

UTM GEOFENCING-LIKE SYSTEMS

David Benavente





Crash avoidance & flight over restricted areas prevention



SKYWAYS

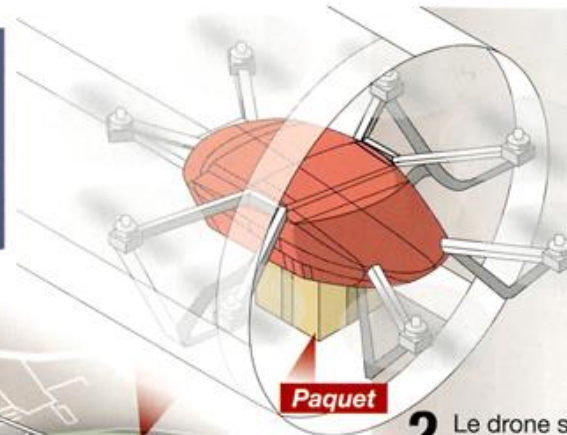
Solution de livraison urbaine

Le projet Skyways d'Airbus prévoit de livrer de petits colis aux étudiants et facultés sur le campus de la National University of Singapore à l'aide de drones.

Cas pilote A

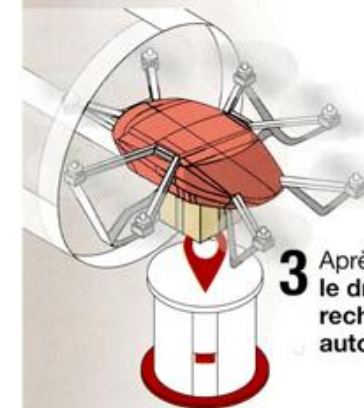
Livraison de colis sur le campus de la National University of Singapore (NUS) via le réseau Skyways.

1 Le drone Skyways est un **octocoptère** qui transporte des conteneurs aériens chargés dans sa partie inférieure.



Paquet

2 Le drone suit une trajectoire entièrement automatisée et atterrit sur une plate-forme définie.



3 Après l'atterrissage, le drone se recharge automatiquement.

4 Les clients finaux reçoivent une notification de livraison sur leur téléphone mobile et vont chercher leur colis à la station de retrait.

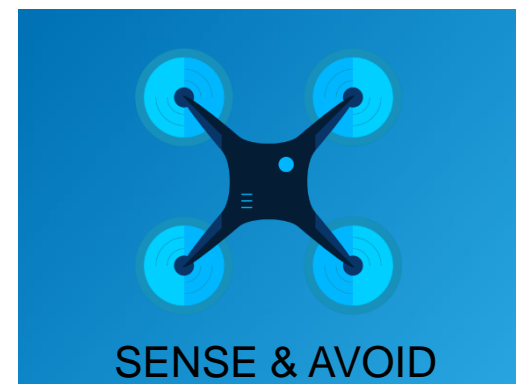


Source : Airbus Group
Infographie : © Beatriz Santacruz



Singapour





Common geofencing for static
& dynamic no fly zones



Global UTM Database



Geofencing & flight plan
accessible database

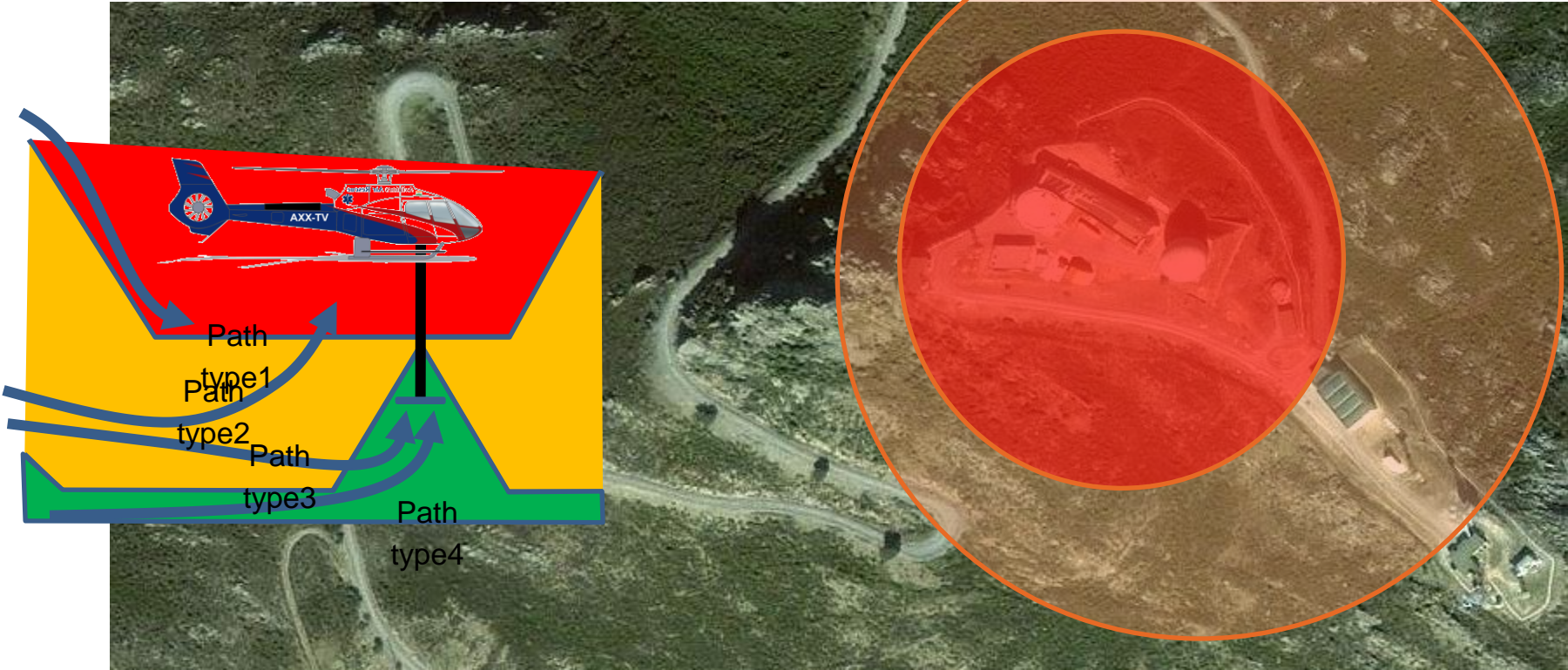


Restricted Area Geofencing



Autonomous avoidance with
no human intervention

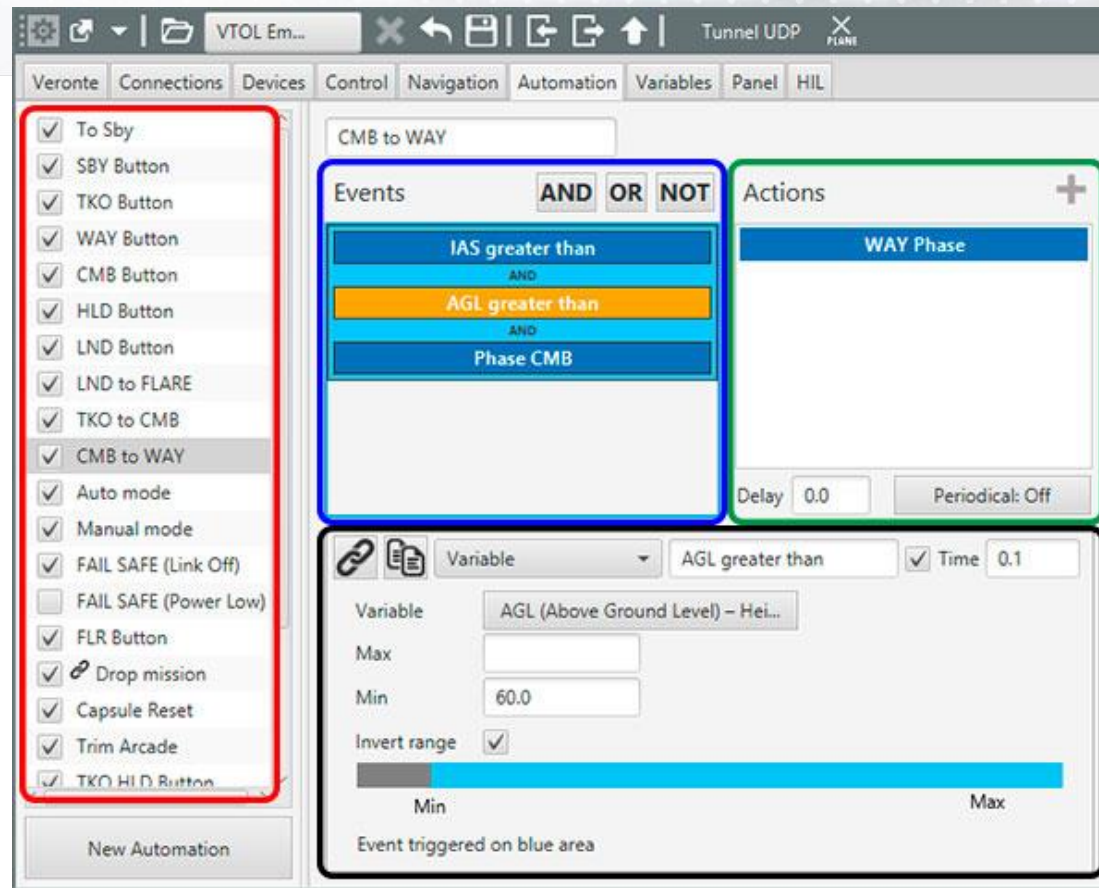
No Fly Area Criticality



**Avoidance VS
FTS activation**



Fully Autonomous Avoidance



The screenshot displays the 'Automation' tab in the Veronte Autopilots software. The 'CMB to WAY' automation is configured with the following settings:

- Events:** IAS greater than AND AGL greater than AND Phase CMB
- Actions:** WAY Phase
- Delay:** 0.0
- Periodical:** Off

The 'AGL greater than' event is further detailed in the 'Variable' configuration window below:

- Variable:** AGL (Above Ground Level) - Hei...
- Max:** [Empty field]
- Min:** 60.0
- Invert range:**
- Time:** 0.1

The 'Event triggered on blue area' is indicated by a blue bar in the variable configuration window, with 'Min' and 'Max' labels at the ends.

Automatic actions on an event detection

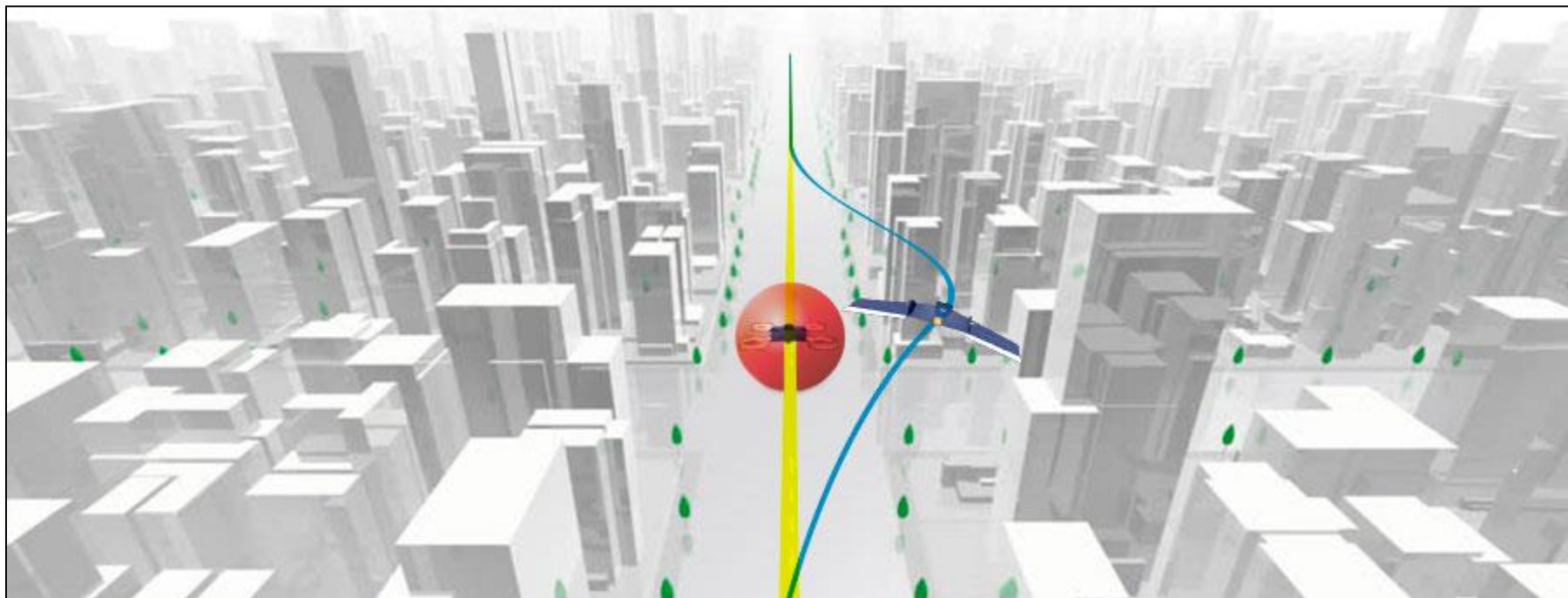


Safe Flight Areas



Operations restricted to an
specific area

Sense & Avoid Geofencing



M2M Communications &
spherical **geofencing**



Autopilot & Geofencing



- Static Obstacle Avoidance
 - UTM / Operator /... defined
- Dynamic Obstacle Avoidance
 - Transponder / Radar / M2M... source
- M2M, LOS, BLOS communications
 - 4G, satcom, datalink
- Veronte Cloud





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