



# Remote Towers and the Digitalising of Middle Eastern & European ATM Infrastructure

Mr Peter Hotham  
Deputy Executive Director

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founding members



# MAKING IT HAPPEN – The Mission



## The Aviation Strategy for Europe

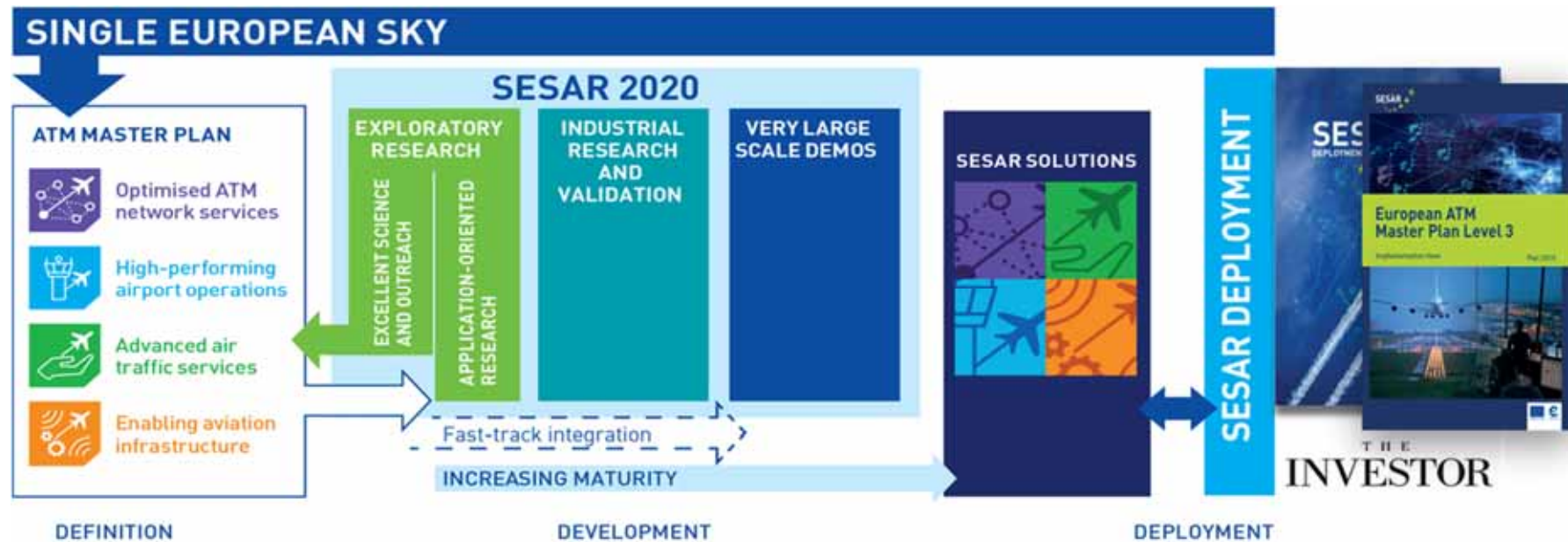
Tackling key challenges in Europe

Maintaining & Protecting our core values  
(Safety, Security, Passenger Rights etc.)

Delivering change through Innovation and  
Digital Technologies

Reaching out beyond Europe

# SESAR Research – A Pipeline to Innovation



2007-2021: 1285M€ of EU funds & 3.6B€ of overall budget

1€ invested in SESAR = 6€ of benefit for Europe’s aviation system

Coordinated and connected internationally and at a global level

# Master Plan Key Features – SESAR 2020 Research



## High-performing airport operations

- Landside & Airside collaborative planning and execution
- Enhanced GBAS approach (e.g. double slope)
- Surface traffic alerts for pilots
- Augmented reality for TWR controller



## Optimised ATM network services

- AU fleet prioritization and preferences
- Dynamic Airspace configurations
- Mission trajectory planning and execution
- Optimized traffic delivery based on Increased collaborative Demand and Capacity Balancing



## Advanced air traffic services

- Virtual ATC operations
- Flight Centric operations
- Multi Sector Planning
- FMS trajectory prediction used by Ground Flight Data Processing Systems



## Enabling aviation infrastructure

- Common services (e.g. Delay Sharing, Data centre for virtual ATC)
- Air/Ground SWIM
- Flight Object interoperability
- Future satellite data link technology

# SESAR Research – Delivering Results



63 SESAR Solutions

24 Solutions being deployed

Global Solution uptake happening

Operational Benefits being realised



# SESAR Solution Example

## Delivering:

- Results that matter
- Results that make business sense
- Results that are relevant for a wide range of stakeholders
- Results with spin-off into wider virtualisation and augmented reality initiatives

## European remote tower initiatives



# VIRTUALISATION – An ATM Digitalisation Initiative



Remote Tower technology & operations across multiple airports.

Use of augmented reality to enable special purpose operations.

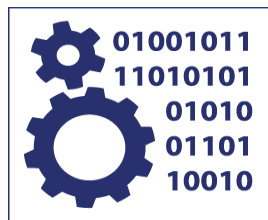
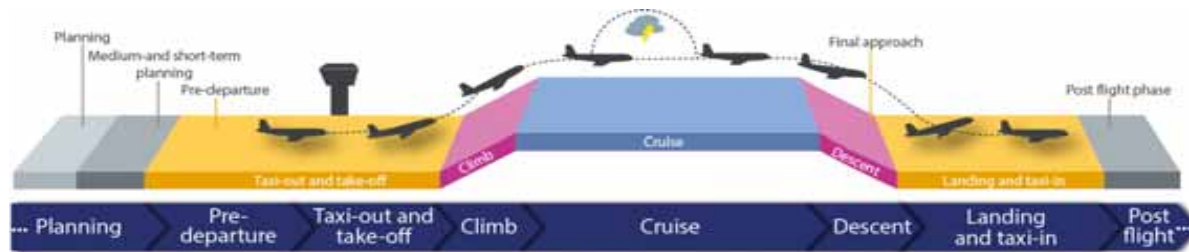
New service business models that can operate across borders.

## Leading to ....

virtual control centre(s) that maintain air-vehicle operations and services in exceptional circumstances, including across national boundaries.



# Only one of the Building Blocks of SESAR



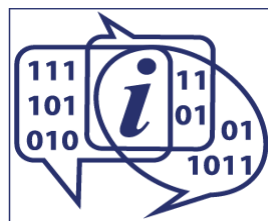
Automation support



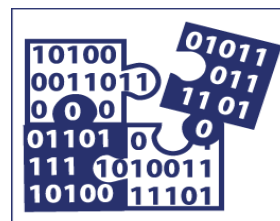
Flight- and flow-centric operations



Integration of all vehicles



Sharing of information



Integrated systems



Virtualisation



# INTEGRATION of all Vehicles

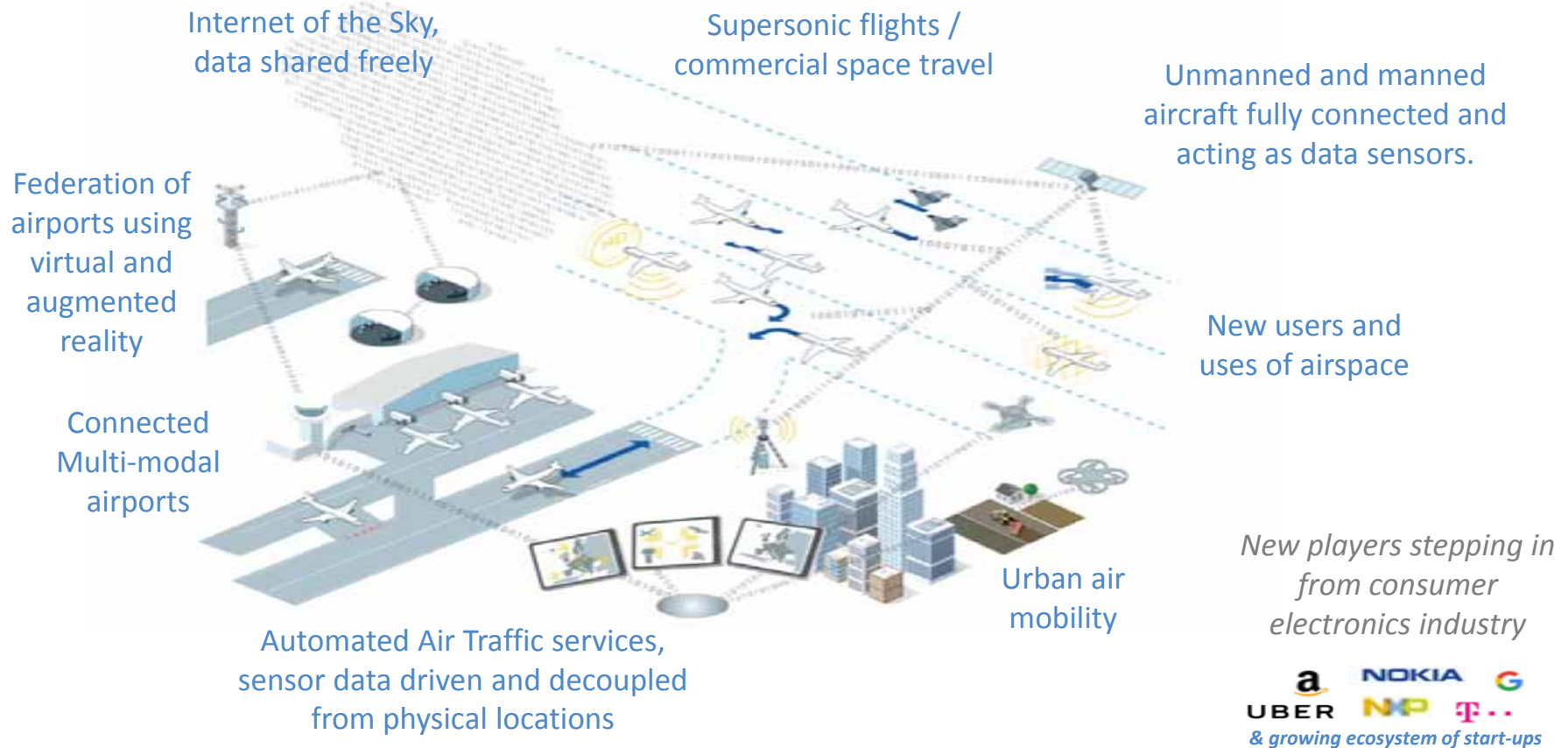


New players .....

- Drones, small & large accommodated then integrated
- Automated vehicle operations
- Space plane & balloon ops
- Urban passenger & freight services
- Special missions by remotely managed & autonomous vehicles



# AVIATION ECO-SYSTEM - Real-world Challenges



# MAKING IT HAPPEN – The Planning

## In Europe:

Delivering the next significant update of the Master Plan in **2018** under the overall theme of “**the digitalisation of aviation infrastructure**” with particular focus on **Drones** and **CNS**.



## With ICAO:

In preparation for Global Air Navigation Plan (GANP) 2019.



# Closing Remarks

**Today, airspace is occupied mainly by traditional manned aviation**

*Traditional piloted fixed-wing and rotorcraft with limited connectivity*



> Thousands of aircraft in the sky

> **Adaptation of current system is not an option to continue European aviation success story (from an industrial, innovation and sovereignty point of view)**

**Tomorrow, Digital Aviation infrastructure to enable all air operations**

*Connected airplanes and rotorcraft, drones, urban air mobility and air taxi services*



> Hundred of thousands of connected flying vehicles in the sky

Source: Pictures from Airbus, Uber



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Thank you very much  
for your attention!



founding members

