



# Implementing Drone Delivery Model for Taclo Ahmedabad City

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# Why?

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graph LR; A((Why?)) -.- B(01. Speed & Efficiency); A -.- C(02. Accessibility); A -.- D(03. Cost-Effective); A -.- E(04. Environmental Benefits); A -.- F(05. Reduced Traffic Congestion);
```

01.

## Speed & Efficiency

**Drones can navigate directly to their destination, avoiding traffic & congestion, resulting in significantly faster deliveries.**

**They can cover shorter distances, reducing travel time and energy consumption.**

02.

## Accessibility

**Drones can reach remote or hard-to-access areas that may be challenging for conventional vehicles, ensuring broader service coverage.**

03.

## Cost-Effective

**Operating drones can be cost-effective, especially for last-mile deliveries, as they require minimal labour and fuel costs.**

04.

## Environmental Benefits

**Drones are more eco-friendly, emitting fewer greenhouse gases than traditional delivery vehicles, contributing to sustainability efforts.**

05.

## Reduced Traffic Congestion

**Drone deliveries can help alleviate urban traffic congestion, reducing the overall burden on road infrastructure.**



# Why?

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graph LR; Why((Why?)) -.-> 06(06. Improved Safety); Why -.-> 07(07. Precision & Accuracy); Why -.-> 08(08. 24/7 Operations); Why -.-> 09(09. Contactless Delivery); Why -.-> 10(10. Reduced Infrastructure Dependency);
```

06.

## Improved Safety

**With fewer human drivers on the road for deliveries, the risk of accidents and collisions is reduced.**

07.

## Precision & Accuracy

**Drones can deliver packages with high precision, minimizing the chances of delivery errors or damage to goods.**

08.

## 24/7 Operations

**Drones can operate around the clock, offering the potential for 24/7 delivery services, including during emergencies.**

09.

## Contactless Delivery

**Especially relevant during health crises, drones can provide contactless delivery options, minimizing the risk of disease transmission.**

10.

## Reduced Infrastructure Dependency

**Drones do not rely on established road networks, making them suitable for areas with limited infrastructure development.**

# SWOT ANALYSIS

## Strengths

### Speed

Drone delivery can be significantly faster than traditional delivery methods, especially in congested urban areas.

### Efficiency

Drone delivery can be more efficient than traditional delivery methods, as drones can avoid traffic congestion and other delays.

### Cost

Drone delivery can be more cost-effective than traditional delivery methods, as drones do not require drivers or fuel.

### Sustainability

Drone delivery is more sustainable than traditional delivery methods, as drones produce zero emissions.

## Weaknesses

### Payload

Drones have a limited payload capacity, which restricts the size and weight of food items that can be delivered.

### Weather

Drones are affected by weather conditions, such as strong winds, rain, and snow. **Taclo's** delivery may need to be postponed or cancelled during unfavorable weather conditions.

### Regulation

Drone delivery is still a relatively new technology and there are a number of DGCA's regulations that need to be considered for **Taclo's** growth

# SWOT ANALYSIS

## Opportunities

### Market Growth

The market for drone delivery is expected to grow rapidly in the coming years. In the future, **Taclo** can reduce the number of drone hubs through the implementation of longer flying ranges, allowing for more extensive coverage and effective drone delivery.

### New Technologies

New technologies are being developed all the time that could improve the efficiency and safety of drone delivery. For e.g., companies are developing drones with longer battery life, greater payload capacity & more sophisticated obstacle avoidance systems.

### Expansion to Other Markets

Once drone delivery is fully established in Ahmedabad, it could be expanded to other cities & regions in India. This would open up even more opportunities for **Taclo's growth**.

## Threats

### Competition

As the drone delivery market grows, more and more companies are likely to enter the market. This will increase competition for **Taclo** and make it more difficult to differentiate from the competition like **Swiggy & Zomato**.

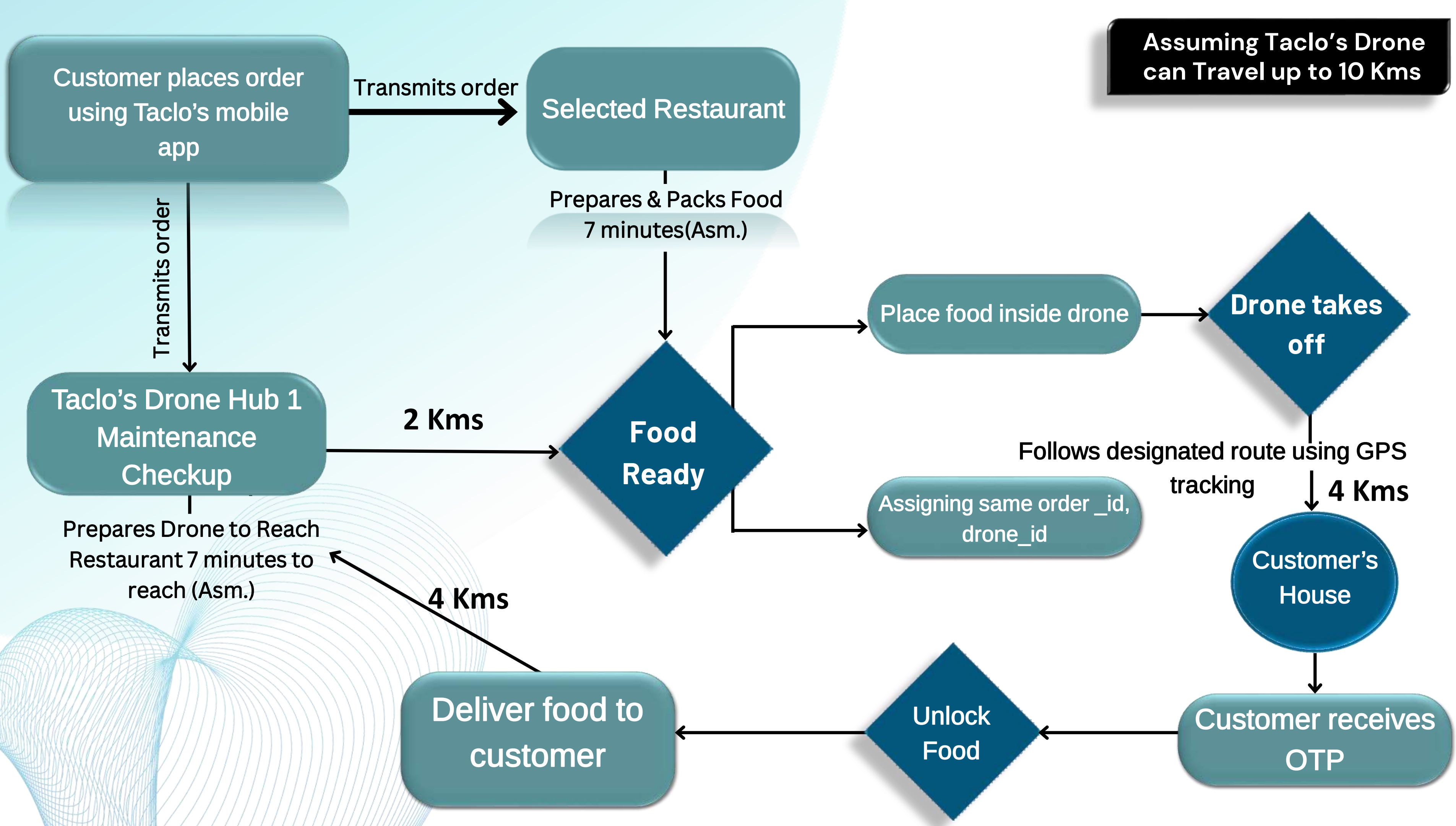
### Safety Concerns

There are a number of safety concerns associated with drone delivery, such as the risk of collisions with electric cables, birds or people.

### Regulatory Changes

Governments may implement new regulations that could restrict the use of drones for delivery. This could pose a significant threat to the **Taclo's food delivery services**.







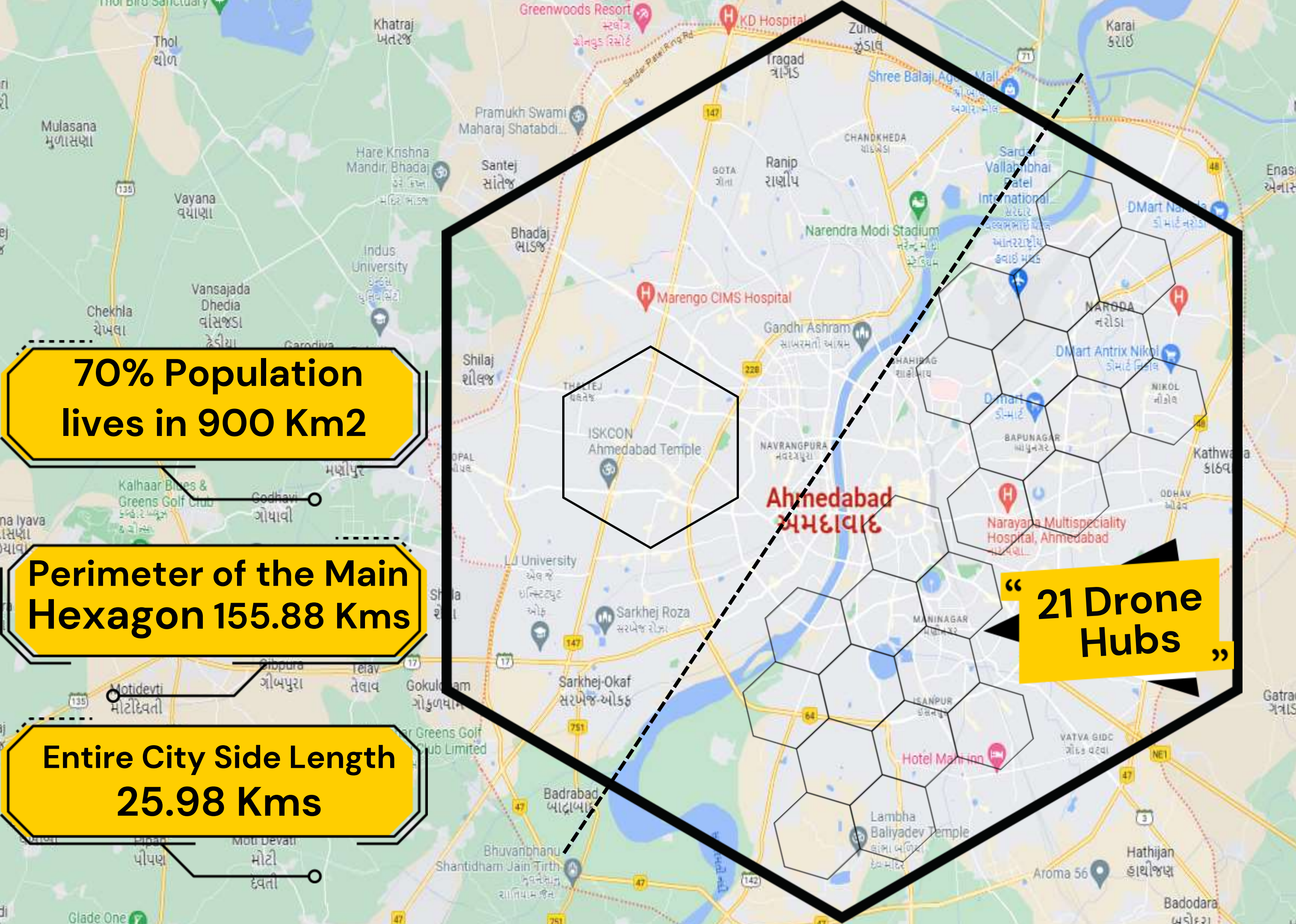


**1,866 km<sup>2</sup>**  
**Total Area**

**70%**  
**Population**

**For the sake of simplifying calculations, I am considering a total area of 1800 square kilometers for implementing drones throughout Ahmedabad.**

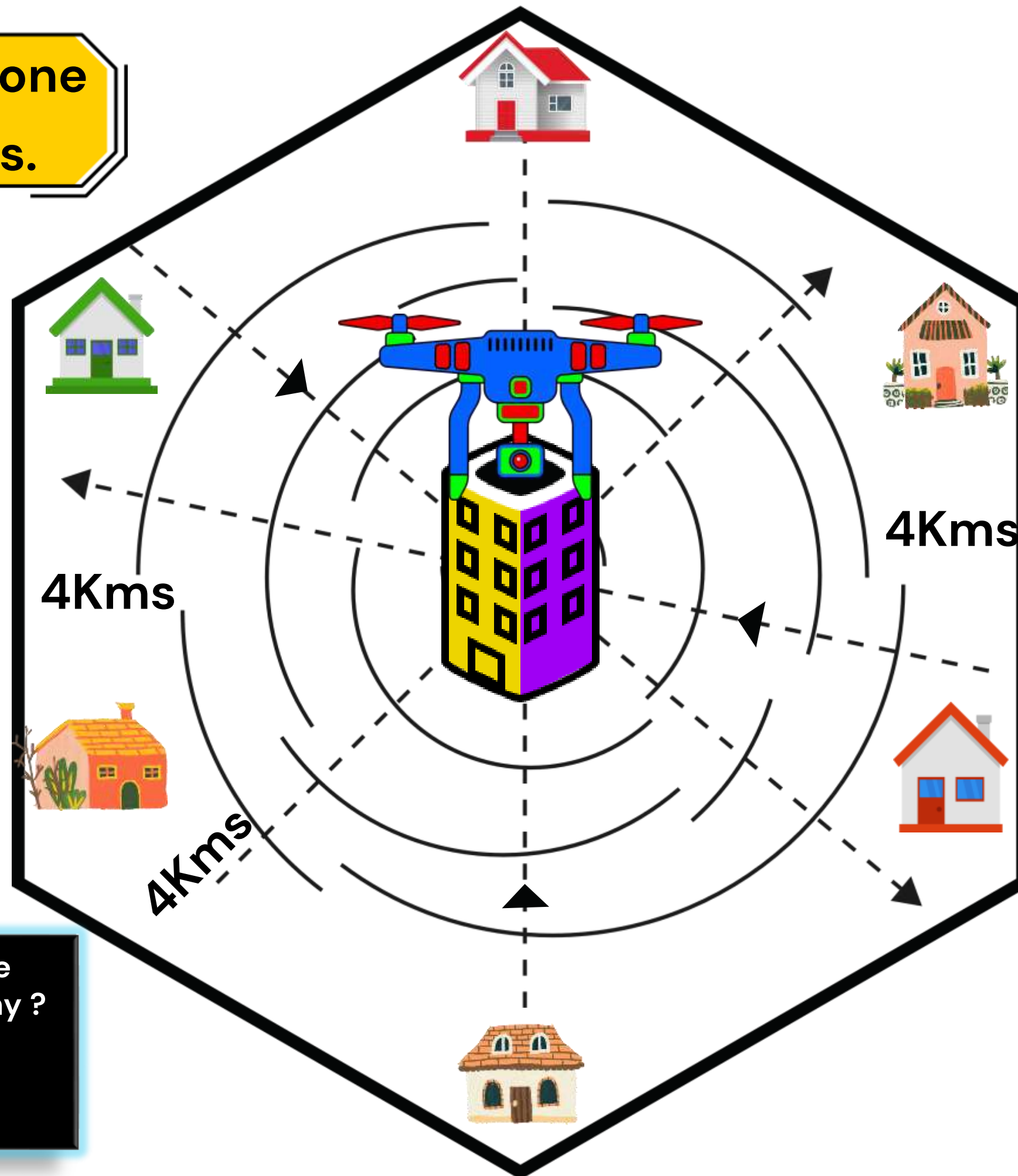




Dividing the city into 21 hexagonal zones to strategically establish drone hubs, with the aim of enhancing connectivity and accessibility within the city.



Each hexagonal zone will look like this.



Excluded the Distance b/w Drone Hubs to Restaurant i.e. 2 Kms Why ?

(It depends on the InterCity's geographical route, so it varies)

From the drone hubs, the drones will travel up to 4 kms. After delivering the food, the drones will return to the hub, covering another 4 kms, which totals 8 kms.



**Since 70% of the population resides in the other half of the district, my specific focus will be on that area. I, plan to divide this portion into 21 hexagonal zones, each with its own central hub for managing deliveries.**

**I arrived at the number 21 by dividing half of the Ahmedabad area by the coverage area of each hub, with each side (a) measuring 4 km and the distance from the center to a vertex also being 4 km. This calculation results in an area of 41.57 square km.**

**The calculation can be expressed as follows**

$$900 \text{ km}^2 / 41 \text{ km}^2 = 21 \text{ hubs.}$$

**So, to cover the entire half, or we can say 70% of the population of the district, we require a total of 21 drone hubs.**