



# TELLIX

Harsha, Benjamin, Dylan, Irshaad,  
Armando, Sanjeev, Caleb, Ritvik, Abbie



# Drone Specification

Weight: 80g

Dimensions: 98x92.5x41 mm

Max Flight Time: 13 mins

Max Speed: 8m/s

FOV: 86.4°

Camera: 5MP (2592x1936)

Video: HD 720p 30fps



# Team Roles

Irshaad - Executive Director

Ritvik - Hardware Director

Harsha - Hardware Specialist

Benjamin - Hardware Specialist

Dylan - Chief Operation Officer

Sanjeev - Coding and hardware Director

Armando - Math-Experiment -

Technological-Hardware-Specialist (METHs)

Caleb - Coding Specialist

Abbie - Marketing-Administrative Director

# Custom Modifications

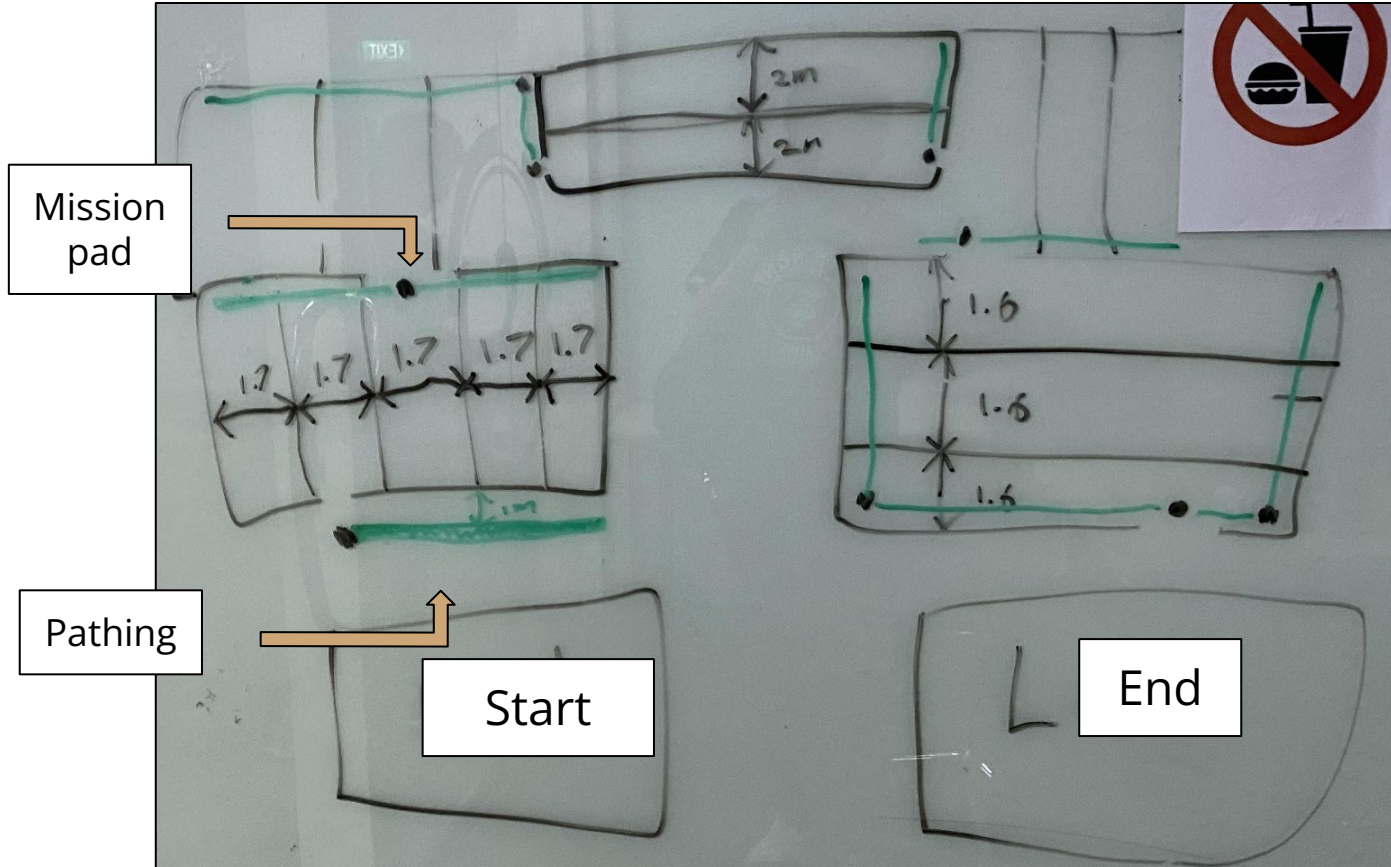
1. Applied thermal paste on the connectors for better cooling
2. Mounted camera with 3D printed brackets for camera to look downwards with adhesive
3. Added green LED on the top for full 360 degree lighting
4. Removed propeller guards and top cover





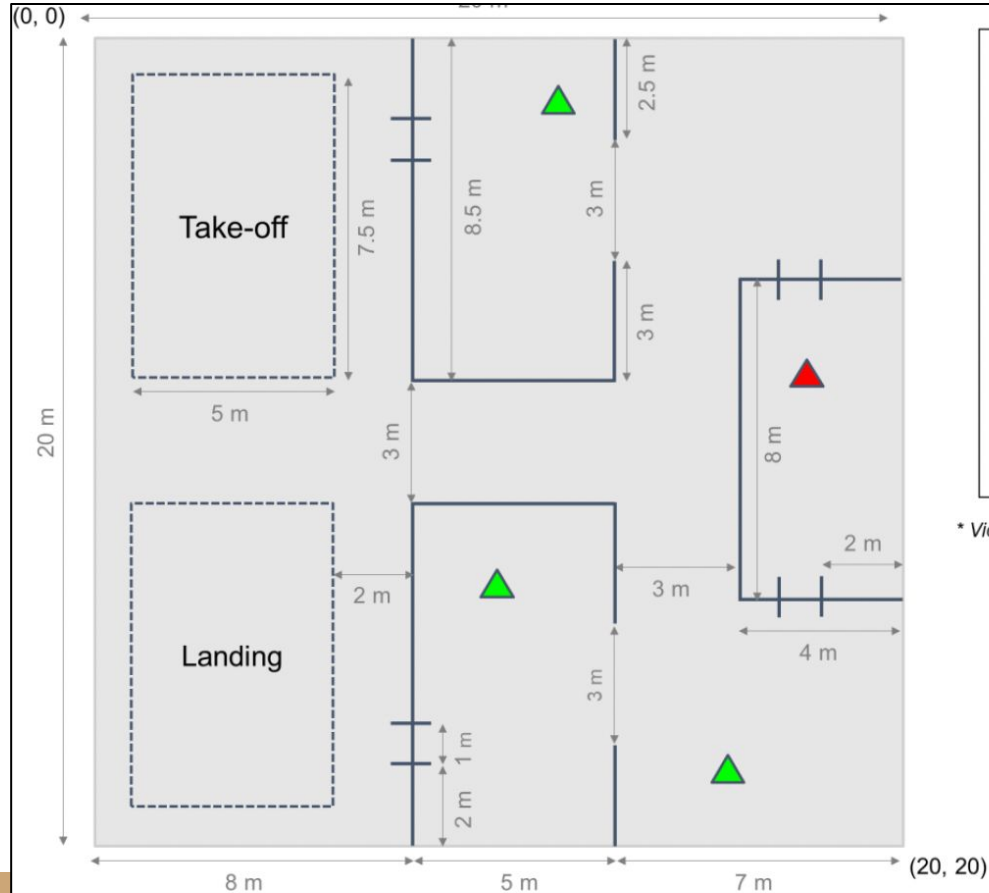
# Strategy

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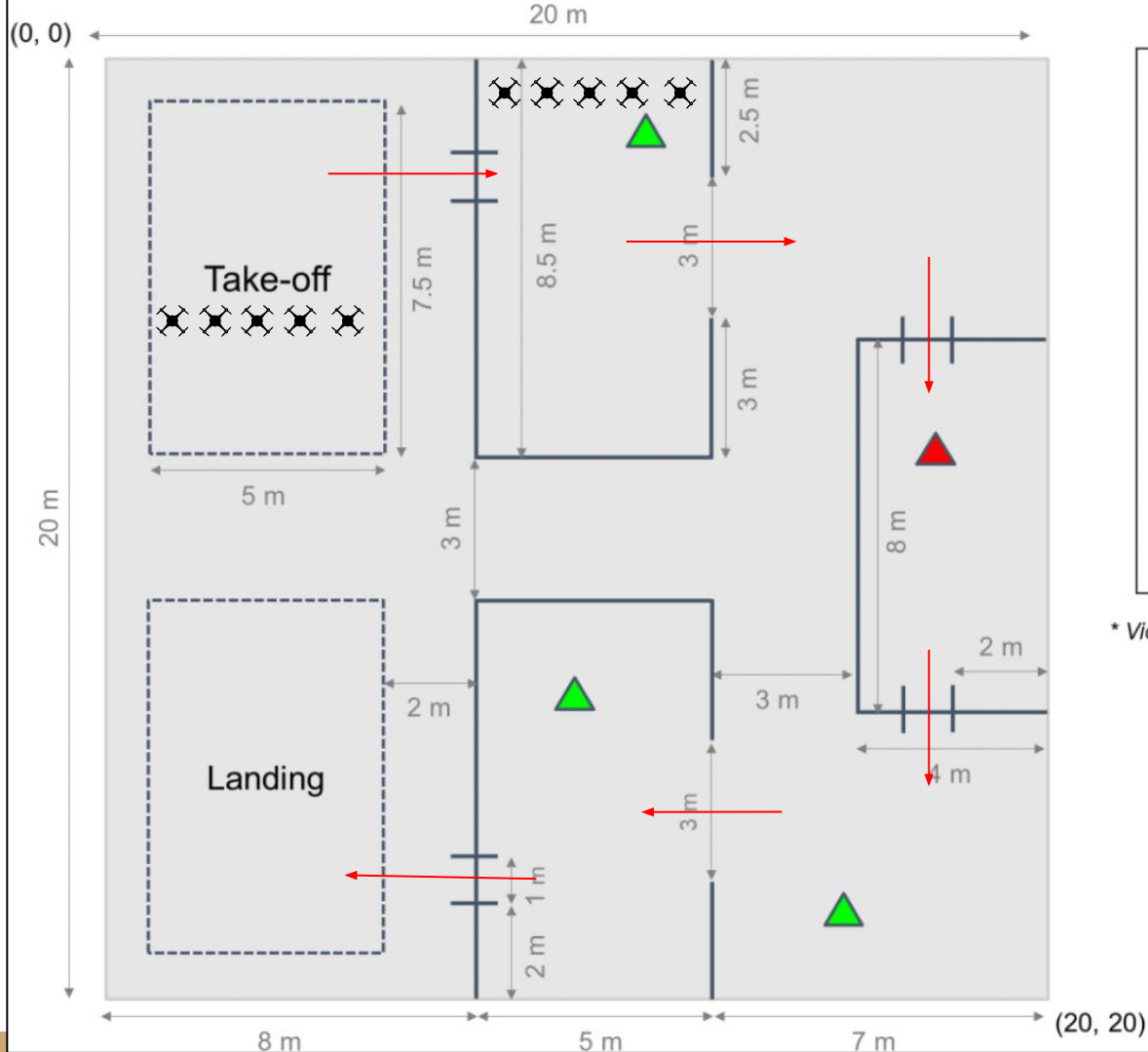
1. There will be 11 laptops,
  - a. 10 laptops individually control 1 drone (group X)
  - b. 1 laptop to control 10 drones (group Y)
2. All 20 drones will fly simultaneously at take-off area



# Group X

1. All 10 laptops will assist and instruct its individual drones to move to its respective rooms
2. The drones will be moving in a group of 5
3. The 2 groups of 5 drones will follow the red arrows illustrated on the picture to the right.
4. Once the drones have successfully cleared the rooms and saved survivors, the remaining (if there is any) will proceed to the landing area.

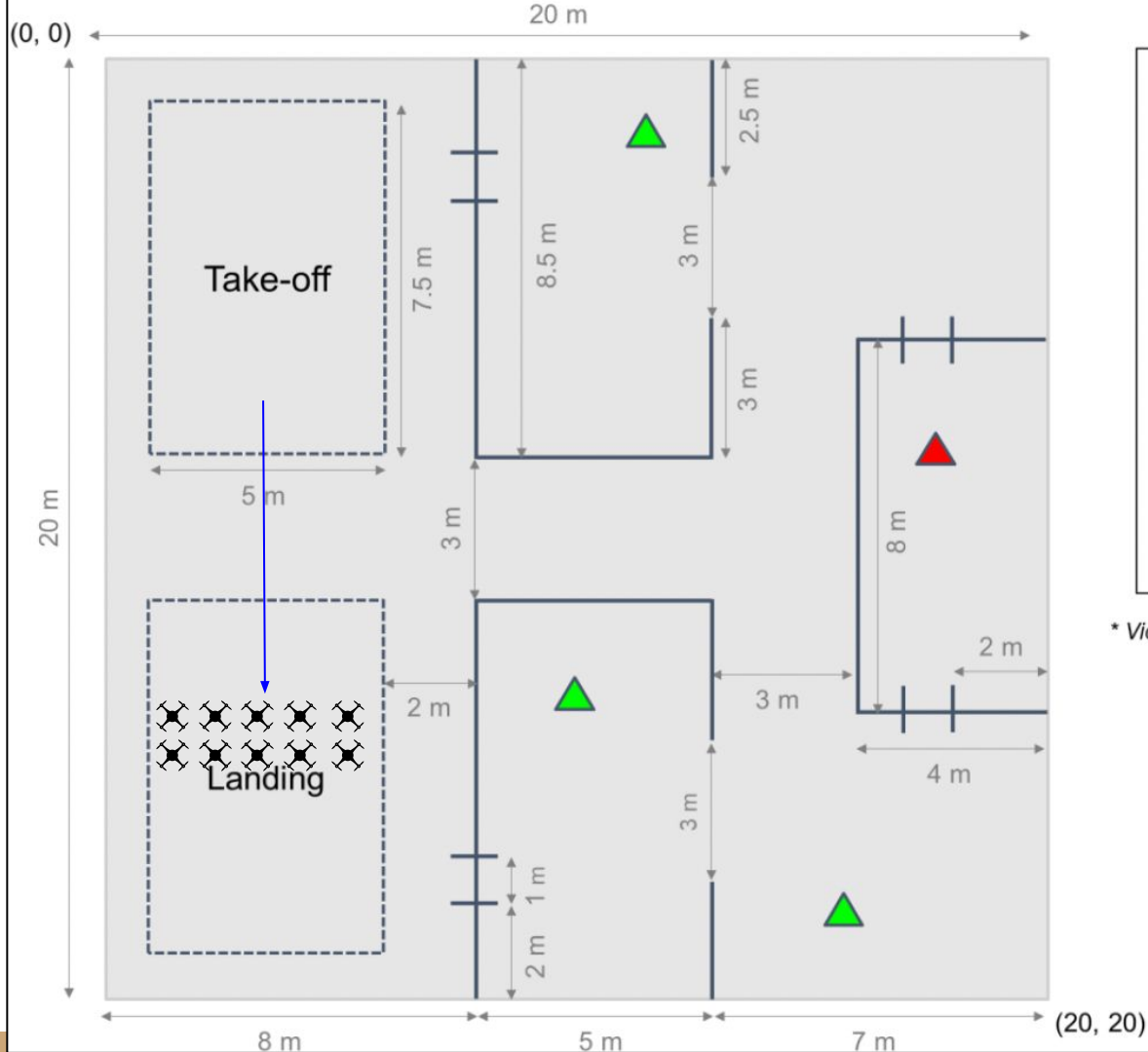
\*1 set of drones is 5 tello drones





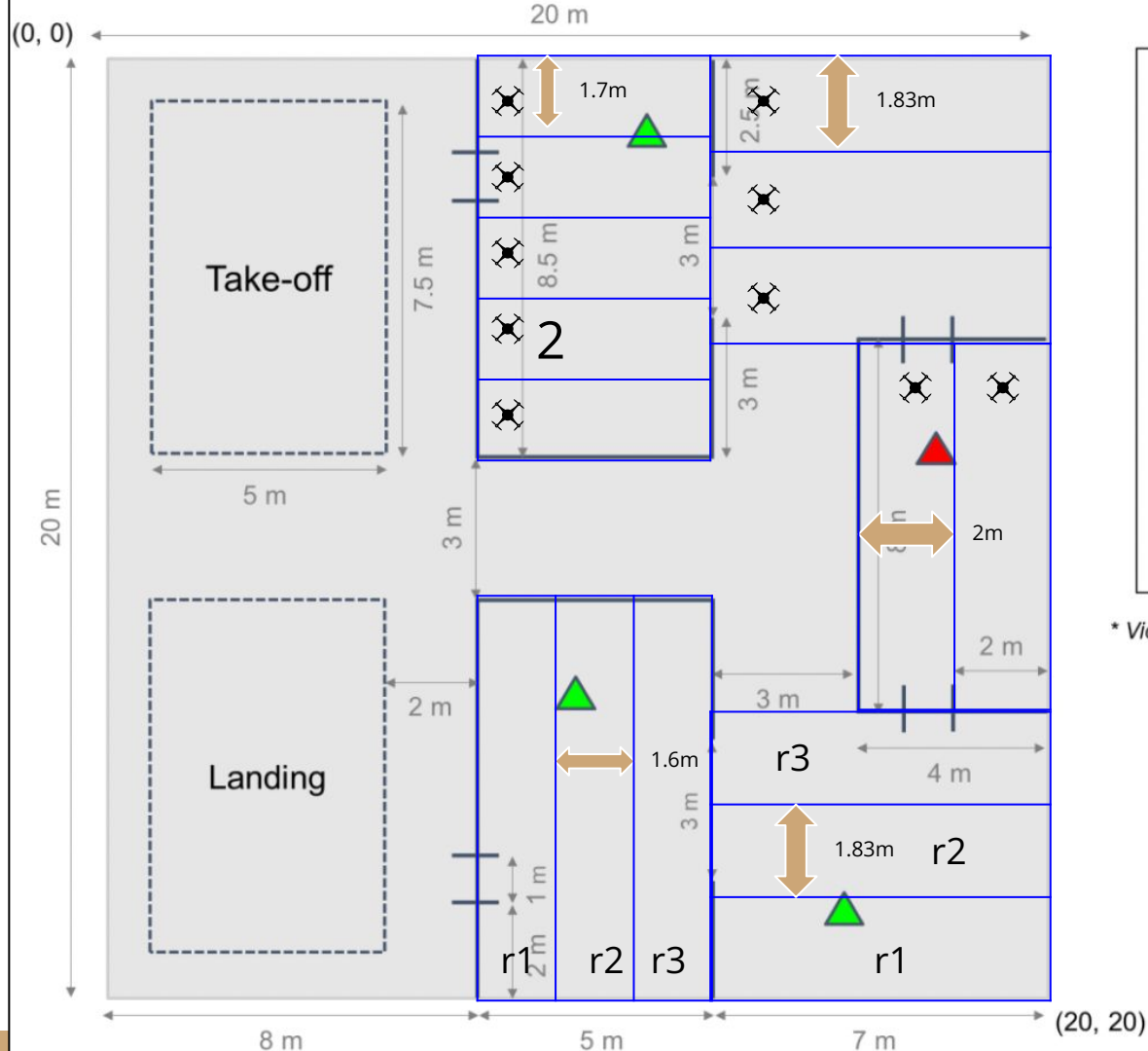
# Group Y

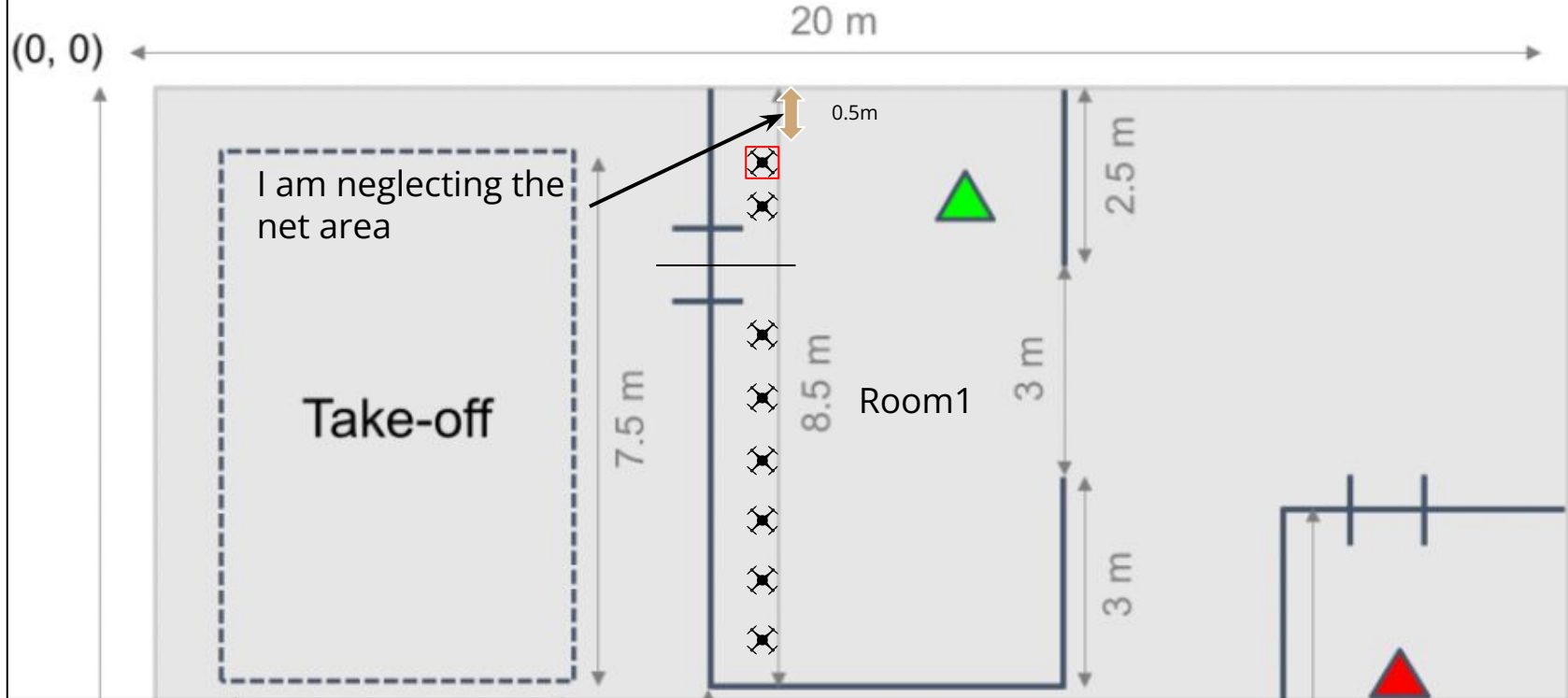
The 1 laptop which controls 10 drones will coordinate and fly all of the drones into the landing area immediately after flying in the take-off area illustrated with the blue arrow on the picture to the right



# Room Scouting

1. The rooms are separated by a table with blue lines illustrated on the picture to the right.
2. 1 drone will be designated to 1 column
3. The drone will then move the the column to scout and check if there are any victim markers on the ground.
4. If there are victim markers, the drone will proceed to land on the marker, or else, it will finish scouting its designated column and head out of the room through the other opening.





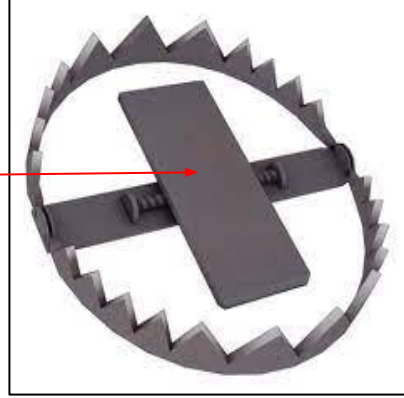


# Victim Markers



# Idea 1

Center of the  
bear trap



## **Bear trap.**

Reason:

There is an issue of the drone sensing a victim marker that has already been found.

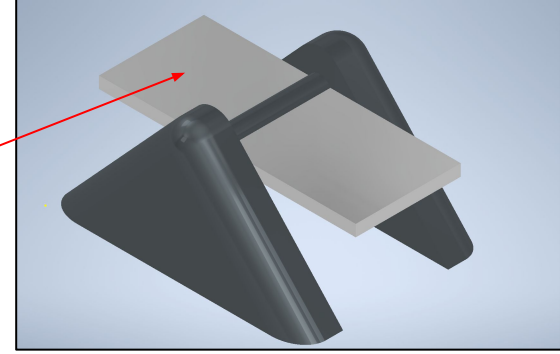
When the drone locates and lands on the victim marker (place at the center of the bear trap), the bear trap will close and encompass the victim marker and the drone.

This may reduce the possibility of the other drones detecting the already found victim markers.

However, this was not feasible due to safety concerns and possibility of permanently damaging the drone.

# Idea 2

plank



## See-Saw.

Reason:

This idea is capable of hiding the victim marker whilst not damaging the drone and is safe to work with.

One side of the plank is colour coded as the victim marker.

When a drone lands on the colour coded side of the see-saw, it will push down on the plank and rotate it around a pivot.

When rotated, the coloured side will face towards the ground and hide the victim marker

However this not feasible because the plank will not turn evenly and smoothly. Also it requires the drone to land at a precise point on the plank, making it more risky.

# Idea 3



## **Yellow cone.**

Reason:

The victim markers were difficult to detect using the previous marker ideas

The victim marker is a 3 dimensional object, making it easier for the camera to detect from any angle

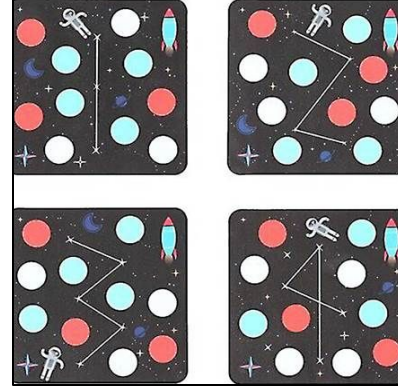
However it will cause a problem for the following drones as they will view it as a un-found victim, causing more number of drones to land which will affect our performance

# Idea 4/ Final Idea

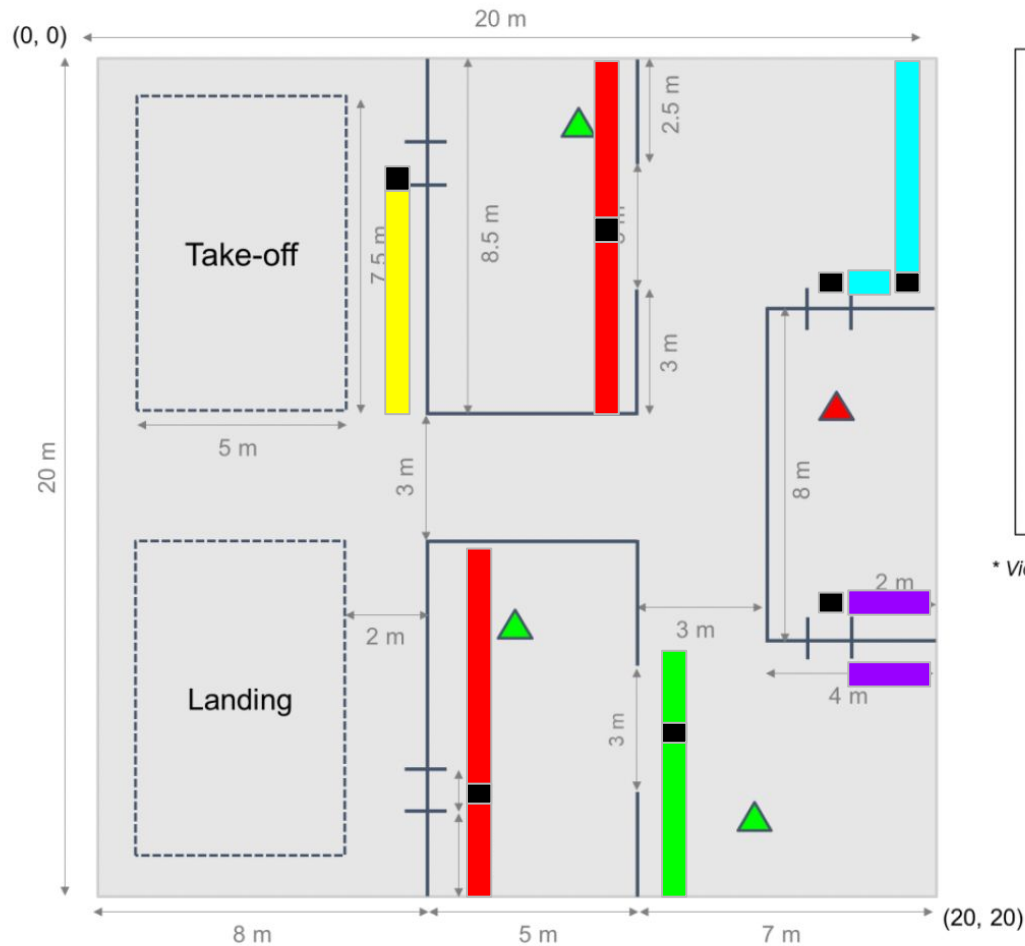
## **Mission pad.**

The final idea for the victim marker is to use the provided Tello mission pads since the drone can easily recognise them

Printed on the pads.







#### Legend:



Normal victim\*



Bonus victim\*



Wall



Window  
(1 m x 1 m,  
0.5 m off the ground)



Floor marking

\* Victims' positions are for illustration only

Thank you!