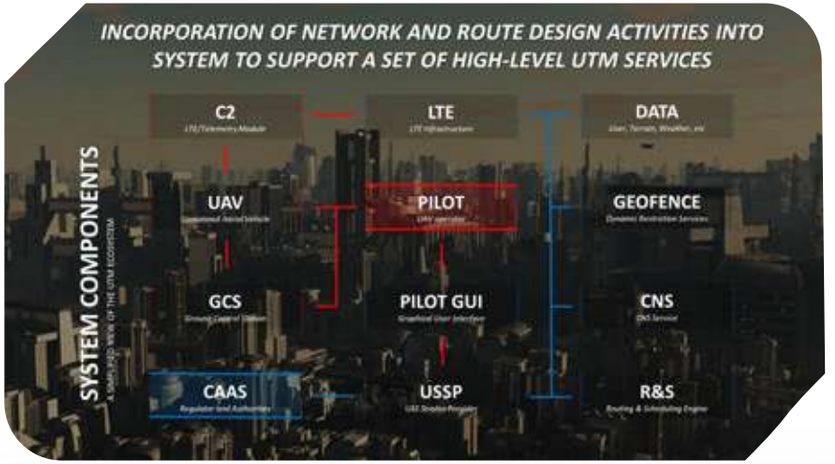
UNMANNED AIRCRAFT SYSTEMS TRAFFIC MANAGEMENT OPERATIONS

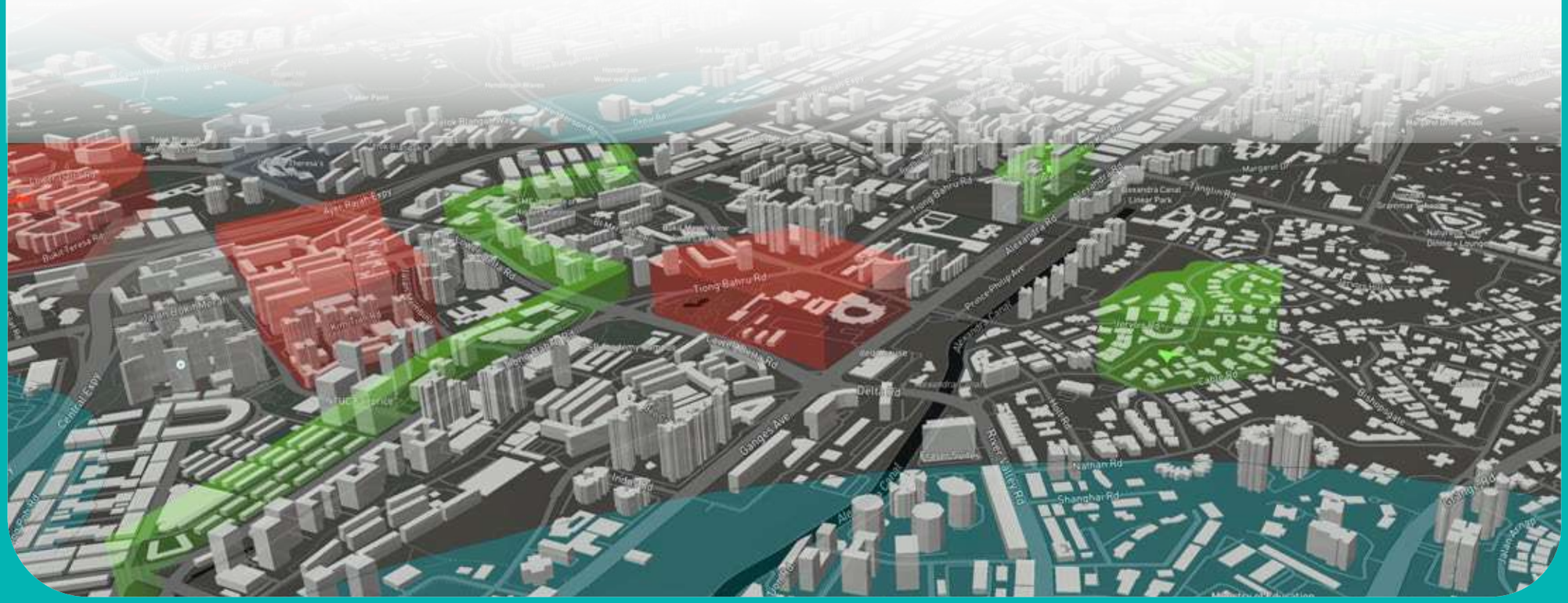
The Civil Aviation Authority of Singapore supports innovative and beneficial uses of drones and adopts transformative unmanned aircraft technologies.

One such technology is the Unmanned Aircraft Systems Traffic Management (UTM) system, which CAAS is driving to support the growing use of drones in operations and applications across industries such as Drone Aerial Photography and Videography, Surveying and Mapping of terrain, and Infrastructure Inspection.

In order to carry out drone operations, drone operators need to know where their drones are flying in real-time, and authorities and airspace managers need to know likewise in order to manage aviation safety and public security.

This system helps to manage these drone traffic, allowing operations to happen in a safe and efficient manner, and provide airspace situational awareness.



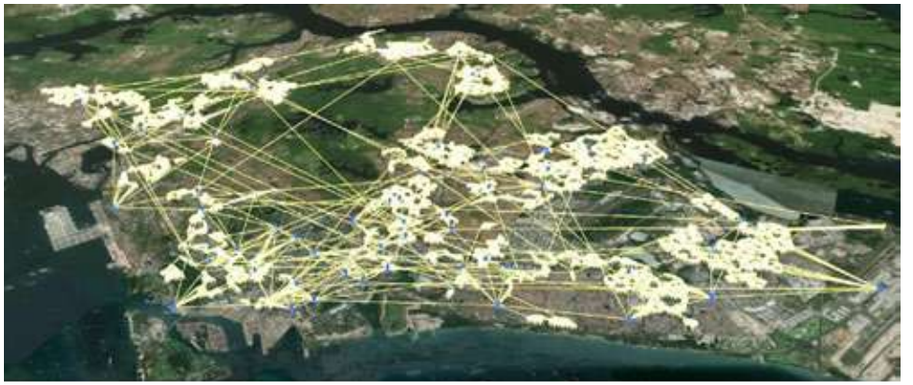


UNMANNED AIRCRAFT SYSTEMS TRAFFIC MANAGEMENT OPERATIONS

To ensure that the UTM system is able to perform optimally and efficiently, it is vital to have a secure and capable cellular network.

Heron Tech conducted several drone flight trials using the 4G/LTE cellular network to assess its suitability for various UTM system applications, investigate the impact of increased drone traffic on the overall performance of the UTM system, and to examine the network's capacity to handle the increased drone traffic in the air.

Two hub-and-spoke traffic networks were also developed by Heron Tech for simulation tests to enable strong network connections between drones. These networks encompassed a Collision Risk and Routing Modelling (CRRM) system, which focused on minimising drone collisions with obstacles and optimising flight routes. The outcomes from the trials provided valuable insights for further development and enhancement.



Baseline hub-and-spoke Unmanned Aircraft traffic network with SingPost offices as hubs and HDB buildings as spokes

Optimised hub-and-spoke Unmanned Aircraft traffic network with cluster centers as hubs and HDB buildings as spokes

MYDRONEFLEETS FOR AIRSPACE SITUATIONAL AWARENESS

UNMANNED SYSTEMS

The Civil Aviation Authority of Singapore (CAAS) plays a vital role in supporting and driving the use of drones for various applications. CAAS Unmanned Aircraft (UA) regulatory requirements ensure UA operations can be facilitated while maintaining aviation and public safety.

CAAS recognises the diverse uses of UA in Singapore and has worked closely with UA operators to facilitate the deployment of innovative drone technology and applications such as infrastructure inspections and critical facilities surveillance.

In 2023, CAAS facilitated the International XPRIZE Rainforest competition, where various industry applications were showcased and demonstrated.

MyDroneFleets by Garuda Robotics enables tracking and visualisation of drone flights, making it easy for airspace and drone fleet managers to manage drone operations safely, in compliance with local regulations.

It enabled Beyond Visual Line of Sight (BVLOS) flights for 100 drones at the XPRIZE Rainforest semifinal competition, where 13 international teams showcased their drone technologies for assessing rainforest biodiversity.

UNMANNED SYSTEMS

AI-POWERED DRONES FOR INSPECTION AND SURVEILLANCE

Overwatch by Garuda Robotics is an AI-powered inspection and surveillance system for critical infrastructure.

Using drones and AI enable safety inspections for difficult-to-reach areas and surveillance of critical facilities to be conducted more efficiently and safely.

Overwatch is used by enterprise and government customers in Singapore, Malaysia and Bhutan.