the cover

Serve Robotics Tagline:

“Why move a 2-pound burrito in a 2-ton car?”

<https://www.makeuseof.com/how-uber-eats-new-autonomous-deliveries-will-work/>





Partnered with Starship Technologies

- Last-mile delivery: final journey of the order to the customer
- Autonomous delivery
- Level 4 autonomy, sidewalk robot
- Availability: College Campuses
- Calculates the best route via machine learning technology
- Order tracking via the App
- Notification on the phone to meet the robot outside
- Unlock the vehicle via passcode
- Collect meal by lifting up the cover

<https://www.agvnetwork.com/starship-technologies-faqs#:~:text=Users%20place%20their%20order%20via,they%20want%20the%20delivery%20sent.&text=Once%20the%20robot%20arrives%2C%20users,unlock%20it%20through%20the%20app.>

Why are we different?

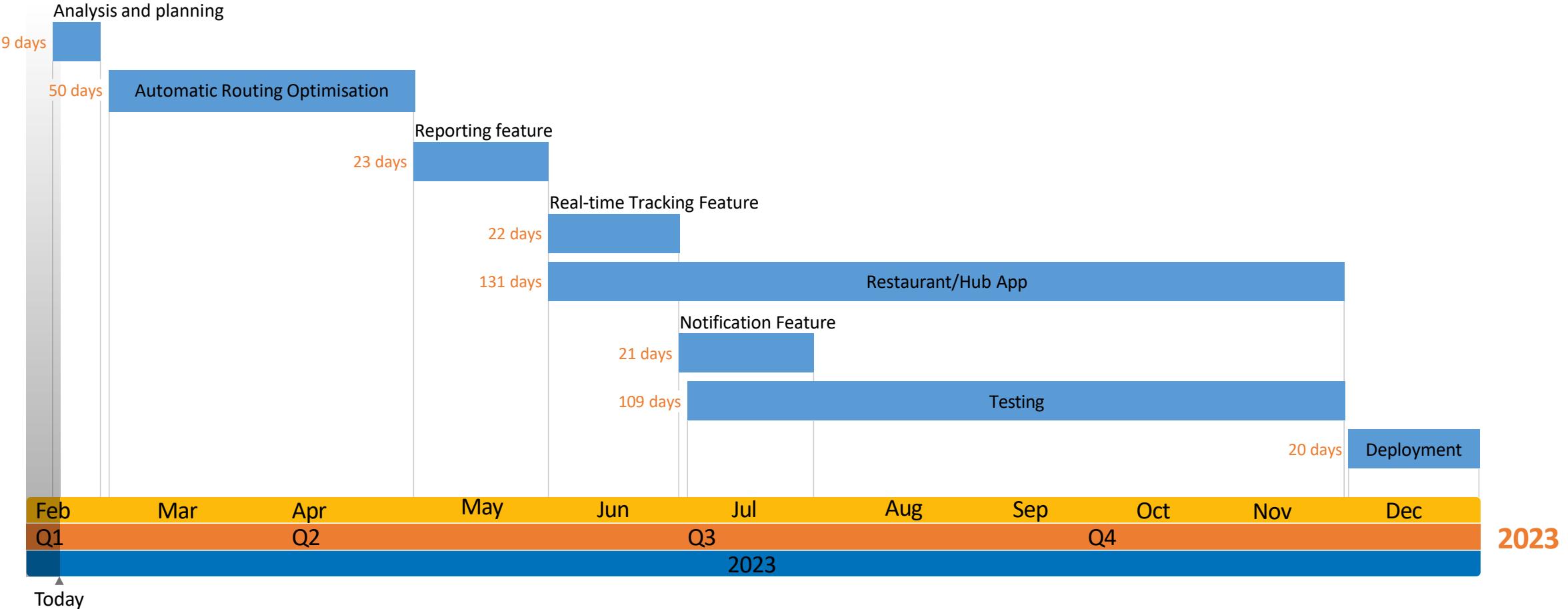
- Middle-mile delivery: from partner restaurant to a hub
- **huge potential for cost saving in the middle mile** (proven by Amazon)
- middle-mile operations tend to become **repetitive and predictable - easier to automate processes and cut expenses**
- Not all people have smart phones, and the older generation may not be very comfortable with having to operate the whole picking up process themselves. This will keep our present customers.
- The last mile will be delivered by a real human, therefore the human interaction with the customers will stay personal and will not be lost.

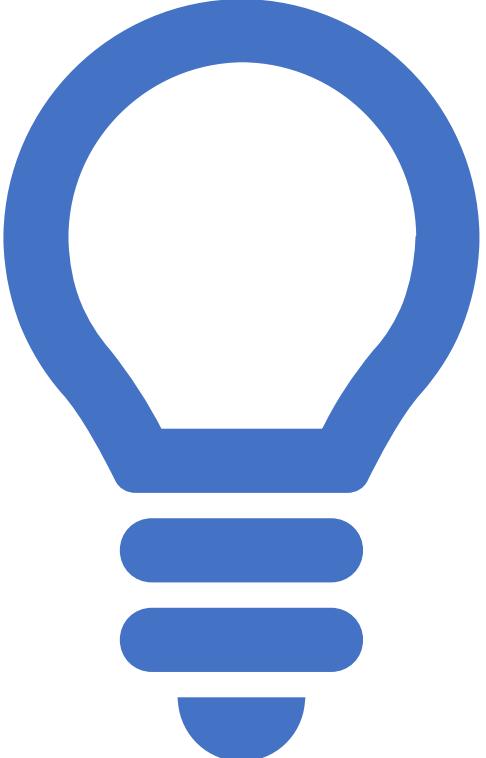




Roadmap and vision

Roadmap





Theme 1

Route Optimization

AI and
machine
learning

Developing the AI for the tool to increase the efficiency of route planning and save valuable time

Visualising
delivery
routes

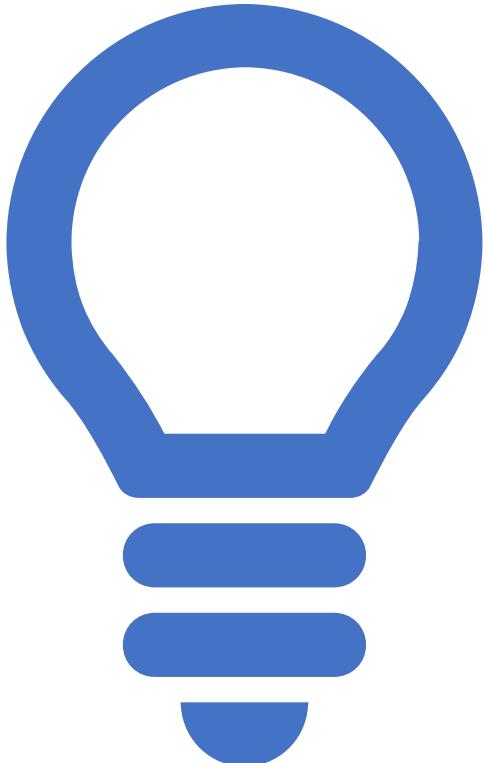
Transforming delivery routes into real-time maps – the hubs expecting the order can always check the status

Smart GPS

Incorporation a smart GPS to simplify the delivery management process

Theme 2

Restaurant/Hub App



-
- | | |
|-----------------------------|--|
| Hub operations | Incorporating the operations of all hubs into the app |
| Shipment alerts | Push-up notifications in the app as soon as the order is on its way, delivered or if problem encountered |
| One platform for everything | One platform to get complete visibility of the movement of the order |
-



Vision for the future

Introducing a hub-to-hub delivery

Stopping at several points and picking up food on the way to the hub



Thank you for
your attention!

