

# THALES



## The Challenges of Air Vehicle Traffic Management

EUROCAE HIGH LEVEL MEETING  
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## The Airspace Occupancy Challenge

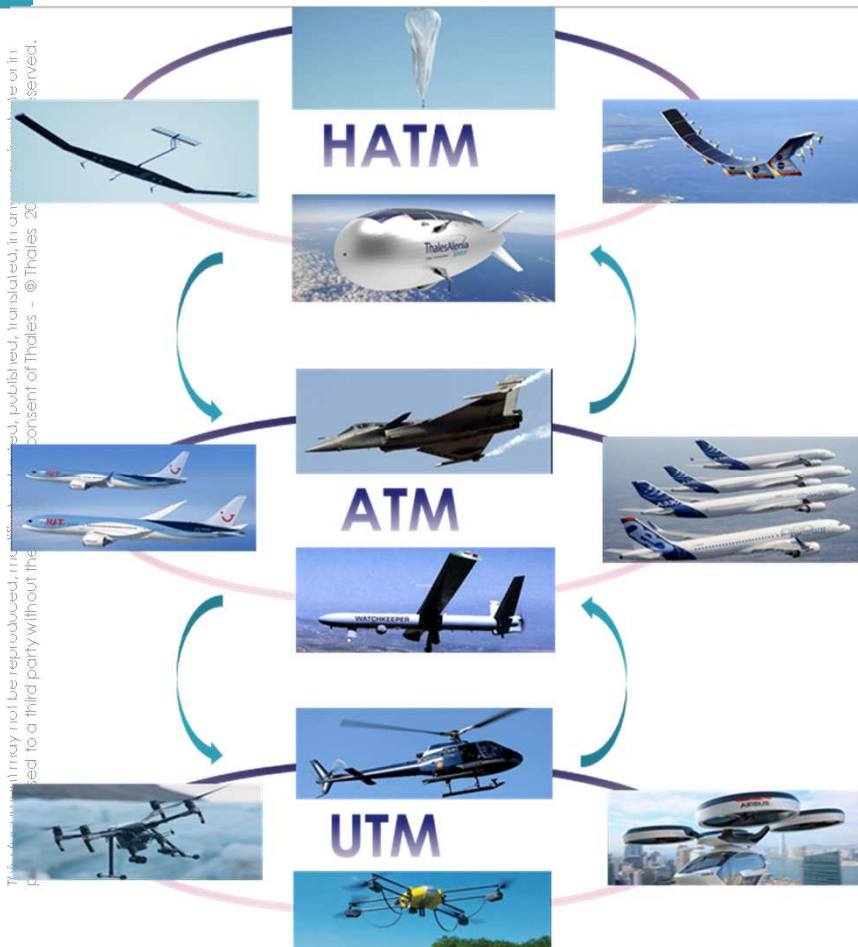


### Airspace is getting more crowded and air traffic becomes more complex

- Increasing density in controlled airspace with RPAS integrated with the usual fleet
- UAS in low altitude with manned aviation and upcoming Urban Air Mobility
- High Altitude Operations and the necessity for HAPS to transit the controlled airspace
- And the need to accommodate future vehicles: commercial space, hypersonic...

*Not forgetting the equally highly demanding challenge of Airport capacity*

# The Airspace Occupancy Challenge



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# The Safety Challenge in presence of new concepts & technologies

## Deep technology and operational changes will be gradually implemented



Digital technologies (AI, Big Data, ML, IoT...) bring a lot of capability  
→ their introduction requires extensive validation for safety critical apps



Vehicle autonomy & increased system automation are inevitably coming  
→ the integration with human-in-the-loop traditional ATM is complicated



Machine-to-machine connectivity (e.g UAS) adds efficiency & capacity,  
→ it opens substantial new cyber threat vectors, with limited human safety net

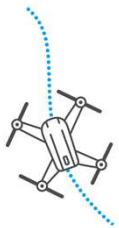


More dense and complex traffic, more instances of severe weather, more types of vehicle, more security threats → more challenges for the safety

*End-to-end safety and security will stay as ones of the biggest challenges facing aviation industry*

# New Business Challenge from emerging concepts and technologies

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UTM by THALES

## Web & Connectivity technologies and practices will impact ATM system architecture, engineering and business models

- Move to Service Oriented Architecture & Cloud Native Technology
- Introduction of service models: IaaS, PaaS, SaaS, Data as a Service
- Service delivery models from conventional HW & SW to full cloud-hosted managed services, with high delivery update cycle
- Models for cloud infrastructure: private cloud or on-premise Data Centres or hybrid solution

## UTM may disrupt ATM concepts, technologies & business models

*New concepts and technologies may overturn in the mid term the established way of doing business*

# The Need for harmonized regulation and standardization

## UTM Emergence requires prompt and intense efforts

- To get the appropriate level of global harmonization in order to facilitate UAS integration
- To set up a defined framework in order to ensure safety and security while enabling competition on a sound basis
- To define the path to the end concept with reasonable steps to facilitate the standardization work, e.g for the short –term:
  - One airspace = multiple UAS operators but one UTM system
  - Interoperability between adjacent airspaces



***Introduction of new concepts and technologies requires a dedicated involvement of the Aviation Community***

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## Thank you for your attention

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