ICAO UNITING AVIATION

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Runway Collision Risk Measurement using ADS-B

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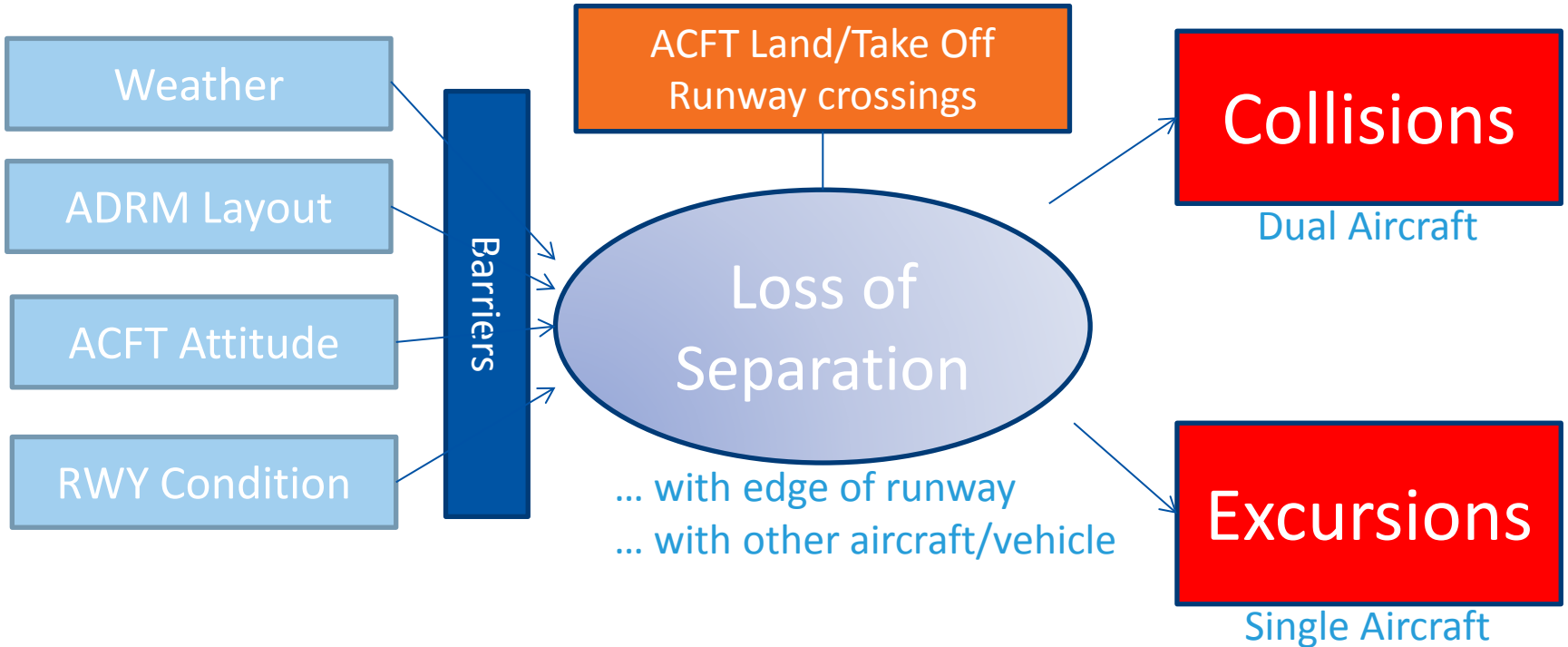
Air Navigation Bureau

ICAO

GRSS / Lima / November 2017

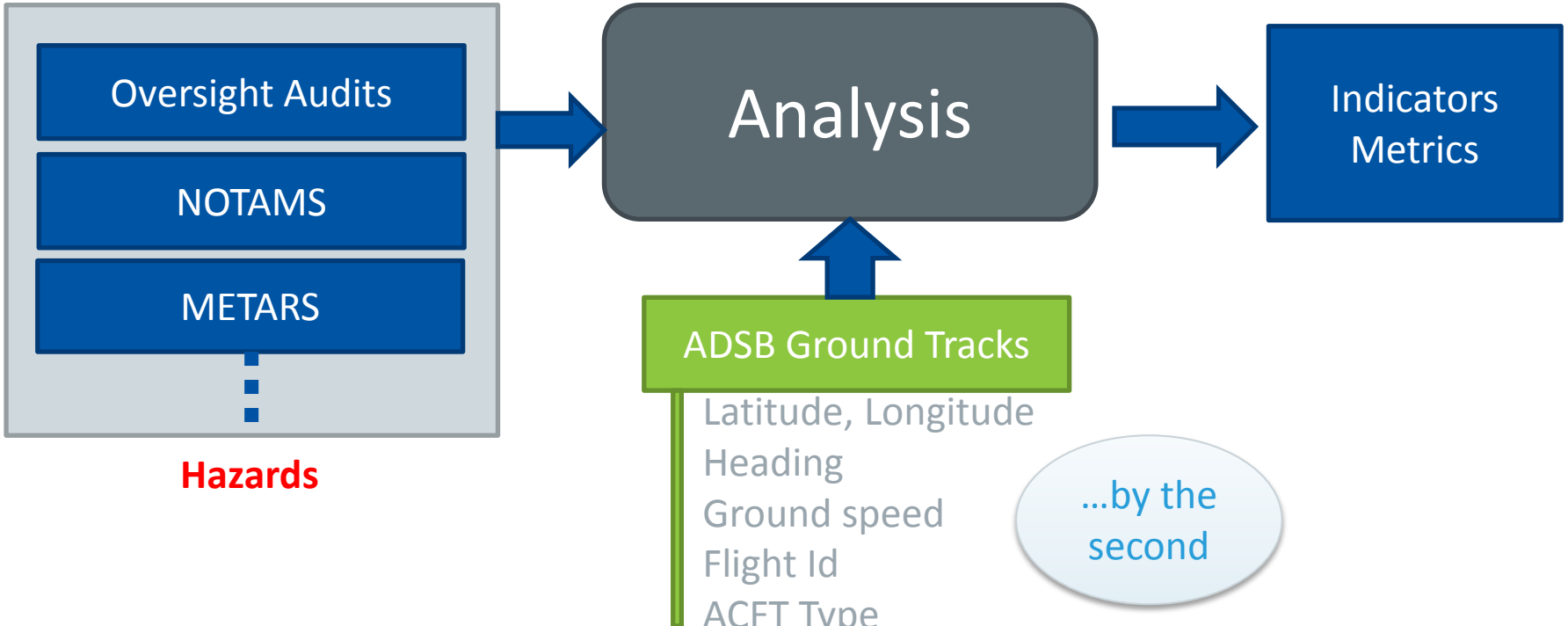
Runway Safety



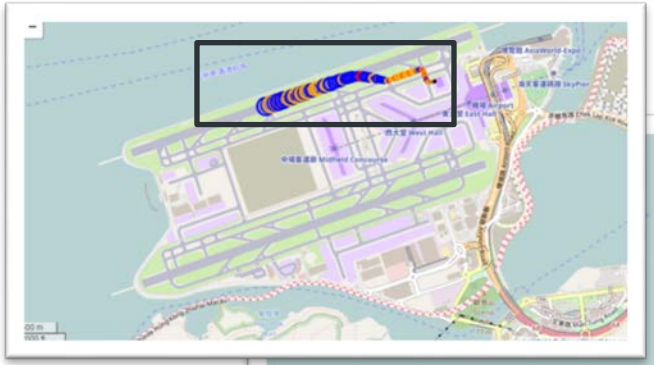
Gaining Insight

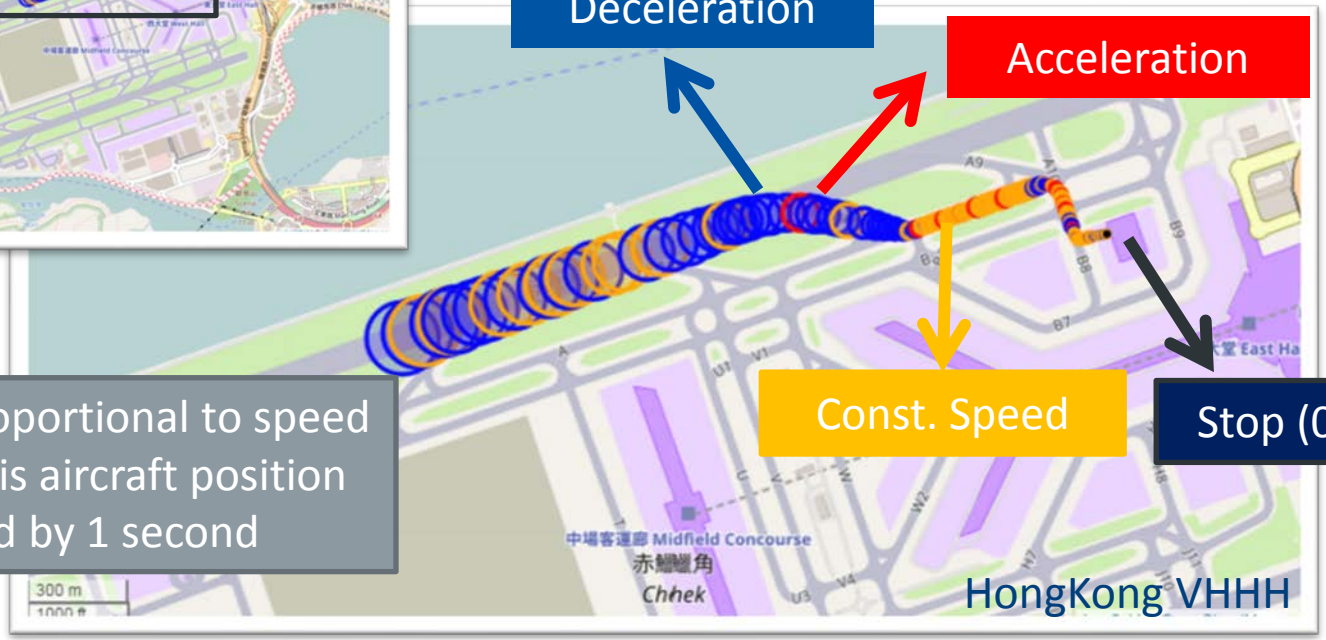
- Level 1
  - **Reactive analysis** and **investigation** of high consequence events (accidents, serious incidents)
- Level 2
  - **Monitoring** of **everyday** operations and **hazards** and combined **realtime** analysis
  - Define, separate and track **Normal** vs **Abnormal** operations

Level 2 Data Analysis Process



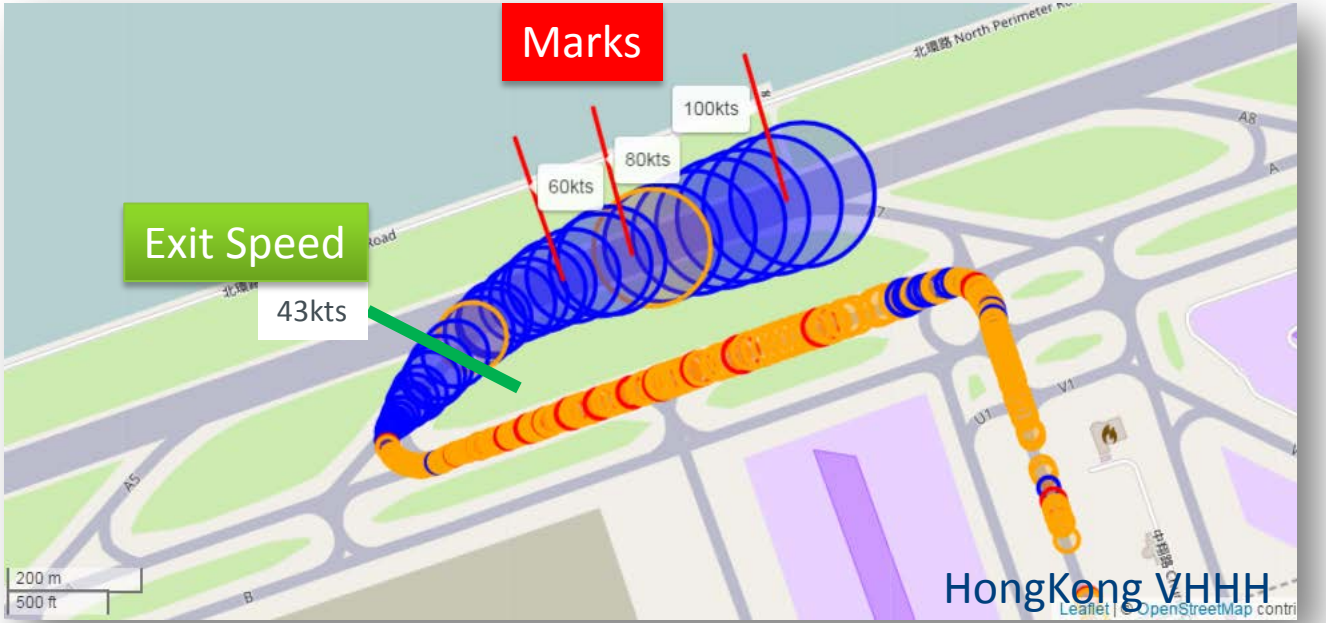
Visualizing the data



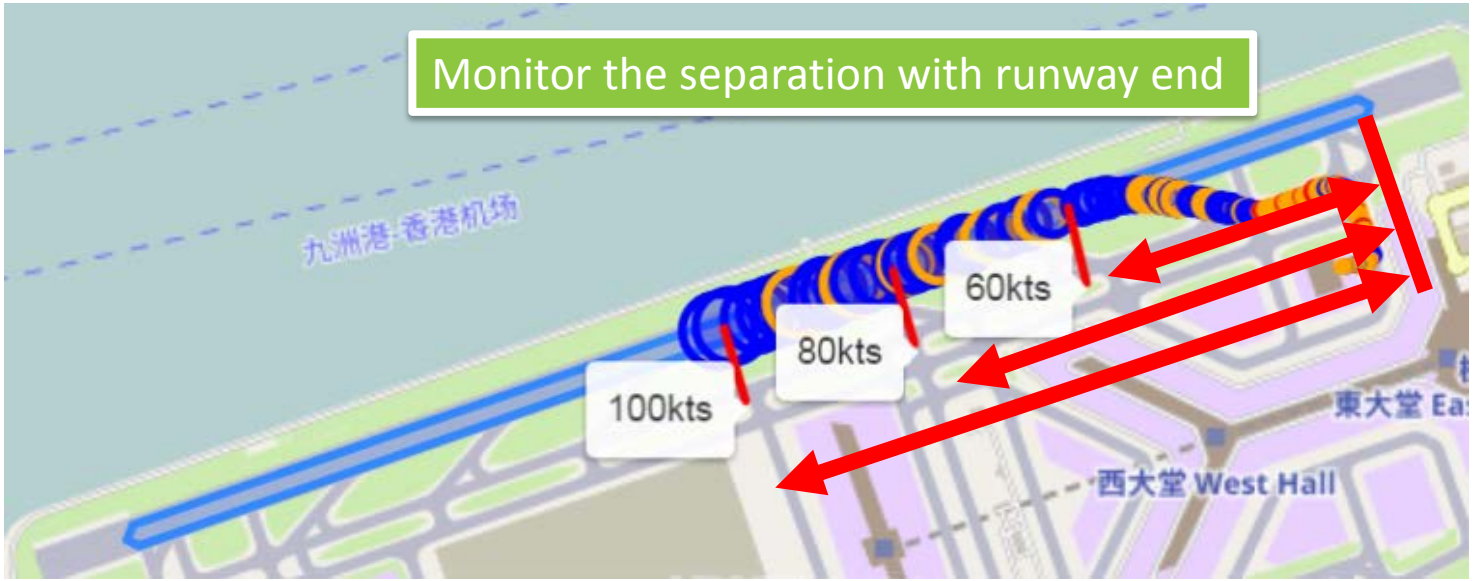


Circle size proportional to speed
Circle center is aircraft position
Circles spaced by 1 second

Speed Marks


Marks
100kts
80kts
60kts
Exit Speed
43kts
200 m
500 ft
HongKong VHHH
Leaflet | © OpenStreetMap contri

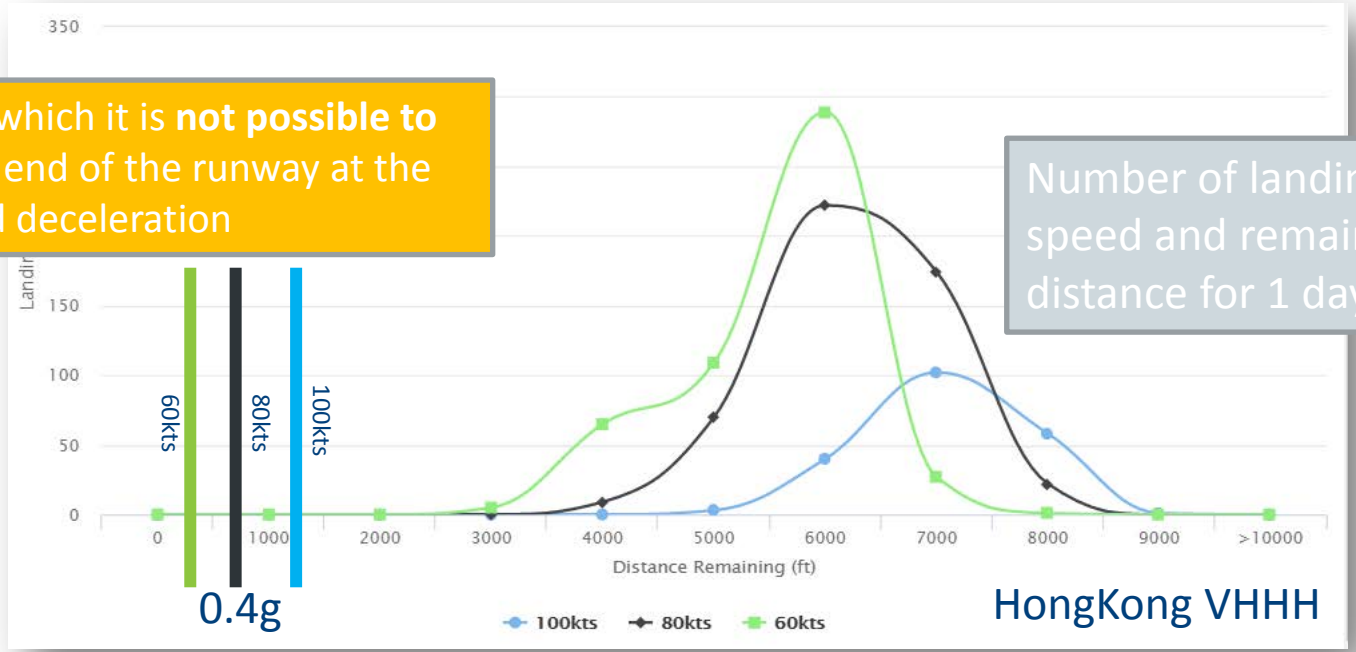
Runway Remaining



$$Distance = \frac{Speed^2}{2 \cdot Deceleration}$$

Runway Remaining

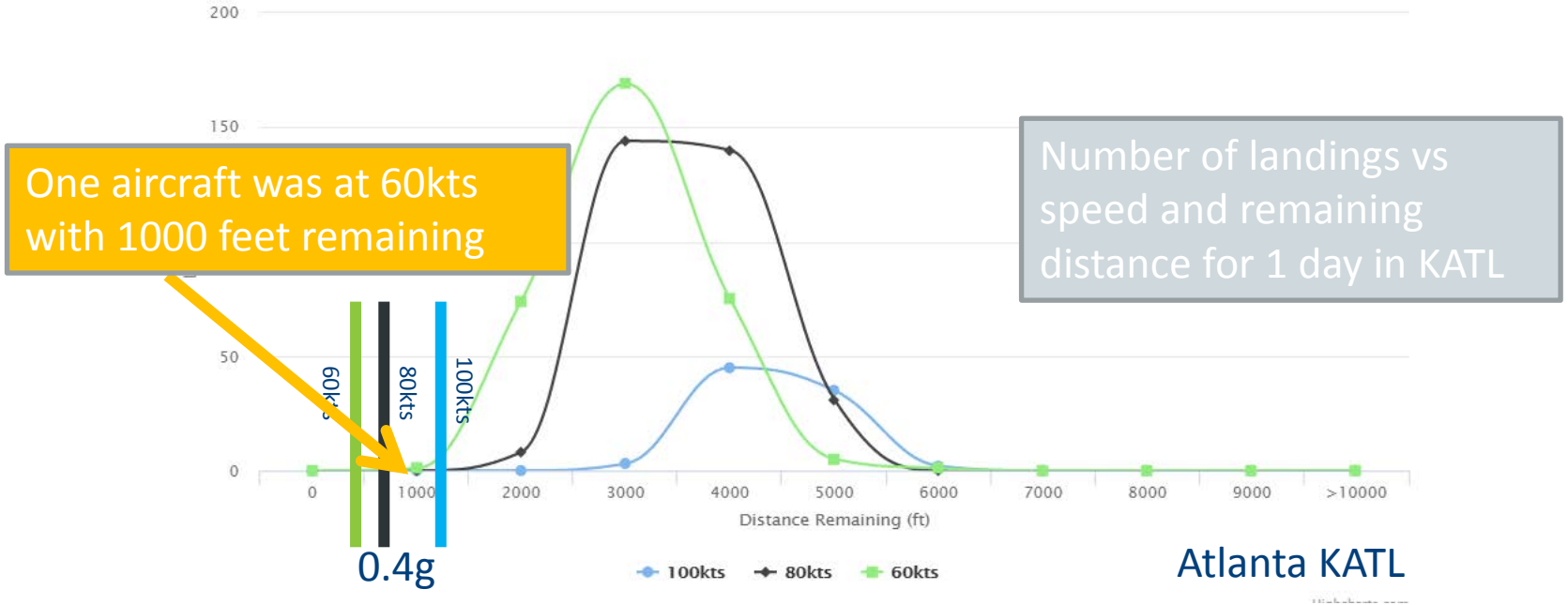
Distances after which it is **not possible to stop** before the end of the runway at the given speed and deceleration



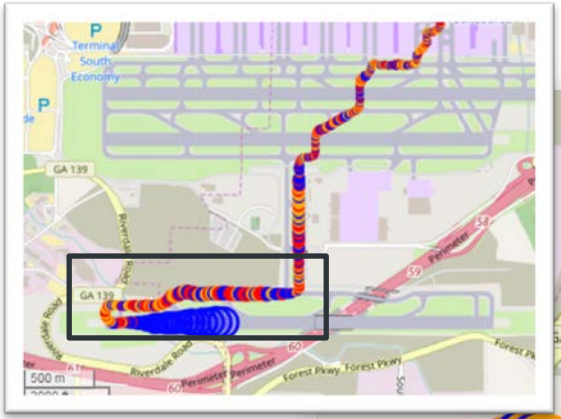
Number of landings vs speed and remaining distance for 1 day in VHHH

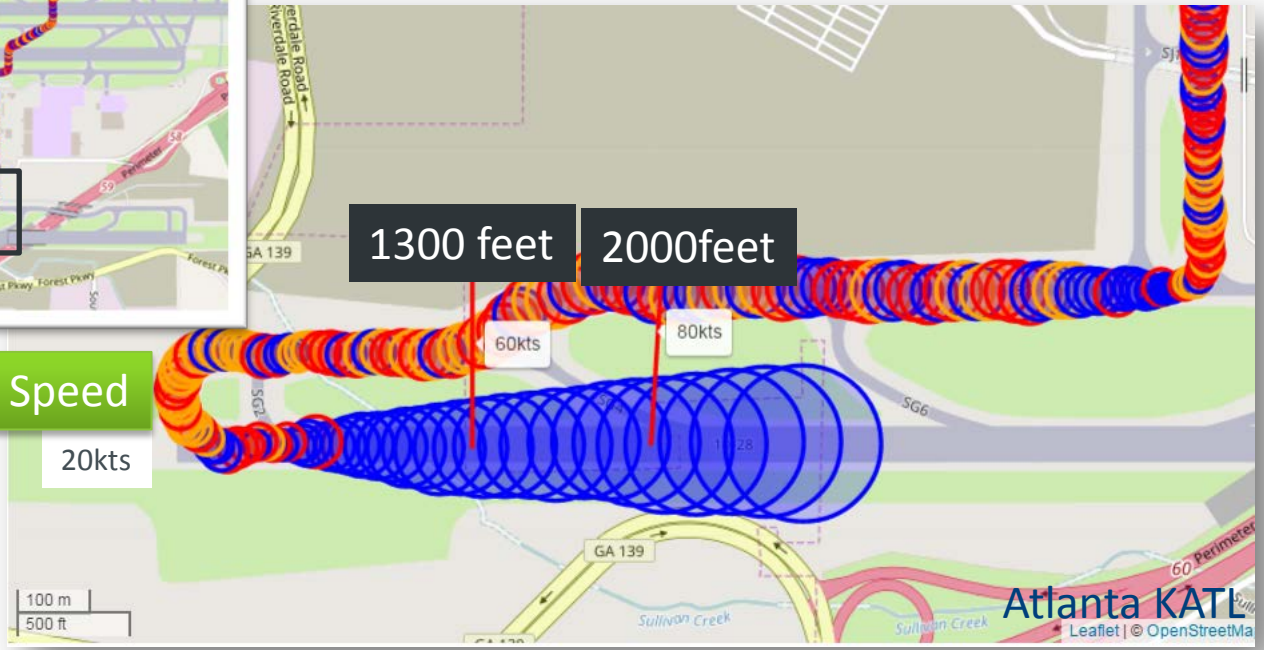
HongKong VHHH

Runway Remaining



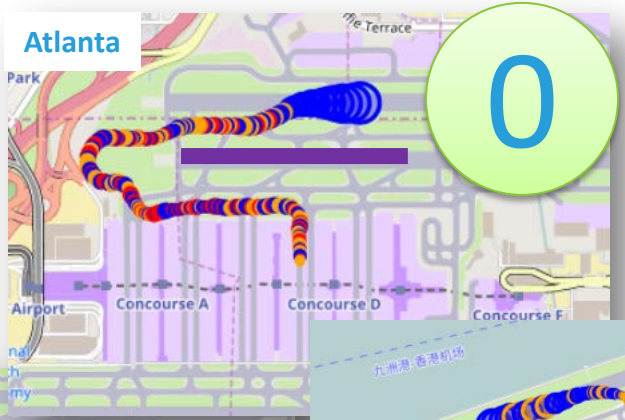
Reduced separation with runway end





Runway Crossings

Atlanta



Atlanta

Hong Kong

Atlanta

Hong Kong

Monitoring Usage

Operations

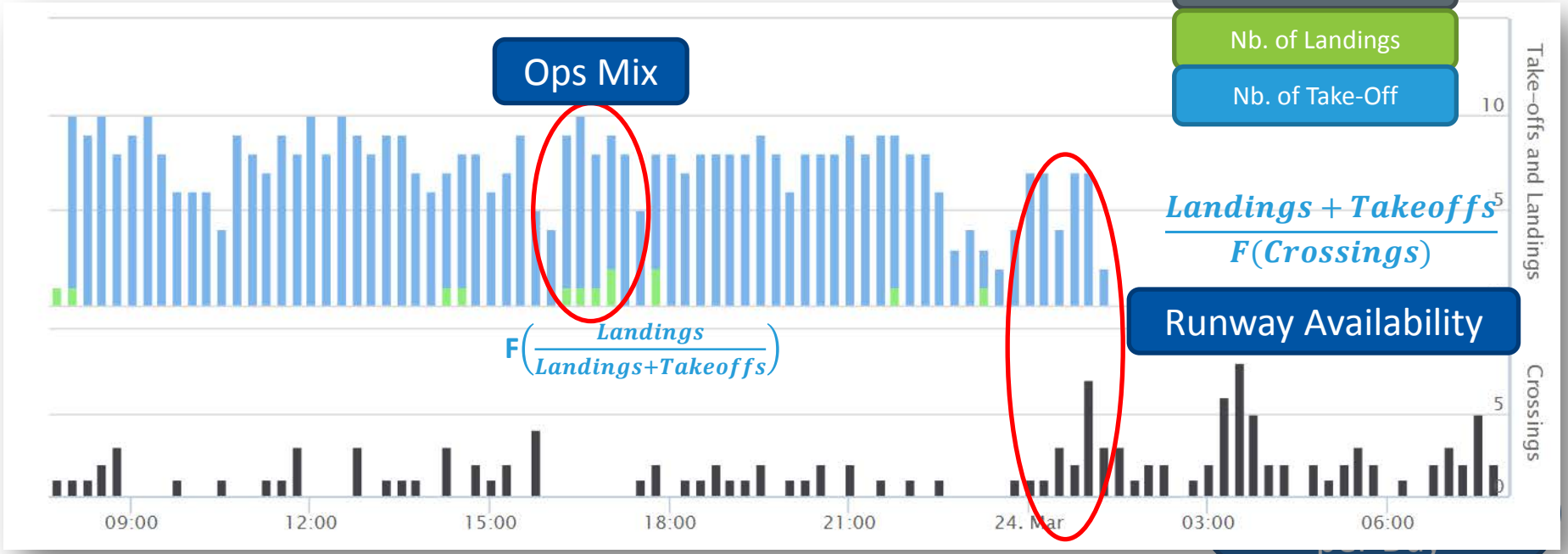
- Nb. of Crossings
- Nb. of Landings
- Nb. of Take-Off

Ops Mix

$$F\left(\frac{Landings}{Landings+Takeoffs}\right)$$

$$\frac{Landings + Takeoffs}{F(Crossings)}$$

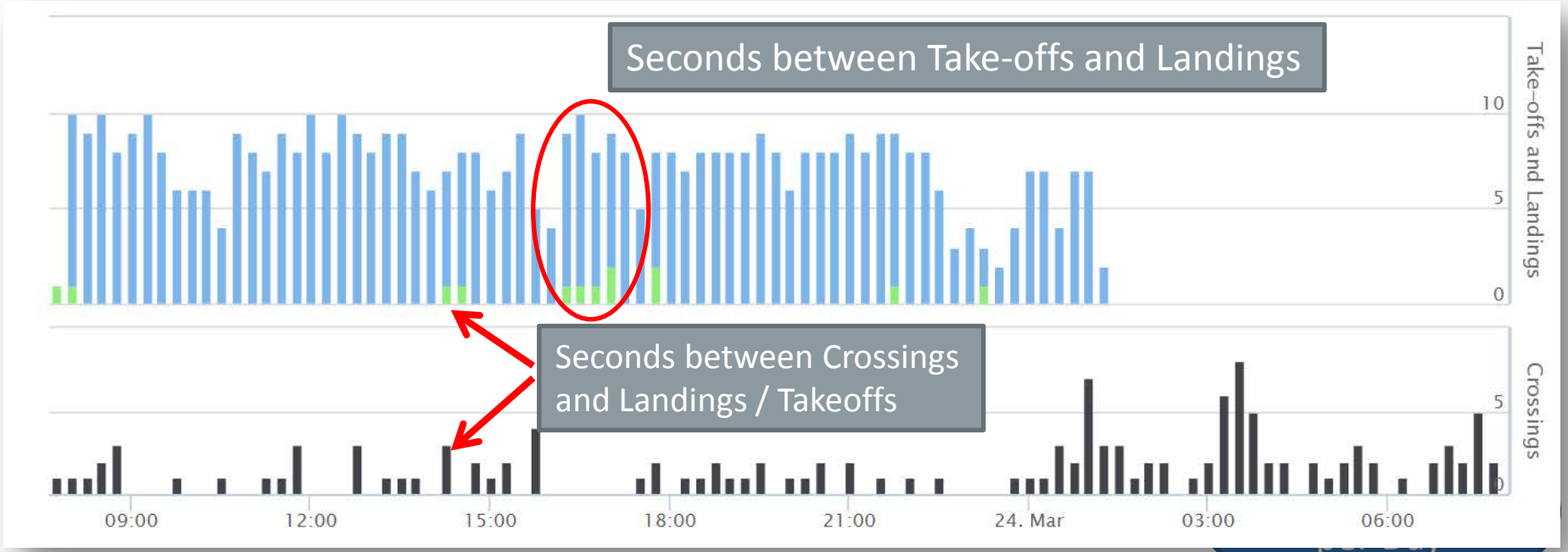
Runway Availability



One day at Hong Kong RWY 07R/25L

per nb of Operations per 15 min

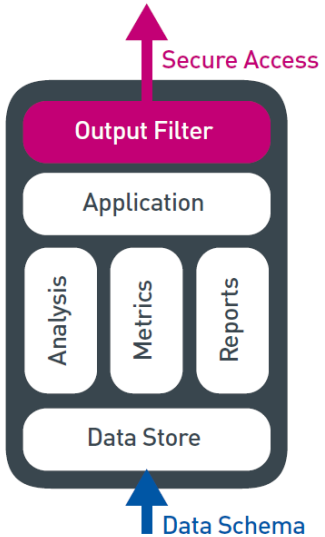
Monitoring Separation



One day at Hong Kong RWY 07R/25L
per nb of Operations per 15 min

Next: Integration into SIMS

The ICAO Safety Information Monitoring System (SIMS) is an ICAO web-based information system comprised of different **applications**, which generate **indicators** in support of State Safety Programmes (SSP) and Safety Management Systems (SMS).



What to participate?

Contact us!

NO COUNTRY LEFT BEHIND

THANK YOU!