

# Saab Digital Sky -



## expanding the digital tower centre...for drones

Live Drone Demo Day – Linköping October 5<sup>th</sup>

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# Strong demand for "traditional air travel" beyond 2040



**New trends are emerging but too early to estimate traffic impact**  
Social and environmental considerations will play a role



Corporate travel evolution



(Alternative) Energy cost



Environment awareness  
and passenger behaviour



# Saab ATM Product portfolio today !

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## ATC Automation

I-ATS takes your tower and controller operations to the next level of automation



## Digital Towers

World leading digital and remote tower solutions.



## CDM & Efficiency

Power your decisions and maximize performance at every stage to reduce delays, costs and environmental impact.



## CNS

Critical situational awareness and safety at all weather conditions for ANSPs and airport operators



# Towards Digitalized ATM & Airports



**DIGITAL TRANSFORMATION new Services  
...on almost every ANSPs agenda!**

Our Shared Vision  
for 2045





# CANSO – IATA – ACI → consolidated view

## Members of the CATS Global Council



## Complete Air Traffic System (CATS) Global Council

### Our Shared Vision for 2045



## 2045 Vision Narrative

In 2045, a wide range of airborne vehicles share our skies.

We all operate in a fair, intelligent, interoperable global airspace that is user-centric, technology-agnostic and performance-based.

Similar to user demand; technology, digitisation and data have fuelled the rise of new and improved services, which are provided to a larger than ever number of manned and unmanned aircraft with more efficient levels of performance. A network of real-time data, machine-to-machine communications and automated technology are dramatically shifting the competitive environment and business models, with service providers capitalising on opportunities in information management and technology, data-based services and connectivity with other transport modes, for example, air taxis and autonomous vehicles in urban environments.

Automated, digitised and data-powered, we're each a node in a smart, connected network that's resilient and scalable in the face of disruption.

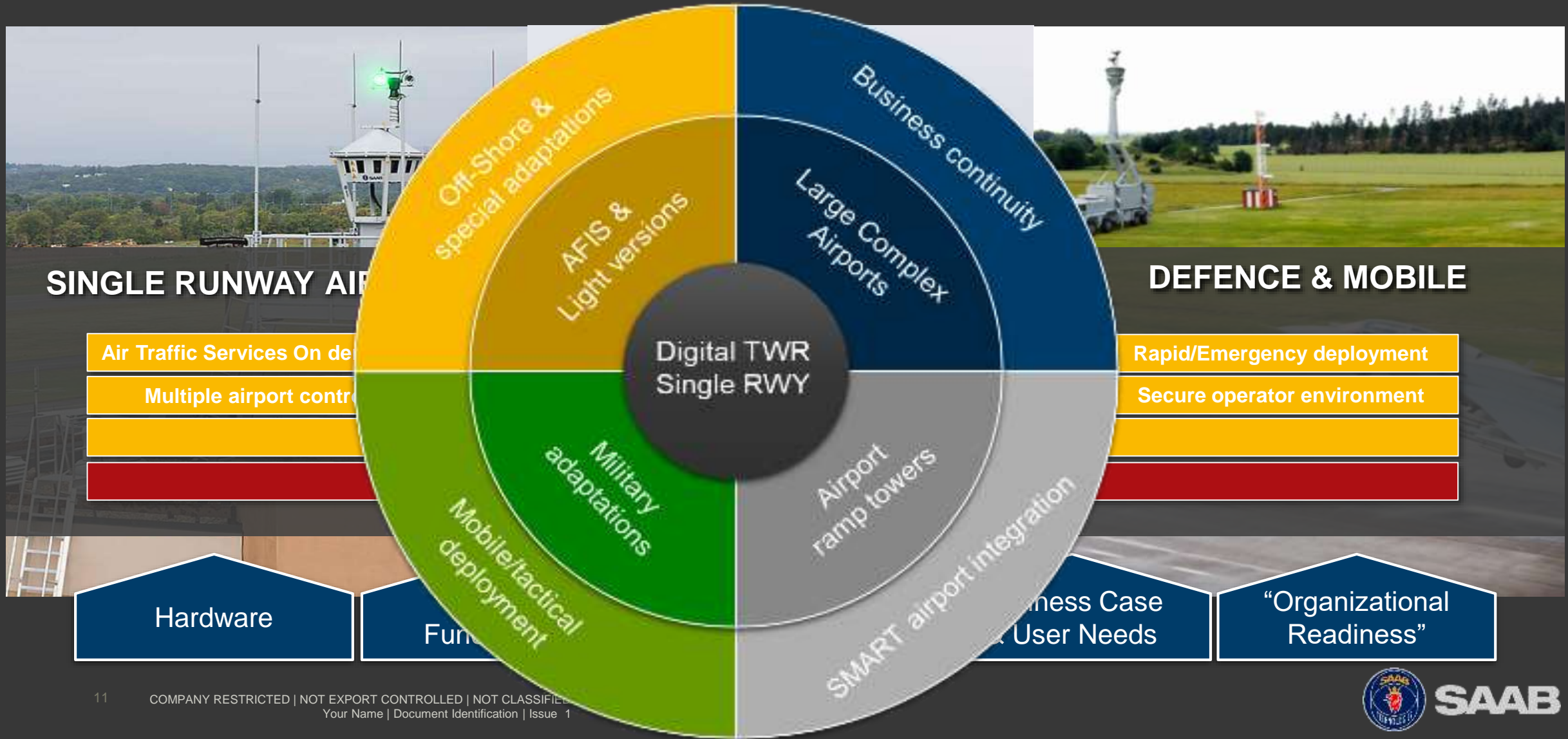
Seamless point-to-point travel is facilitated by a harmonised, integrated system; permitted by common regulatory frameworks and underpinned by global safety standards.

Airspace is maximised to its fullest potential as a global resource, powering growth and prosperity. Airspace design and allocation is system-centric, mission-led and performance-based.

The aviation sector is a healthy, competitive marketplace, its culture is one of agility and innovation, and the airspace management community is thriving with a new generation of highly-skilled talent.



# A Solution to meet **multiple Use Cases**






# r-TWR Install




 **UK**  
London City Airport



 **USA**  
United Airlines - Houston &



 **GERMANY**  
NATO Base, Geilenkirchen



## Traffic Management at Saab

54m • 

NATO Air Base Geilenkirchen goes operational with digital tower. The base is equipped with a Saab r-TWR system.

[#Nato](#) [#airbase](#) [#remotetower](#) [#saab](#)



NATO Air Base Geilenkirchen goes live with Digital Tower from Saab



**EDEN**  
Sundsvall Örnsköldsvik, Sundsvall,  
Ångermanland, SMA



**LAND**  
Shannon



**ium**  
Liege/ Liege RTC



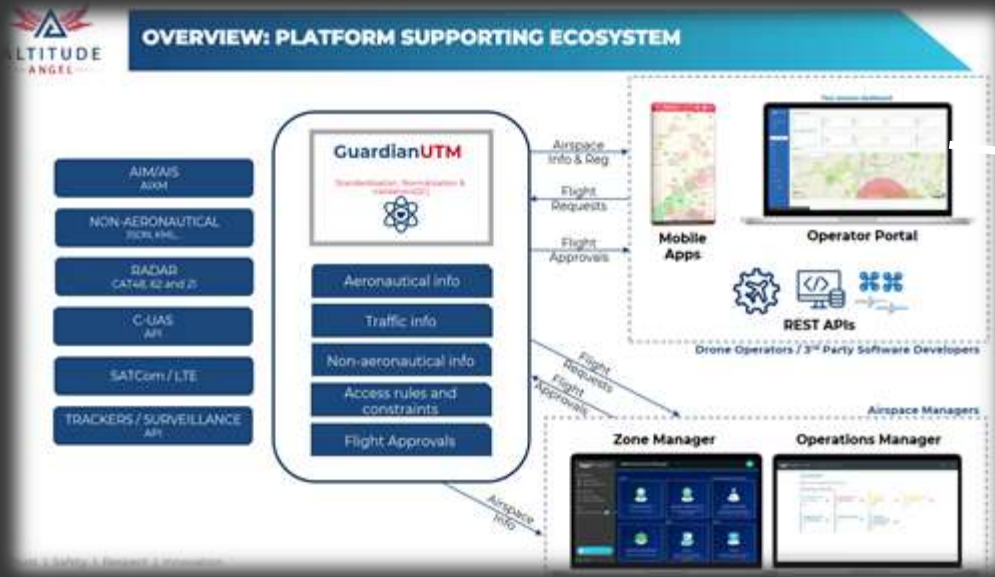
# r-TWR Deployable

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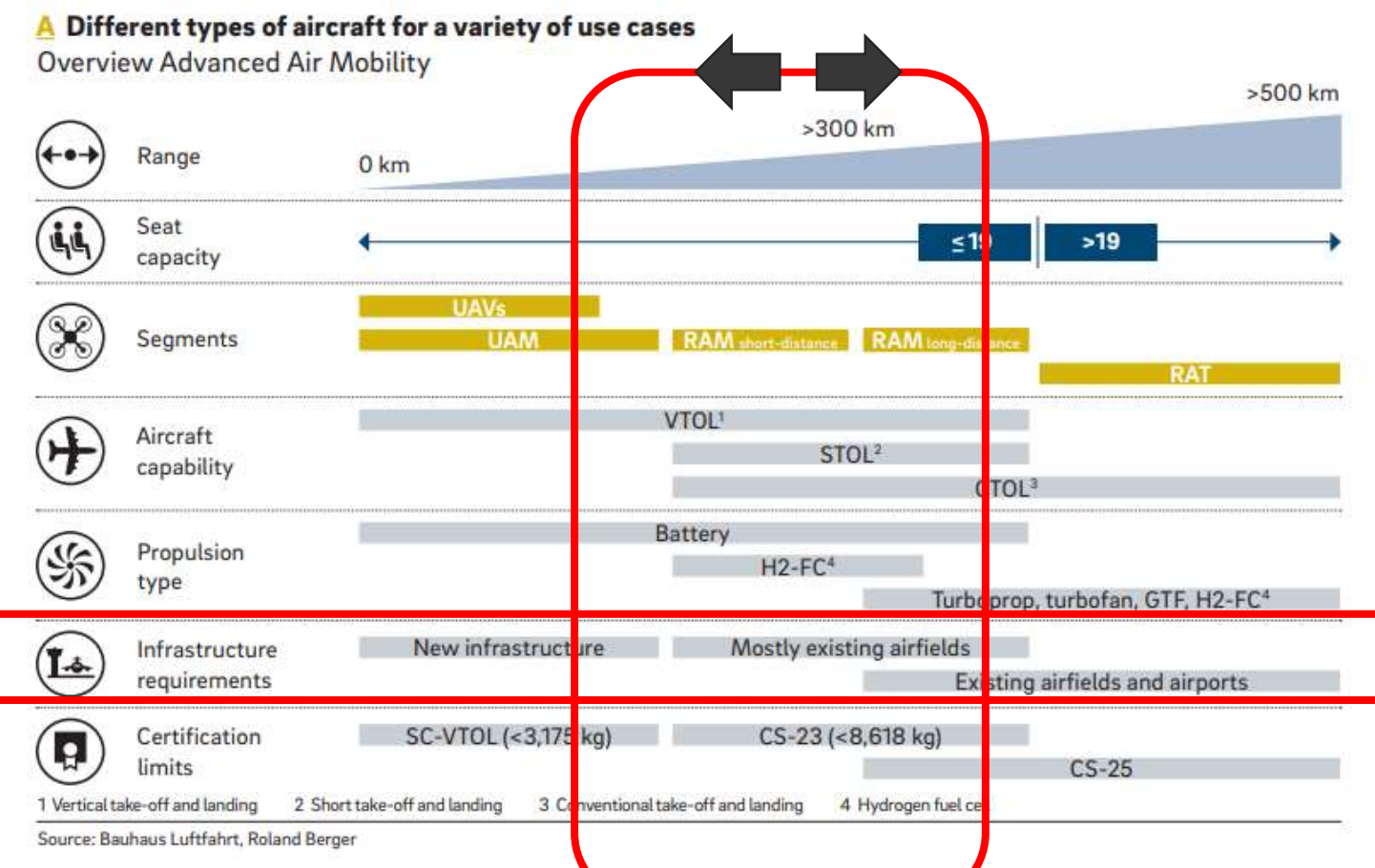
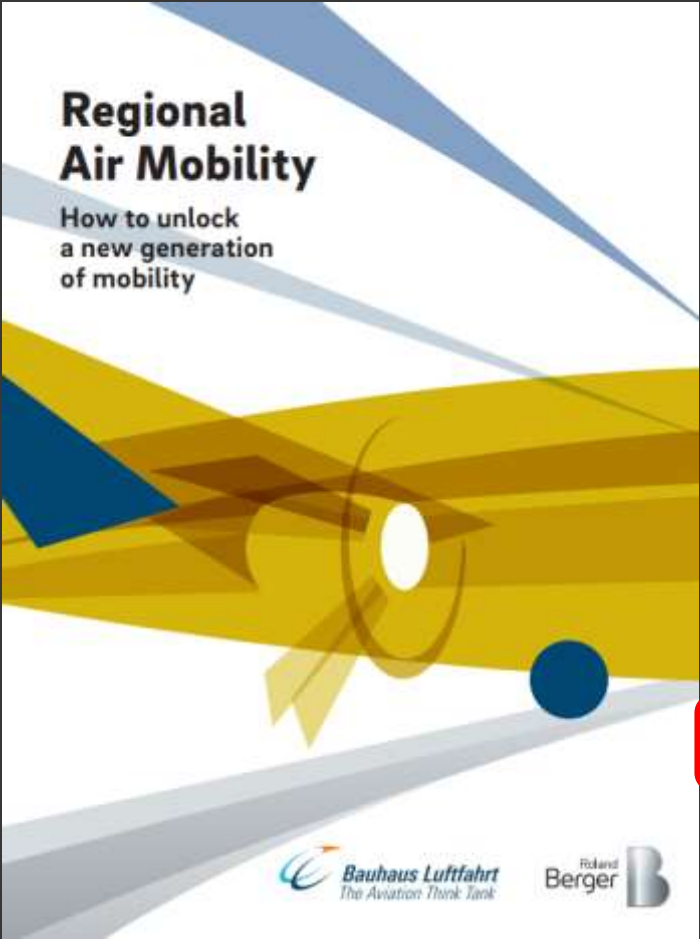
# Integration of Altitude Angel Guardian UTM



- ✓ Common concept
- ✓ Validated integration
- ✓ Coordinated road-map and support concept



# New vehicles and services is in constant evolution





# Air Traffic Management revenue streams

**PAX AIR TRANSPORT  
INDEXED VALUE STREAM**

**Traditional revenue stream**  
based on passenger and goods  
- Maintained or reduced



- **New revenue** stream based on drones, UAM, electrification of flights etc
- Expanding fast during the period

## Drone and UAM operations

UTM/ UAM  
servicea

Electrical /  
Hydrogen  
infrastructure

Autonomous/  
Smart airport

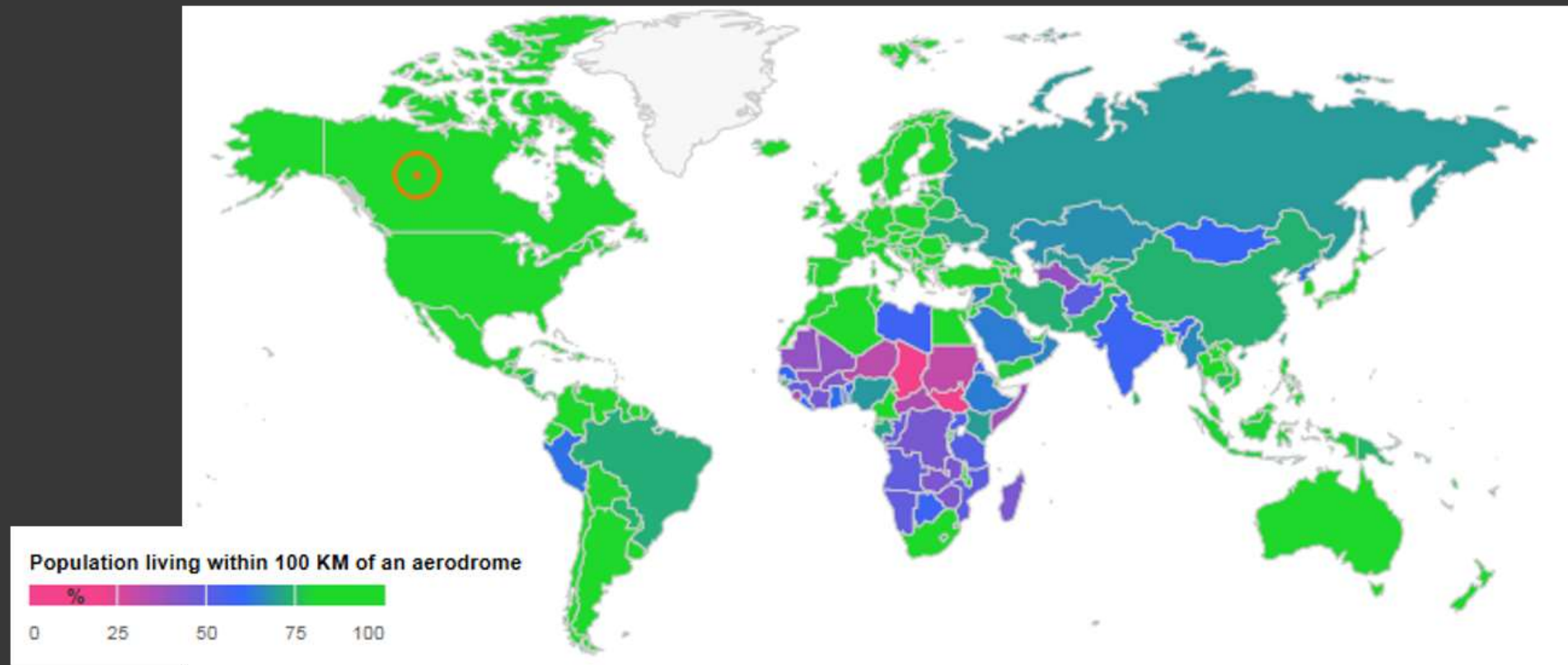
**\$ Billions.... But business model is not clear yet**





# New Aviation ECO system will increase the number of airports – using new Air Mobility

## Airport Accessibility





# Drones – use cases → driving U-SPACE/ UTM



1. remove people from dangerous work;
2. reduce the number of people needed;
3. reduce the number of steps in the process;
4. replace more costly methods;
5. access inaccessible (by humans) locations;
6. perform tasks quicker or more efficiently;
7. and, perform functions people do not want to perform / not strong enough labor pool.

AGRICULTURE

**RETAIL – Last Mile Delivery**

HEALTHCARE

ENERGY

SPORTS AND ENTERTAINMENT

HOSPITALITY & TOURISM

URBAN PLANNING

INSURANCE

MANUFACTURING AND INVENTORY MANAGEMENT

SHIPPING

AIRLINES AND AIRPORTS

REAL ESTATE

MINING AND RESOURCE EXPLORATION

WEATHER FORECASTING

CONSTRUCTION

TELECOMMUNICATIONS / ENTERTAINMENT

EMERGENCY RESPONSE

FOOD / RESTAURANT INDUSTRY

<https://www.dronegenuity.com/commercial-drone-use-cases-comprehensive-list/>





# Initial UAM/AAM use cases

## C Use case 1: Air taxis

### On demand point-to-point operations

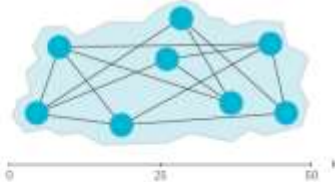
- On-demand point-to-point non-stop service from one destination to another
- Optimally used under the following circumstances:
  - Short distance between two landing sites
  - Fluctuating medium/high demand between two landing sites



- High network coverage
- Fastest travel times between two points



- Schedule frequency depending on # of air taxis
- High number of routes to cover all points
- Large amount of landing sites required to create network
- Sufficient air space (no restrictions) required to make use of direct point-to-point network



■ UAM landing site ■ Metropolitan area — On-demand service

Source: Roland Berger

## D Use case 2: Airport shuttles

### Scheduled short-range operations

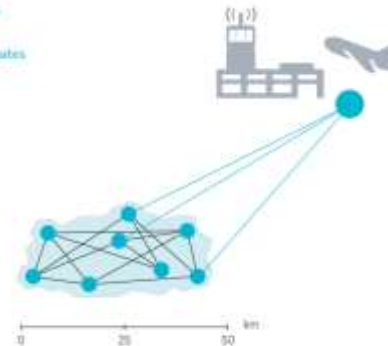
- Scheduled operations with fixed flight plans and pre-booked flights
- Flight schedule adjusted to arrival and departure times of airport
- UAM landing sites strategically located very close to terminal and gates



- Fastest transportation option between airport and city
- Transfer from plane to UAM on air-side of airport possible (very short transfer times)



- Interference with commercial airline operations problematic
- Scheduled operations



■ UAM landing site ■ Metropolitan area — On-demand service — Scheduled service

Source: Roland Berger

## E Use case 3: Intercity flights

### Scheduled medium- to long-range operations

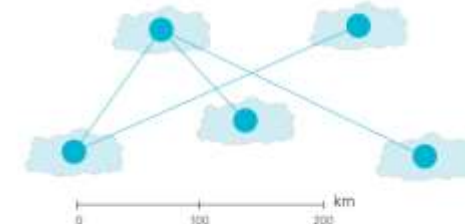
- Intercity flights to other larger cities close by, which are too close even for regional airlines
- Fast UAM connection between cities favorable for commuters and business travelers
- Short travel times let metropolitan areas grow closer



- Significantly reduced travel times between two cities
- The only high-speed travel option without much infrastructure need (compared to establishing high-speed train services)
- Scheduled operations with predictable demand

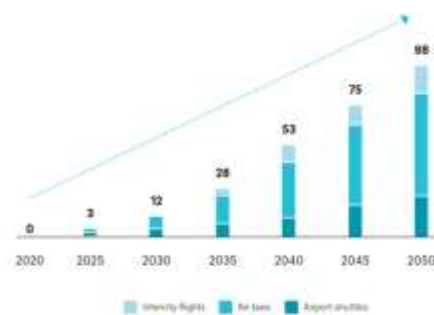


- Long flight times pose challenges to technology (batteries, motors etc.)
- Alternate landing sites required along the way in case of emergency



■ UAM landing site ■ Metropolitan area — On-demand service — Scheduled service

Source: Roland Berger



Note: Estimated that <100 cities will have UAM operations in 2050  
Source: Roland Berger

- Many new landing sites ( vertiports or similar) at and out of airports
- Use of "non used" airspace in combination with used airspace
- IFR/ VFR needs
- Range will groove over time
- Integration with other types of traffic !
- Expansion of U-SPACE regulation possible



# Scope of Saab Digital Sky



Airport services - CDM



ATM – UTM - UAM centre



Local/National UTM/ UAM systems –incl. SUR/



Digital Air Traffic Control and Automation



Civ/ Mil (C-UAS) integration –  
Smart Air Base



SAAB



# It's about supporting an expanding infrastructure

Enabling SERVICES for Air Traffic Management,  
UTM/ U-SPACE  
Air Mobility/ UAM) and electrical flights



Common redundant, safe and digital  
and regulated infrastructure for  
traffic management

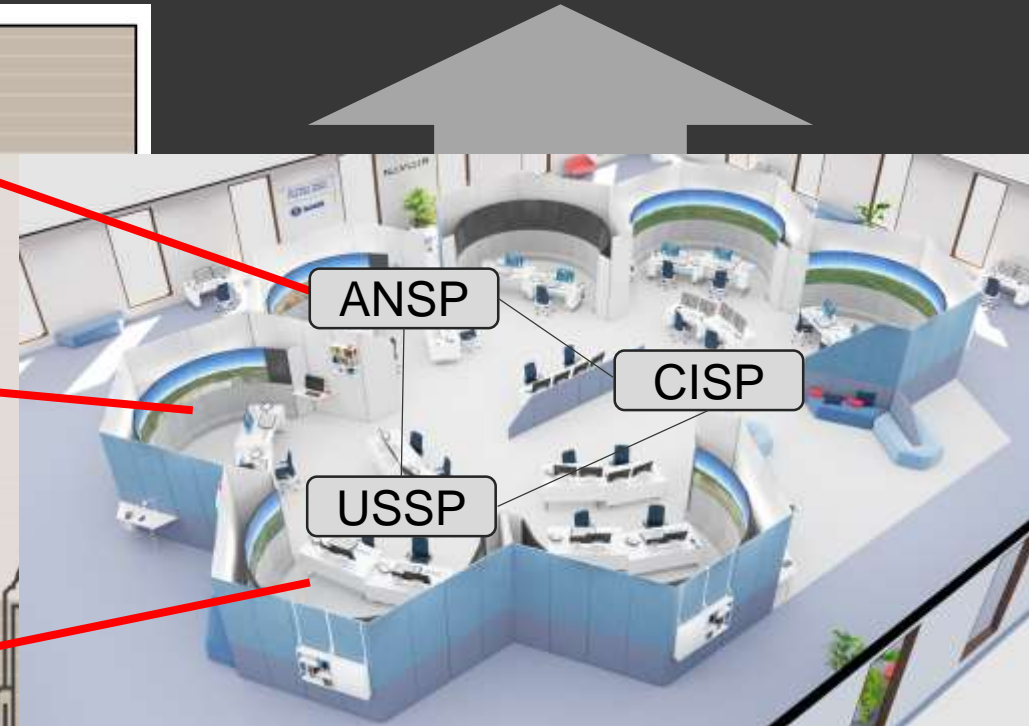
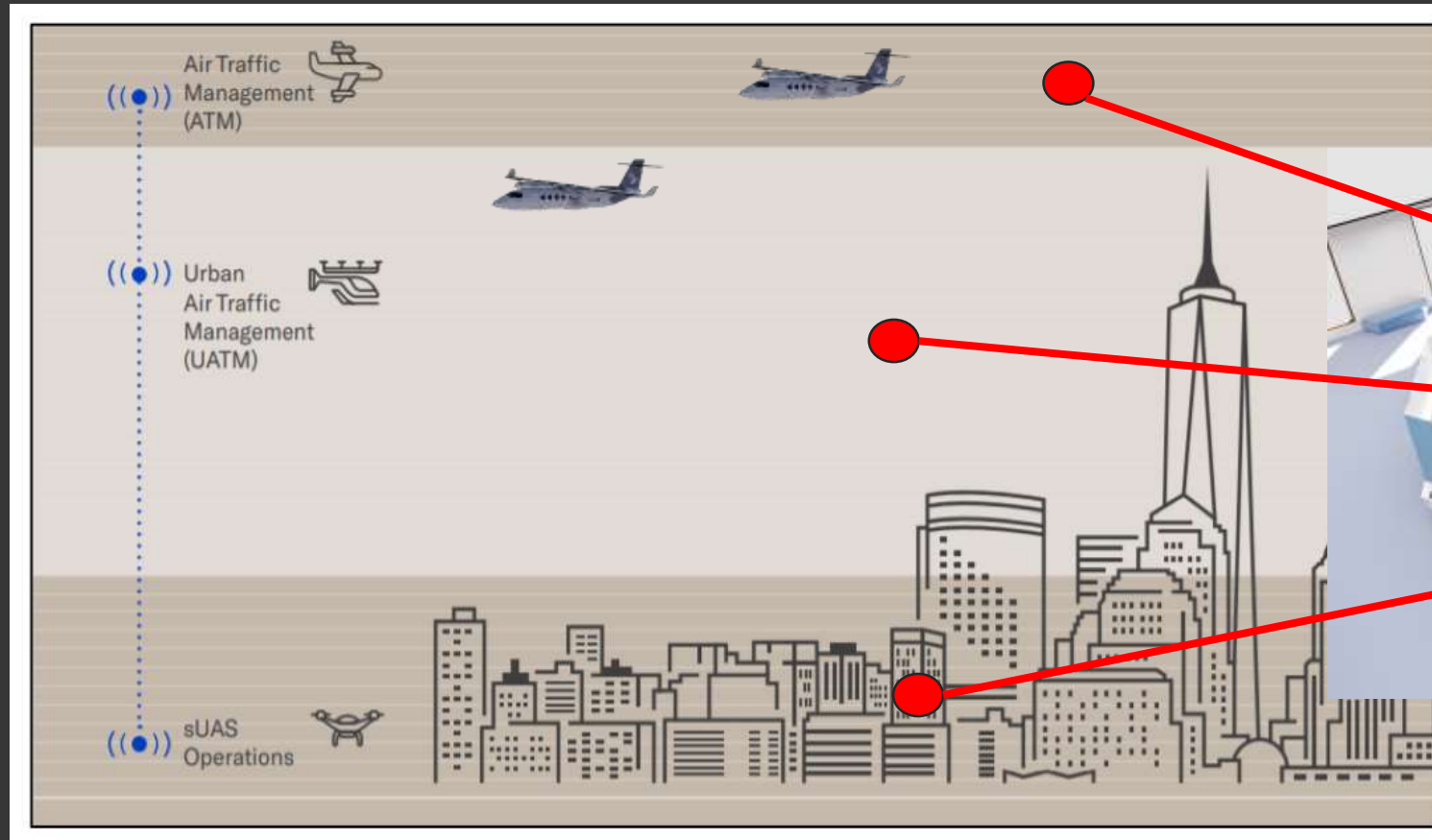




# It's all about Traffic Management – safety and capacity

Enabling SERVICES for Air Traffic Management,  
UTM/ U-SPACE  
Air Mobility/ UAM) and electrical flights

Civil & Military



Common redundant, safe and digital  
and regulated infrastructure for  
traffic management

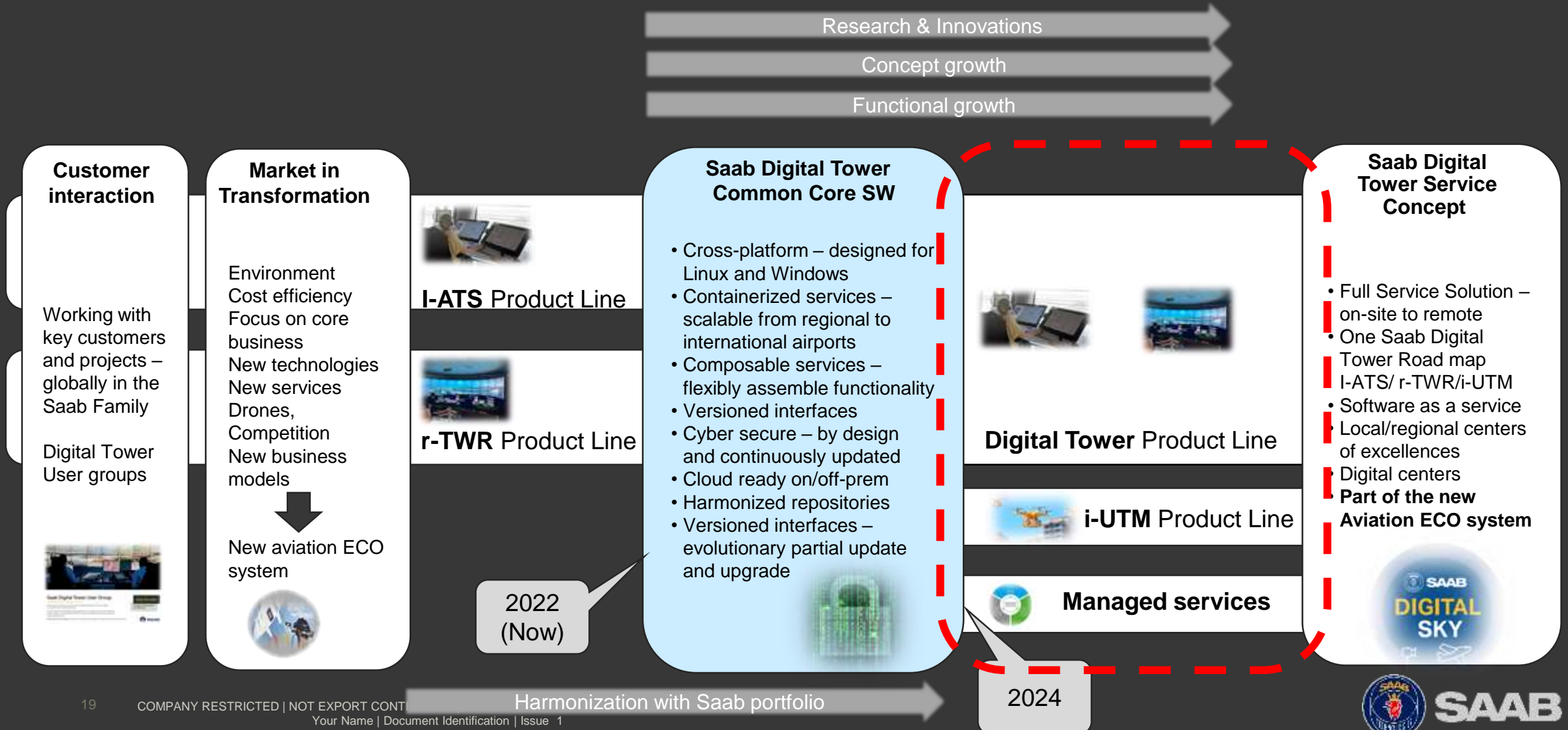


# It's all about airspace...its complicated





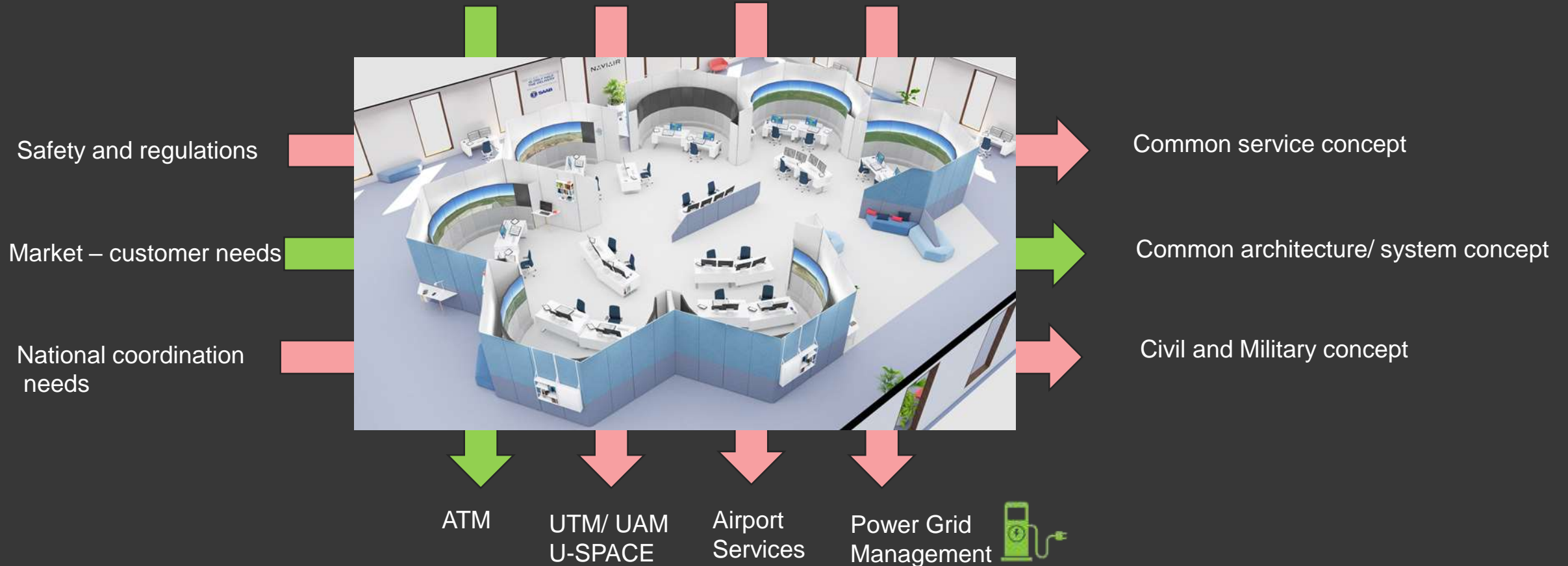
# First step towards the Saab Digital Sky and the Saab product portfolio for tomorrow !





# Focus of Saab and Autonomous Airport Project

## The r-TWR Centre – enabling Saab Digital Sky







Thank you!

[www.saab.com](http://www.saab.com)

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