



# Detect, Pause and Save From Accidents

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## Project Brief:

A drone camera and communication system,

to provide a different perspective that helps drivers **spot the irregularities** in ongoing operations **before accidents happen.**



# It won't fall if there was another forklift to help.

**The driver could have saved it if**

- Detect abnormality in the middle
- Called another driver (not a person walking by!!) for help
- Communicated well with the other driver

# Brand mission of



Live service for safety



Durability



Job opportunity

## Design Considerations



**Rugged**

Sturdy stainless steel cage for drone to protect it from falling objects



**Automatic**

Drone can actively hover around selected object, and auto return later



**Error tolerant**

Drone hub system allowing up to 100mm landing error



**Charged**

Drone is automatically connected to charger in the hub

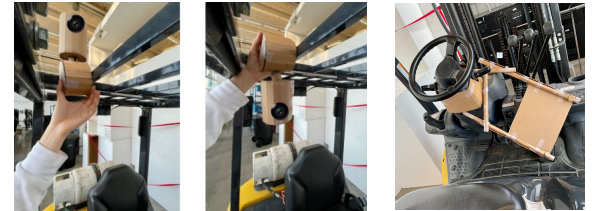
# Findings & Process

- After an **accident happened**, **usually no one saw** it and don't know who and what caused it.
- Most forklift **operators don't have a coach**; they don't have plans for some abnormal situations.
- Drivers can **only see from below**, not the whole picture like in forklift games.

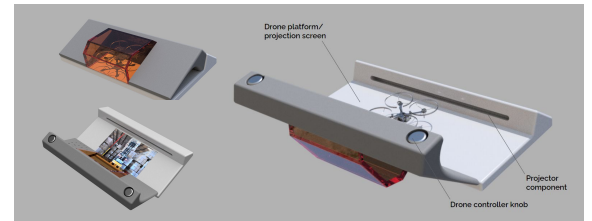
## • Ideation



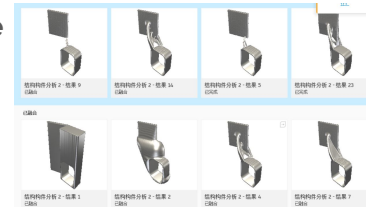
## • Sketch models



## • CAD iterations



## • Generative design

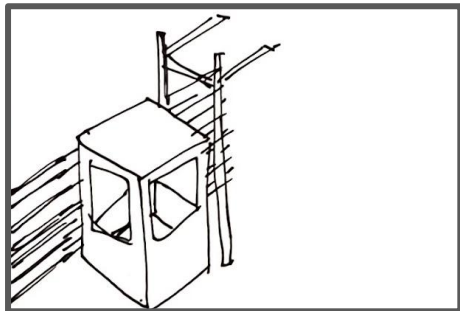


**F** AUTODESK  
FUSION 360™

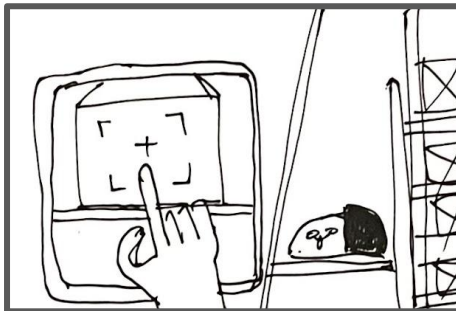
# Inspiration

Toyota and Lexus cars

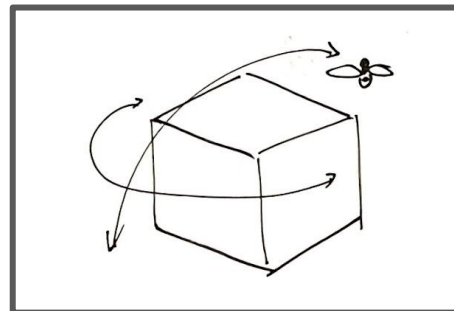




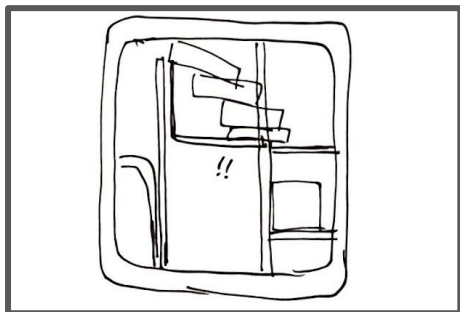
**1. Forklift is moving**



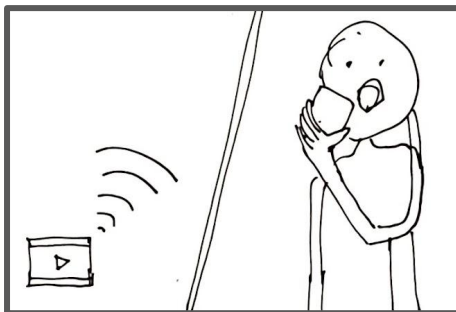
**2. Summon the drone by selecting the load on screen**



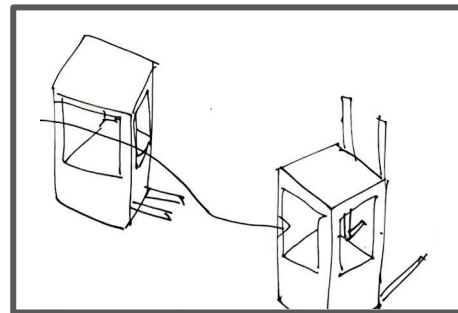
**3. Drone takes off and hover around to take video/photo**



**4. See the task from a different perspective**



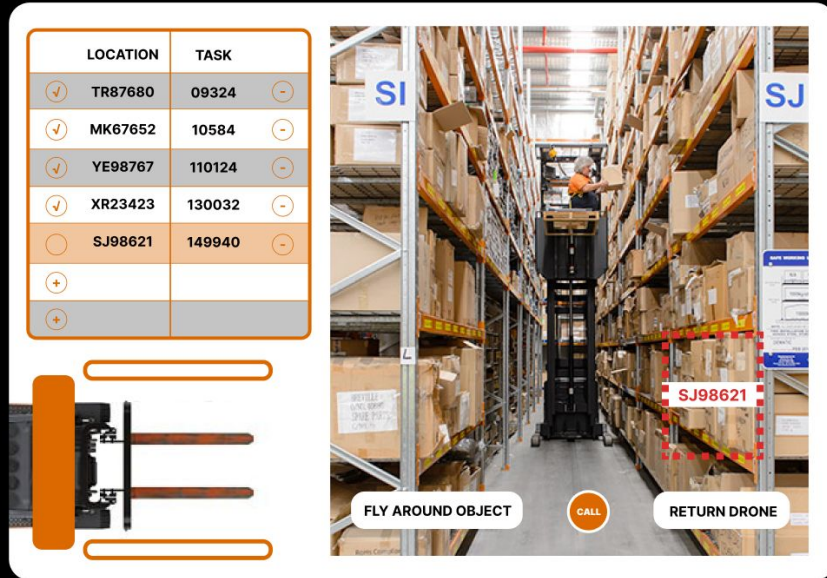
**5. Change forklift strategy or send other drivers the video, ask for help**



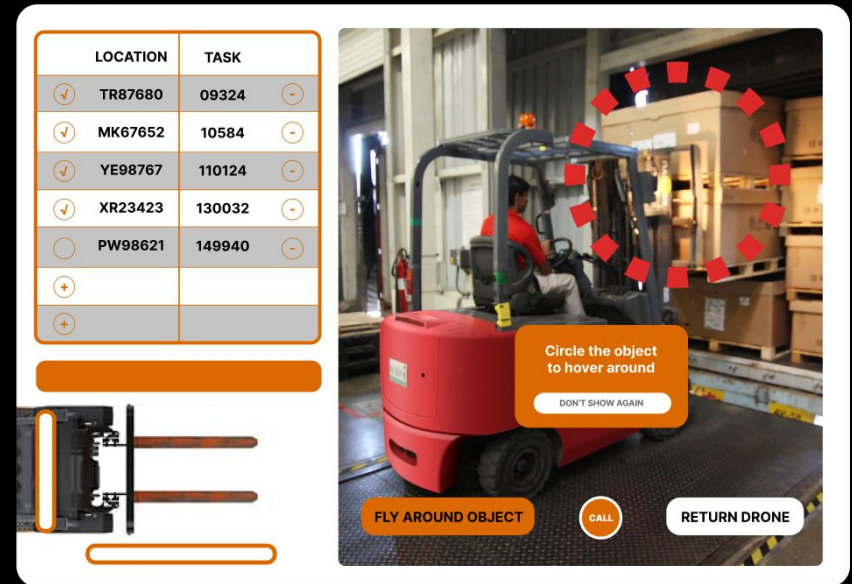
**6. Two forklifts collaboration, or changing the driver to deal with the problematic situation**



# Touch screen Interfaces



Camera would help locate inventory in the task list.



Select object to let drone hover around, click to make drone move to the left, right or behind the freight. Retrieve drone after finish with auto-return.

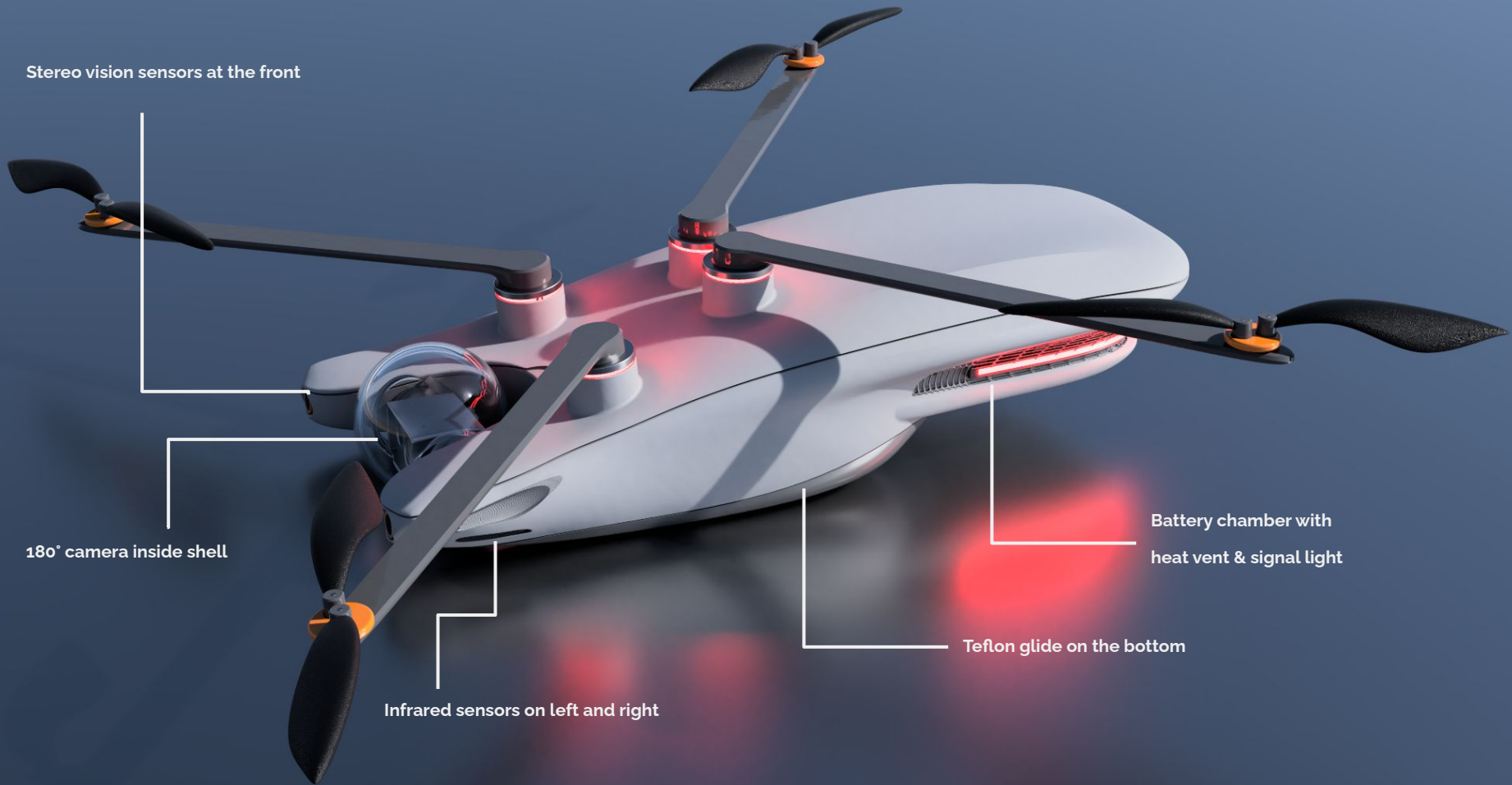
Stereo vision sensors at the front

180° camera inside shell

Infrared sensors on left and right

Teflon glide on the bottom

Battery chamber with  
heat vent & signal light

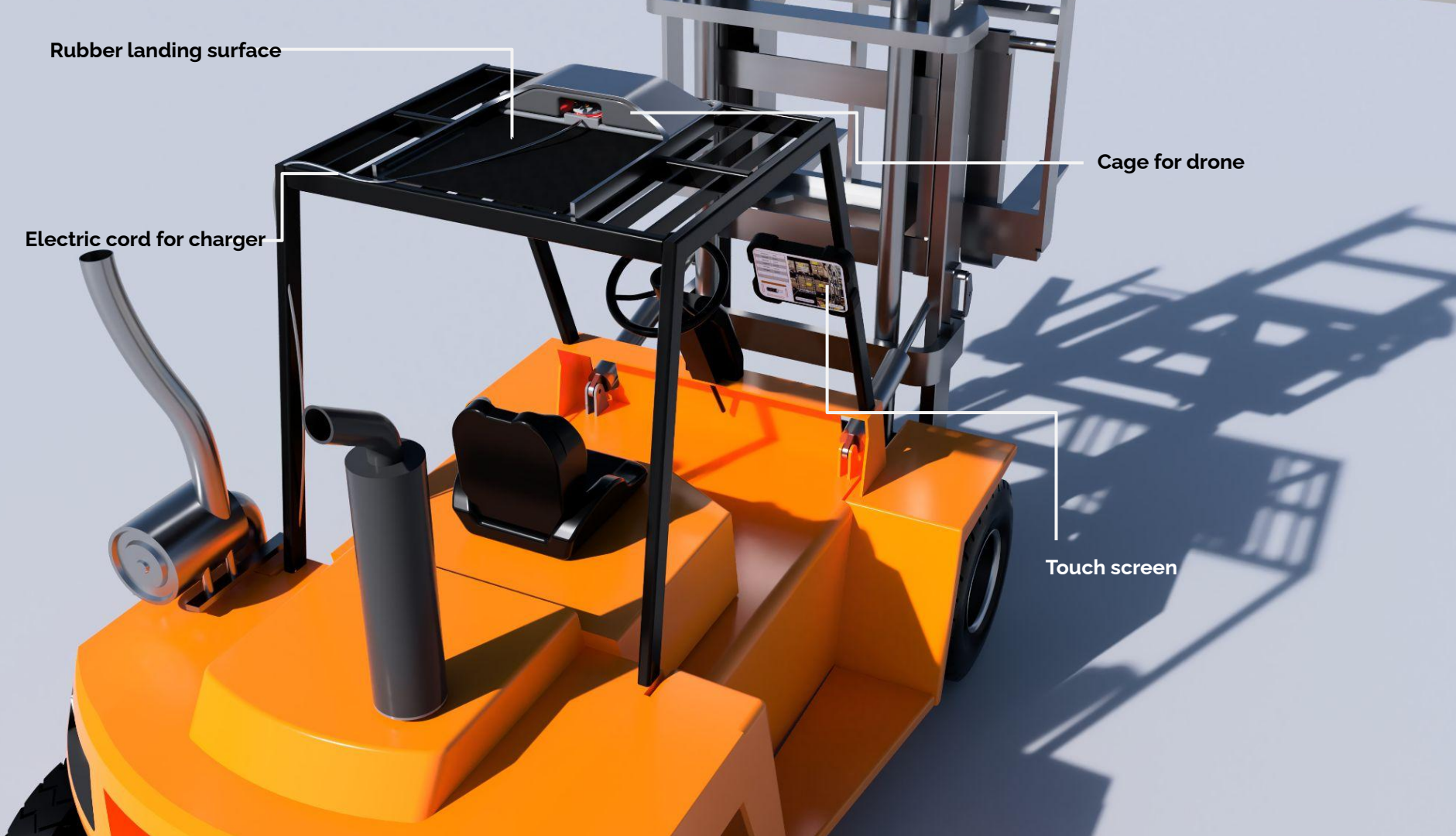


Rubber landing surface

Electric cord for charger

Cage for drone

Touch screen



# Thank you.

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