Doordash Robonav

Design Sprint

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Set the stage

Set the stage for the Design Sprint by framing the problem

Initial PRD

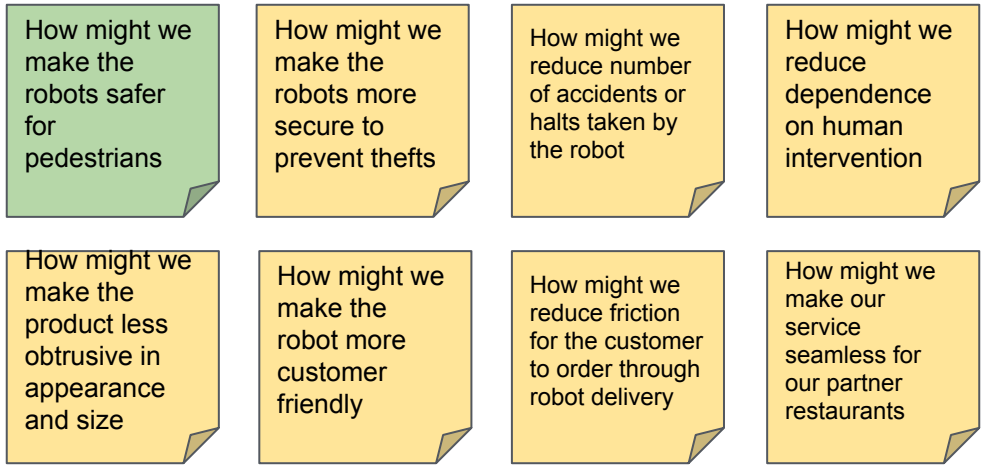
Link your PRD

Understand

Create a shared understanding of the space, problem, and goals

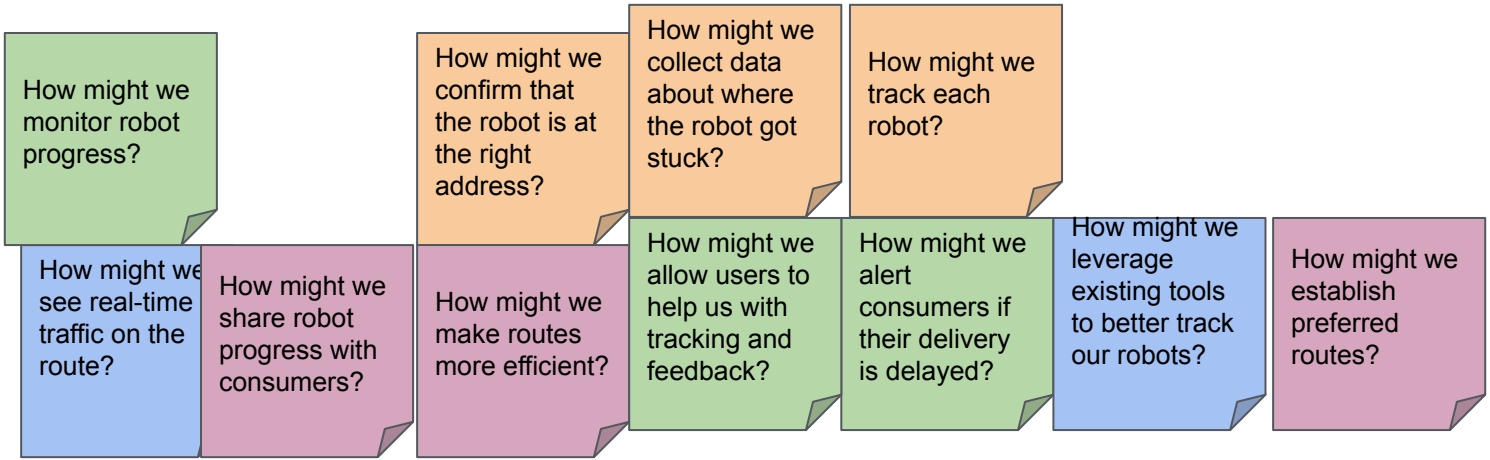
How Might We

Use these digital stickies to capture your ideas. Feel free to rearrange. Colorize. Etc



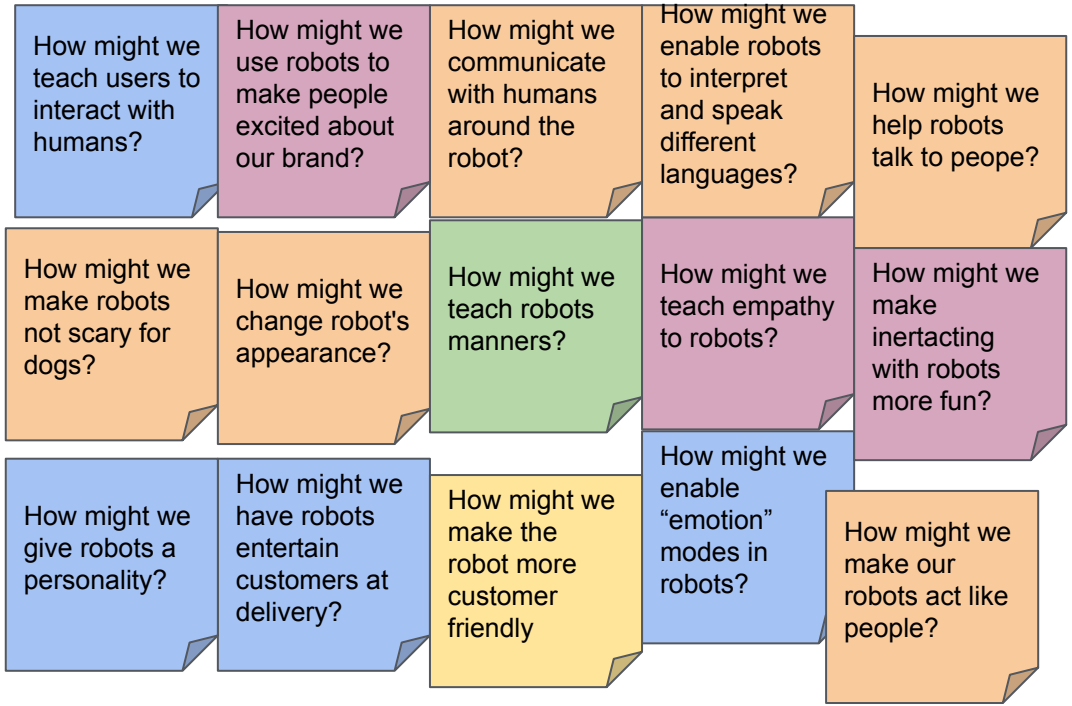
Sorted Stickies

Cluster One: Robot Tracking



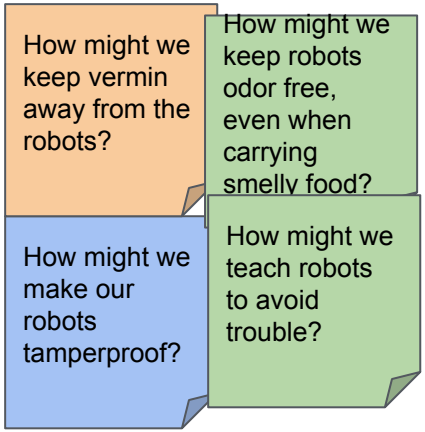
Sorted Stickies

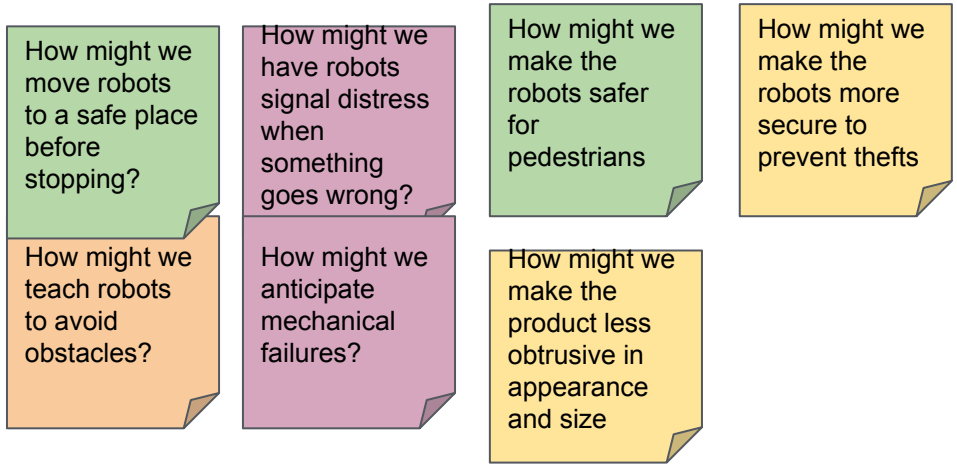
Cluster two: Customer Friendliness



Sorted Stickies

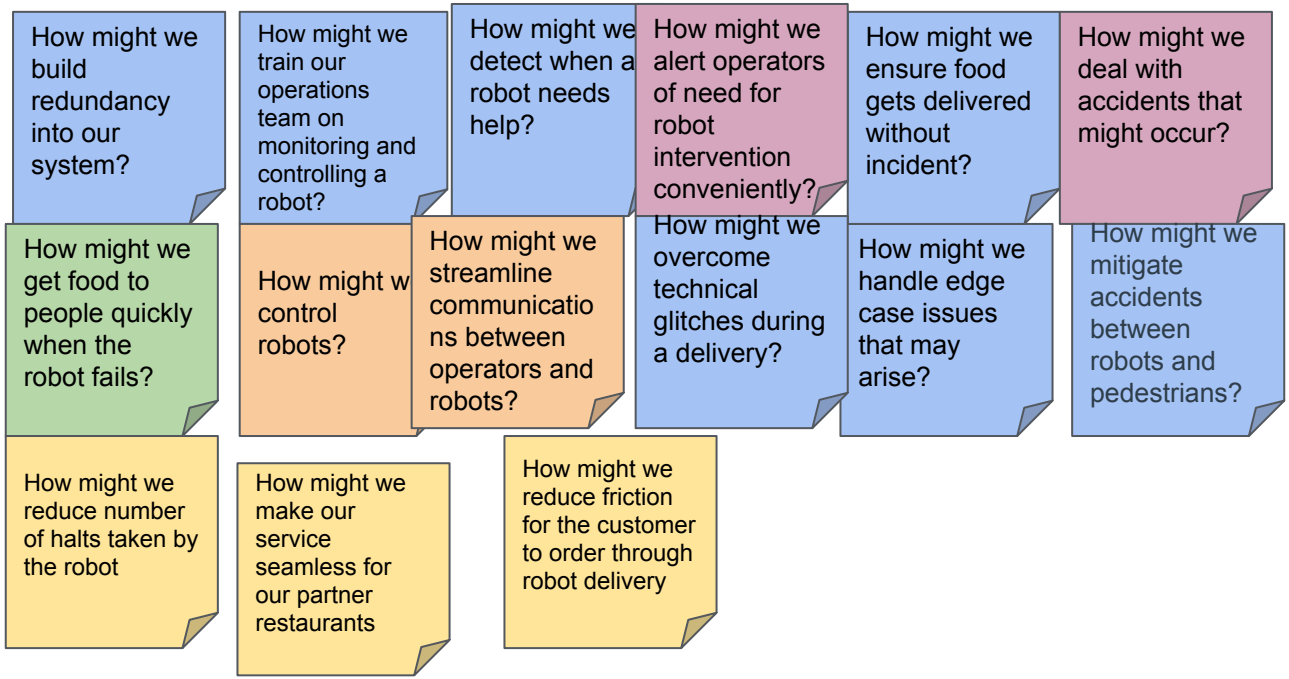
Cluster three: Safety and security





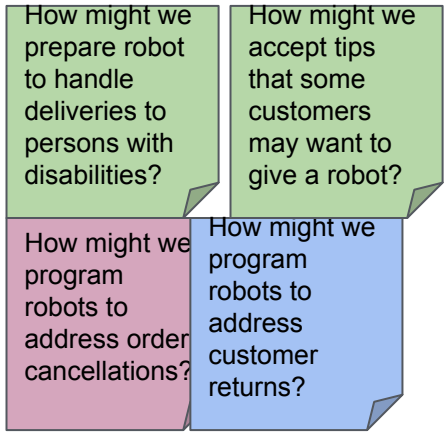
Sorted Stickies

Cluster four: System redundancy



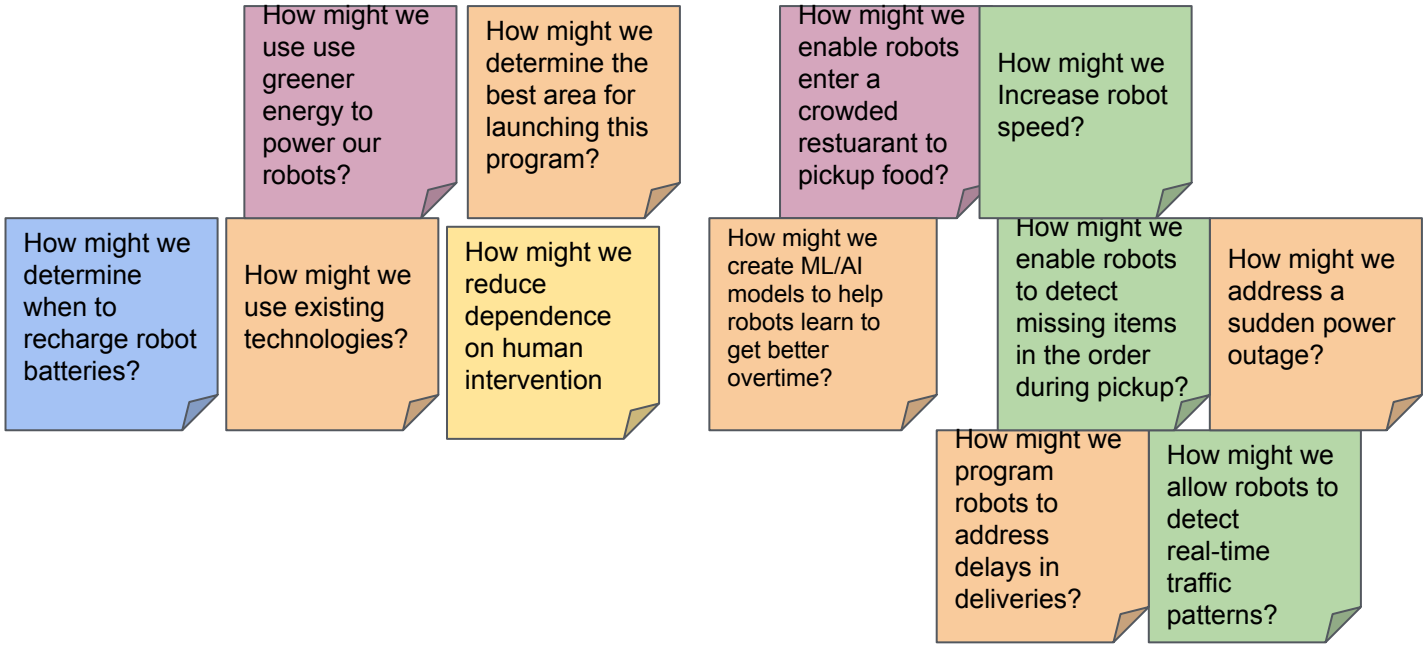
Sorted Stickies

Cluster five: Customer service and interactions



Sorted Stickies

Cluster six: Others



Sprint Focus

Focus	System redundancy
Slide #	9
I selected this theme because	• Redundancy is critical to make the delivery system functional • A complete autonomous system takes time to develop and perfect, in order to ensure our customers have a seamless experience right from the launch date we need to introduce redundancy in form of human operators which will serve as backup for tasks that the robot is unable to perform on its own • Safety and security and customer concerns can also be addressed to some extent by human operators

Define

With an understanding of the problem space, create focus and align on specific outcomes for the Design Sprint

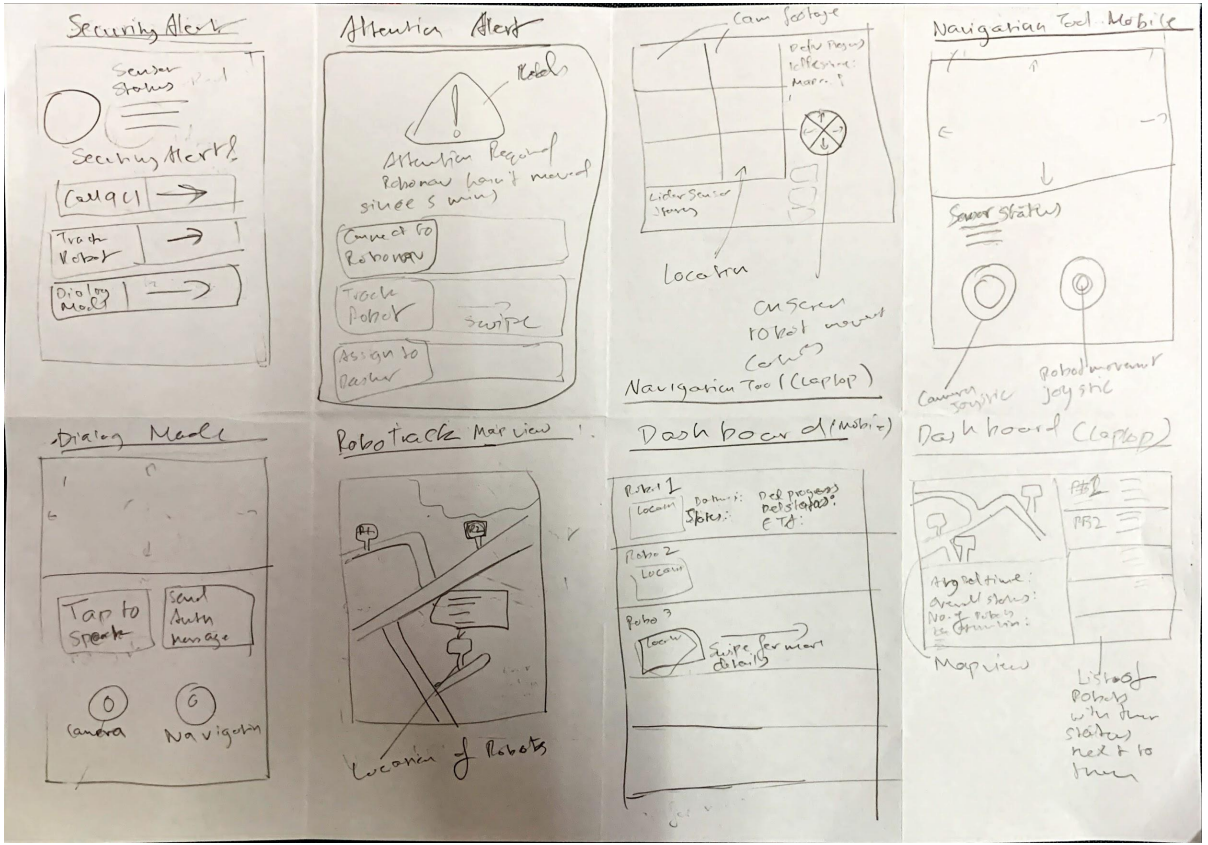
Doordash’s Robonav brings the future to your doorstep

California citizens can now order food and have it magically appear on their doorstep with no human in sight. As self-driving car companies hit major regulatory and technological hurdles, self-driving robots is already a reality today. Doordash launched its Robot delivery service Robonav across 4 cities in the state of California today. With growing demand for faster delivery, hyperlocal delivery startups found themselves in a jam, thanks to ever increasing costs of last mile delivery. In such crisis Doordash turned to technology for an answer. The company came up with a new autonomous delivery system that used robots that carried deliveries from nearby restaurants to the customers doorstep. These robots equipped with 360 degree cameras and Lidar sensors make use of machine learning and Neural Networks to build a map of the neighbourhood to be able to navigate by themselves. They can travel upto a speed of 4 miles/hour and carry a weight upto 40 lbs. Their diminutive size makes sure they don’t obstruct the pedestrians. Since these robots travel on the sidewalk instead of the streets they do not have to deal with traffic on the streets that a Dasher might. Doordash expects the system to bringdown delivery times by 30% on average giving you that meal hot, fresh and just in time. Doordash tested the system extensively at select locations across San Francisco and Los Angeles and received a very positive feedback from the customers. Customers in San Jose, San Francisco, Los Angeles and Oakland can order today by simply place their order through an app. The Robot travels to the restaurant to pick your meal and makes its way to your doorstep, hot, fresh and fast, almost like eating at a restaurant.

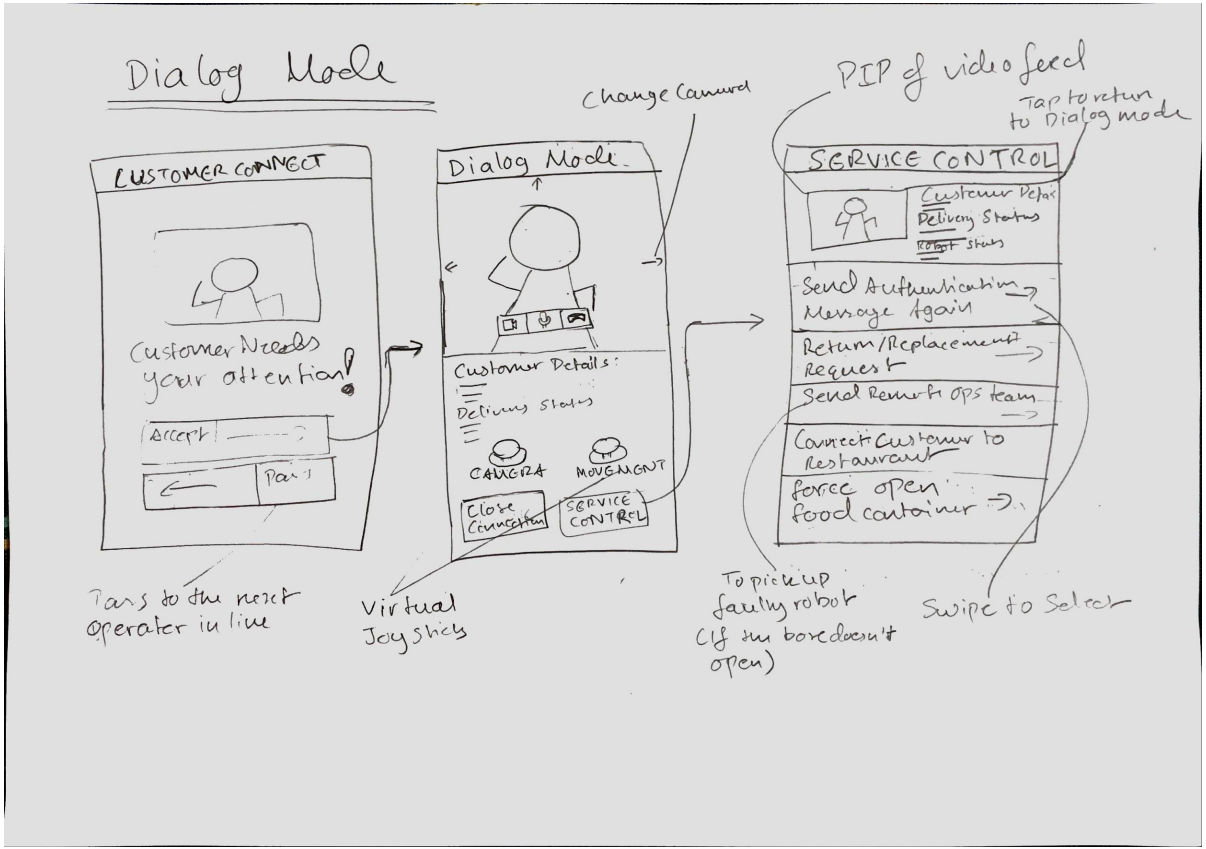
Sketch

Generate tons of ideas, then narrow them down to two in depth solution sketches

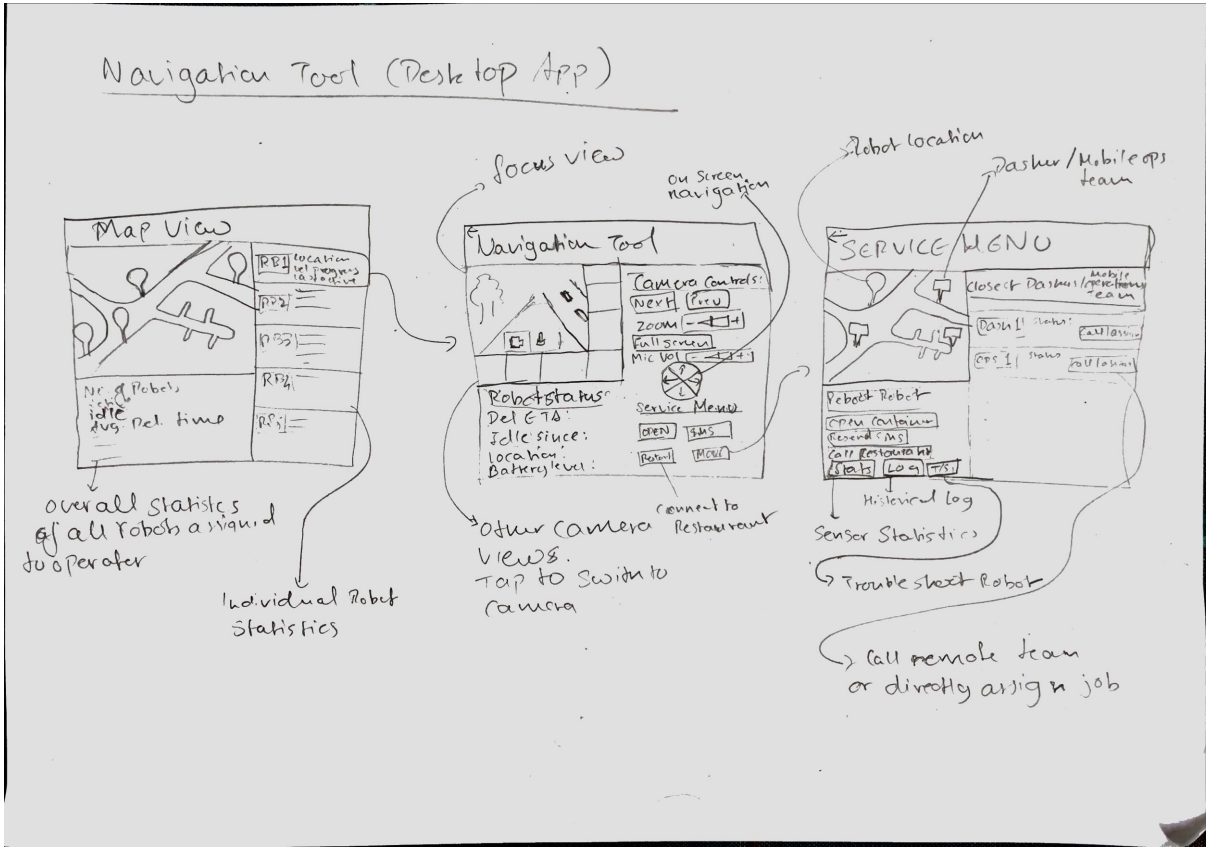
8 Sketches


Security Alert
Sensor Status
Security Alert!
Call 911
Track Robot
Dialog Mode
Attention Alert
Attention Required
Robot hasn't moved since 5 min
Connect to Robot
Track Robot
Swipe
Assign to Patient
Cam footage
Robot Name
Difference:
Marr.
Lidar Sensor Status
Location
Navigation Tool (Laptop)
Navigation Tool Mobile
Sensor Status
Camera Joystic
Robot movement joystic
Dialog Mode
Tap to Speak
Send Auto message
Camera
Navigation
Robot Track Map view
Location of Robots
Dashboard (Mobile)
Robot 1
Location
Battery:
Status:
Def progress
Robot 2
Location
Robot 3
Location
Swipe for more details
Dashboard (Laptop)
Map view
Listing Robots with their status next to them

Solution Sketch 1: Dialog Mode (Mobile)



Solution Sketch 2: Navigation Tool (Desktop)



Decide

Pick the final concept that you develop into a prototype

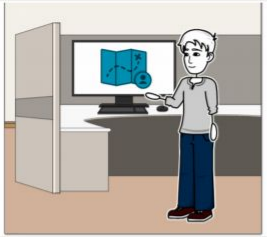
Decision

Decision	Navigation Tool (PC)
Rationale	• Most important and powerful component of the chosen theme • Provides all essential levers to monitor and control the robots in an emergency • Provides granular control over robot behaviour • Reduces accidents • Reduces costly delays and time to delivery • Allows to connect with the customer or other pedestrians in case of any grievances • Manual control also trains the Neural networks to learn to deal with situations better taking us one step closer to full autonomy

Prototype

Turn your concept into a realistic, interactive prototype that you will use to validate your assumptions and ideas

Storyboard



1

SCRIPT

Jack is part of the support team for the operations team. His job is to monitor the movement of all robots to their destination on the map.

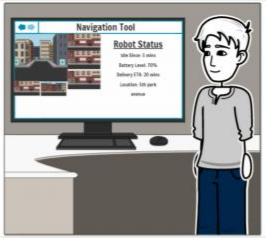
ACTION

2

SCRIPT

He receives a ticket from the customer support team that the customer hasn't received the order they placed 15 mins before.

ACTION

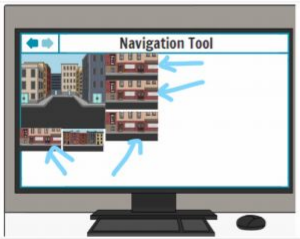


3

SCRIPT

Jack opens up the navigation tool to used to control the robot remotely through the web app. He Sees that the robot hasn't moved since 5 mins from its locationHe sees that the robot hasn't moved since 5 mins from its location

ACTION

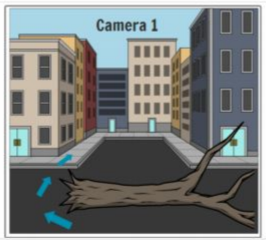


4

SCRIPT

He checks all the cameras to see if there are any obstructions blocking the robot from moving

ACTION



5

SCRIPT

It appears that there is a small tree branch in front of the robot that the robot can't navigate around. He quickly takes control of the robot and maneuvers it around the obstruction and sets the robot on its way

ACTION

6

SCRIPT

The robot soon arrives at the customer's location well within the 30 mins promised and successfully delivers the order

ACTION

theplot.io has removed ability to share storyboards for free, so no link can be added

Prototype

Description • High level overview of the prototype • What does it do?	The prototype is a desktop app that allows an operator to remotely monitor, locate and control any robots assigned to them
Assumptions • Any assumptions within the prototype	• The user must be well versed with the workings of the robot • The user controls the robot through two physical joysticks • Dashers can be assigned jobs to pick up and deliver orders of robots that may have failed
Tasks • What are the tasks that a user can complete in the prototype?	• Select a robot and perform remote servicing operations • Place a call to the remote operations team • View the status of all robots at a glance • Place an emergency call in case of attempted theft

Link your prototype

Validate

Users will go through your prototype and provide feedback on your concept. This is also an opportunity to have an engineering feasibility discussion

Plan and recruit for research

Link your
research plan

User Testing

Link your notes

Link your audio recording

Key Findings from Participant 1

What worked well	• *Functional design* • *Intuitive and easy to use* • *Know where most things are after browsing through the software the first time*
Where participants got stuck	• *User did not know the purpose of the 'Assign' feature* • *The users thinks the software should automatically choose which remote operator is free based on their distance from the robot*
Other observations	• *User did not notice some UI elements such as a red robot card indicating a problem with the robot* • *User did not know the purpose of some options* • *Not everything can be designed intuitively in a compact feature rich software, some level of training may be required* • *Don't have order information. Can't tell where the order is coming and going.* • *Call the customer option also Needed.*

User Testing

Link your notes

Link your audio recording

Key Findings from Participant 2

What worked well	• *Software is Easy to understand* • *The Flow is neatly organized* • *Some person who doesn't know much can easily navigate* • *Features are in the right place so*
Where participants got stuck	• *The purpose of some of the features isn't clear at first* • *But as the user got more familiar it became easier to understand*
Other observations	• *There needs to be a local area map on the navigation so that the operator knows which way to navigate* • *The design works well if the operator has a fixed number of robots to handle* • *Most elements are placed at the optimum location any more changes would make it more complicated*

Improvements

Improvement #1	*Add the emergency button on the navigation tool page*
Rationale	*If the operator notices something odd, they have to navigate away from the camera into to fill service menu to place an emergency call. It would be preferable to be able to place the call and look at the camera at the same time*
Improvement #2	*Add a local map to the navigation tool*
Rationale	*Operator needs to see which way the robot is going when he takes control which is not possible without a map. A live local area map with navigation needs to be added to the navigation tool.*

Handoff

Updated PRD

Link your PRD