



strategy&

Part of the PwC network

Flying Beyond the Horizon

Study on the current maturity level and future perspective of the Italian and International Advanced Air Mobility ecosystems

Next Generation Mobility

Torino, 18th and 19th of September 2024

Today's agenda

Agenda

1. Overview of our methodology and framework
2. Discussion on key findings and evidences
3. Appendix



Our work is the result of an ongoing commitment in contributing to international development of AAM ecosystem

Who we are

01

WHO WE ARE



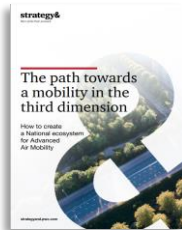
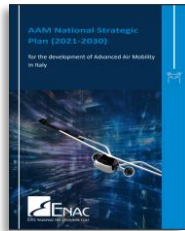
WE ARE **ACTIVELY CONTRIBUTING TO NATIONAL DISCUSSIONS ON AAM** THROUGH ENGAGEMENTS AND BRANDED MARKET RESEARCH

02

WHY WE ARE HERE TODAY



THIS PRESENTATION CROWNS YEARS OF RESEARCH AND CONTRIBUTIONS IN THE FIELD GETTING TOGETHER EXPONENTS FROM THE **ENTIRE ECOSYSTEM** WITH THE AIM OF FOSTERING INTERNATIONAL COLLABORATION



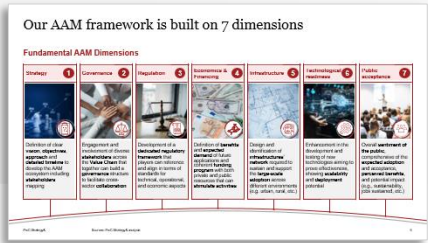
We have developed a framework to analyze the maturity of the Advanced Air Mobility (AAM) ecosystem in a country

Analysis Methodology

AAM Framework definition

- ✓ Identified **7 fundamental ecosystem dimensions**
- ✓ Defined a detailed **scoring matrix** encompassing **5 maturity levels**

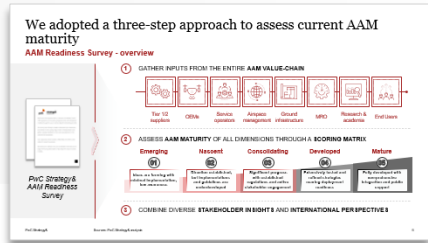
Sector expertise, market research, conferences, newspapers



Data Gathering

- ✓ Developed and shared the **“AAM Readiness Survey”**
- ✓ Conducted **targeted interviews** to grasp additional insights

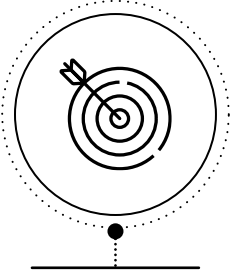
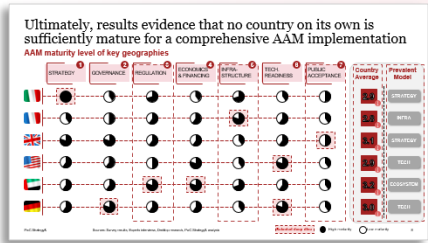
Leading Value Chain players, past clients, Sector Experts, S& PwC international network



Maturity assessment

- ✓ Assessed the **maturity of each country** leveraging survey results and detailed interviews
- ✓ Assigned a **score from 1 to 5** for each dimension

S& PwC national and international network, Sounding board with industry players & experts



Our **final objective** is to identify common **key factors** and unveil **joint international solutions** by leveraging panels from various sectors and countries.

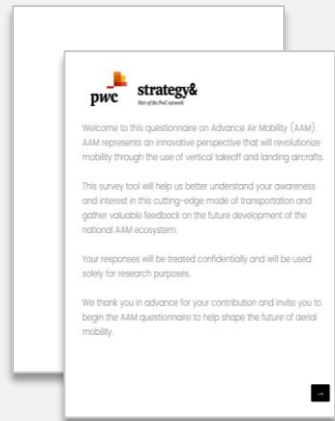
Our AAM framework is built on 7 dimensions

Fundamental AAM Dimensions



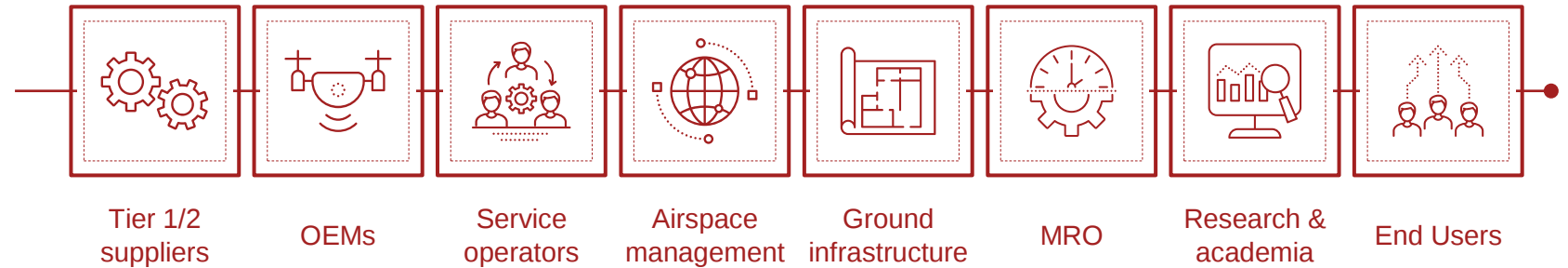
We adopted a three-step approach to assess current AAM maturity

AAM Readiness Survey - overview



PwC Strategy& AAM Readiness Survey

1 GATHER INPUTS FROM THE ENTIRE **AAM VALUE-CHAIN**



2 ASSESS AAM MATURITY OF ALL DIMENSIONS THROUGH A **SCORING MATRIX**

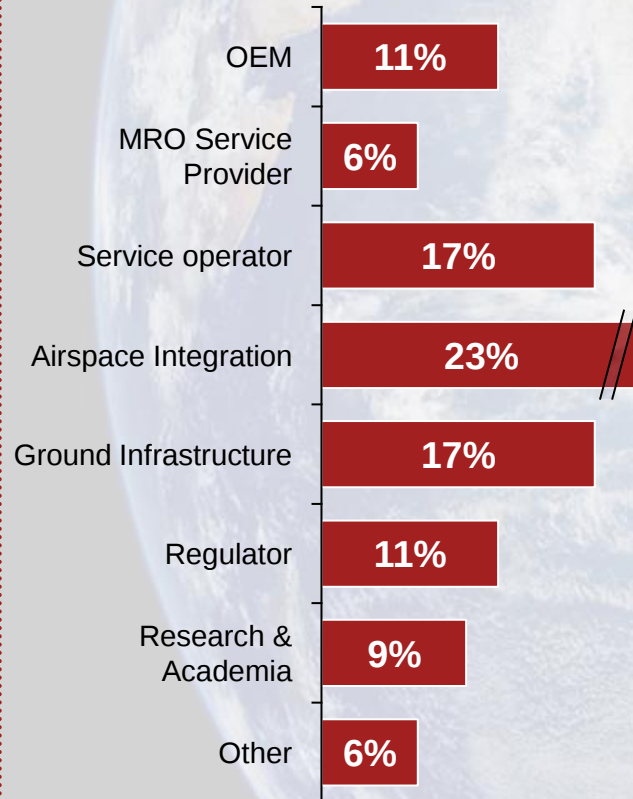


3 COMBINE DIVERSE **STAKEHOLDER INSIGHTS** AND **INTERNATIONAL PERSPECTIVES**

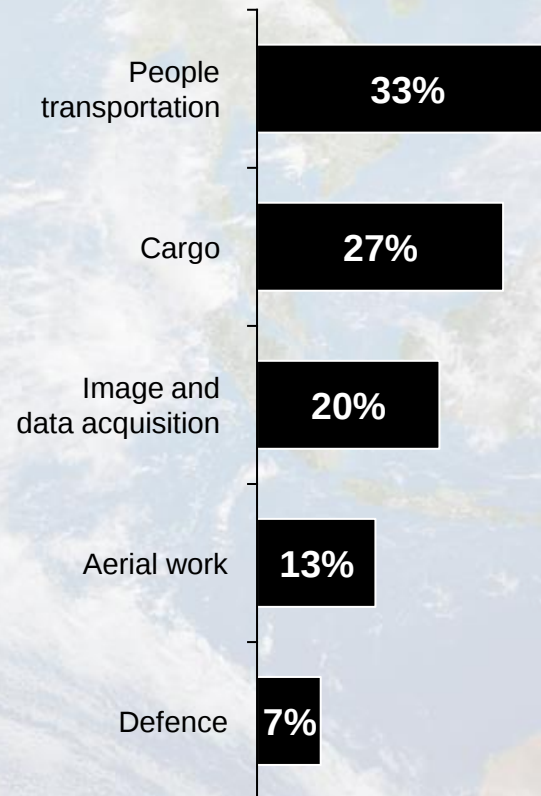
Our survey allowed us to reach an extremely diverse range of respondents guaranteeing full coverage of the AAM ecosystem

AAM Readiness Survey - respondents

Value Chain Position



Mission Specification

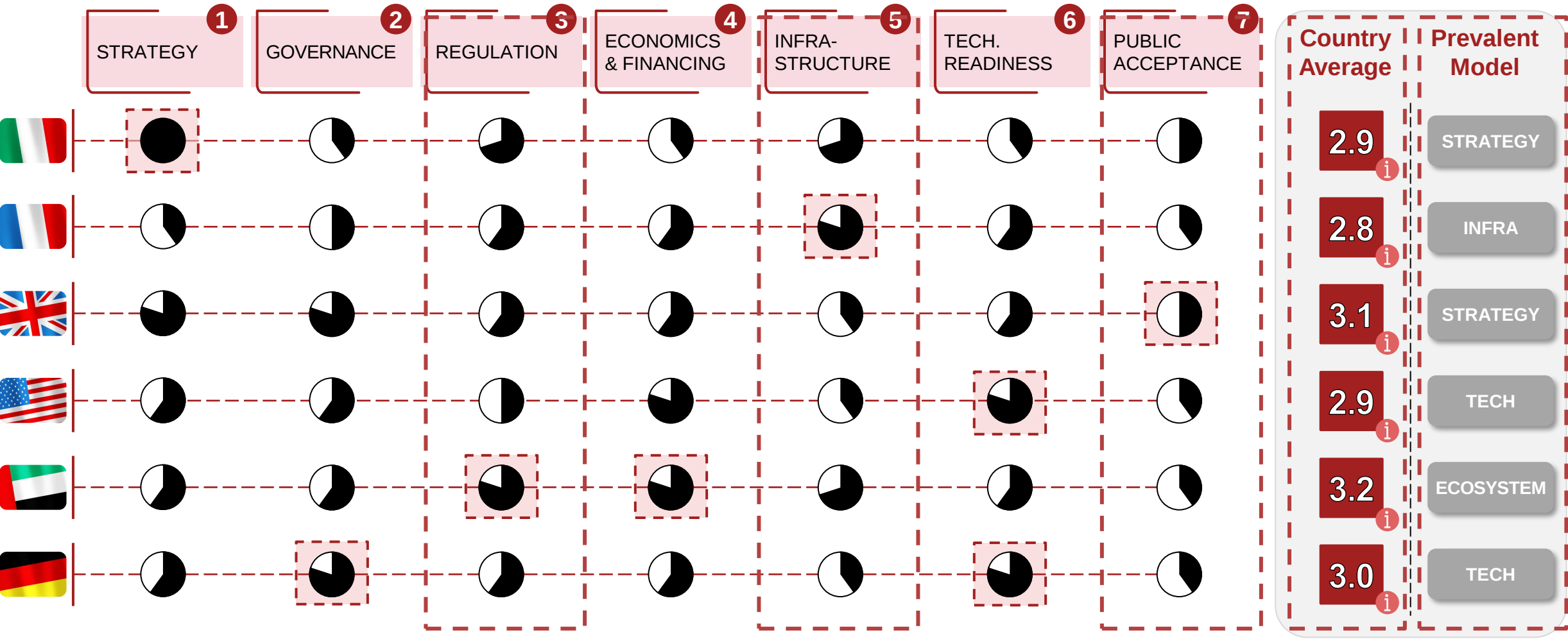


Countries



Ultimately, results evidence that no country on its own is sufficiently mature for a comprehensive AAM implementation

AAM maturity level of key geographies



National AAM ecosystems development is driven by different dimensions for each country

Current status

SIMILAR OVERALL MATURITY



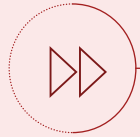
Overall AAM maturity for the analyzed countries has **proven to be similar in a consolidating landscape**, negligible differences in overall country scoring

DIVERSIFIED DEVELOPMENT MODELS



Countries have leveraged on **4 different models** to reach a similar level of AAM maturity – Strategy, Technology, Infrastructure and Ecosystem – developing **best practices** in **specific dimensions**

HIGH SECTOR DINAMICITY



The **development pattern** of the AAM sector is **highly volatile** with countries that have seen a **slowdown** of their **maturity** level (US) and countries which have made **substantial advancements** (UAE)

CRITICAL DIMENSIONS



To **increase the maturity of the AAM ecosystem**, it is paramount to **focus on 3 dimensions** which emerged as critical – Regulations, Infrastructure and Public Acceptance

Sharing best practices, continuous planning, and strong regulations are key to advancing global AAM market readiness

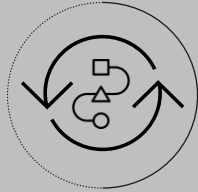
Looking forward

REGULATIONS AS MAIN ENABLER



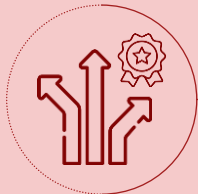
Developing a comprehensive set of regulations is essential, as they serve as main enabler for **vehicles and infrastructure development** fostering **AAM market** to reach its **full potential** and driving **future advancements**

CONTINUOUS PLANIFICATION



Continuous centralized planning is crucial to navigate the **rapid evolving and dynamic AAM market**, ensuring that **National initiatives** remain active and fit for purpose with a **clear Governance**

LEVERAGE NATIONAL BEST PRACTICES



Sharing and applying cross-country best practices can significantly help **Nations** to **solve their bottlenecks** and **improve their underdeveloped areas**, enhancing global **AAM readiness**

Q&A

?



*We encourage the audience to share their questions
~ 10 minutes*

strategy&

Thank you

strategyand.pwc.com

© 2024 PwC. All rights reserved.

PwC refers to the PwC network and/or one or more of its member firms, each of which is a separate legal entity. Please see [pwc.com/structure](https://www.pwc.com/structure) for further details.

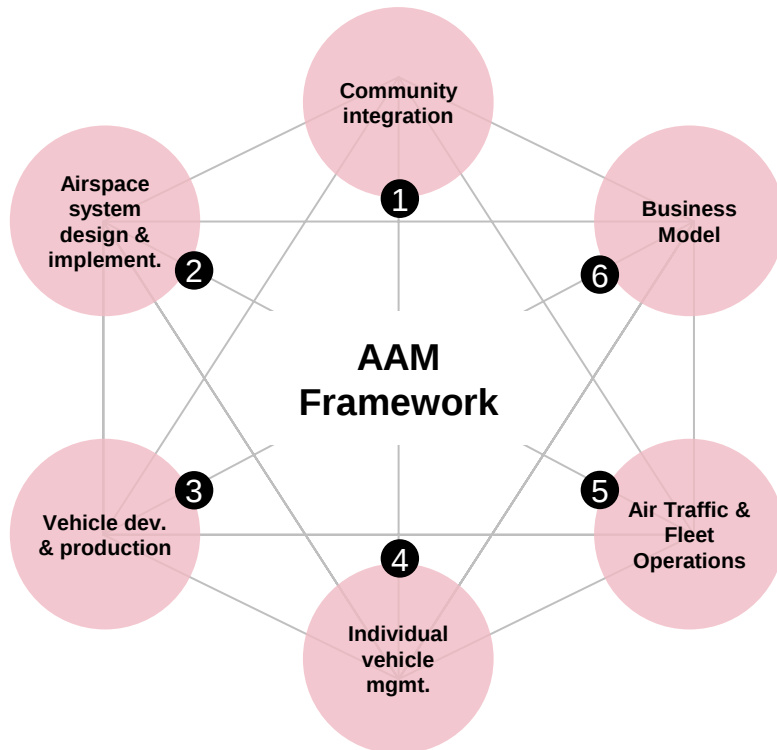
Disclaimer: This content is general information purposes only, and should not be used as a substitute for consultation with professional advisors.

The Italian National Strategic Plan demonstrated to effectively guide operations due to three key distinguishing factors

Italy: National Strategic Plan ENAC

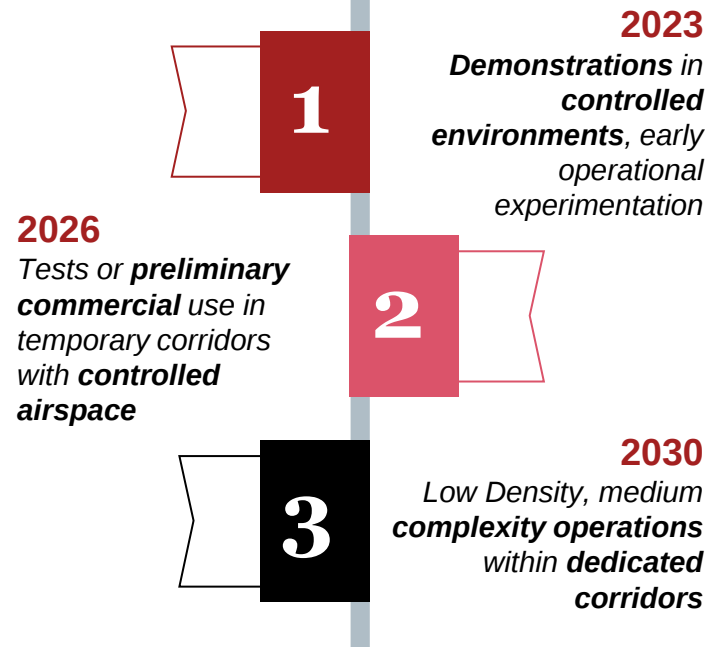
1

Ad-hoc Framework



2

Detailed Timeline



3

Targeted Funding



Specific funding plan over **10 years** and **4 targeted areas**:

1. Development of Roadmap's activities
2. Demonstrations and trials
3. Vehicles and platform development
4. Creation of infrastructure network

Germany: AMI initiative



Description



The first Bavarian U-space is being developed in order to test, validate and demonstrate concrete use-cases in a safe environment



Through the research projects **AMI-AirShuttle** and **AMI-FlyingIN2Air** players design **vertiport concepts** for the areas of Munich, Ingolstadt and Nürnberg to prepare the planning, approval, construction and operation of vertiports



DIEHL

Aerospace



8 Research Projects along the key modules, each with a specified **objective**, **duration**, **funding**, **consortium** and **coordinator**: #AMIUS, #AMI-AirShuttle, #AMI-FlyingIN2Air, #AMI-HORATIO, #AMI-EPS, #AMI-STRUCTURE, #AMI-DEMONSTRATOR, #AMI-PGS

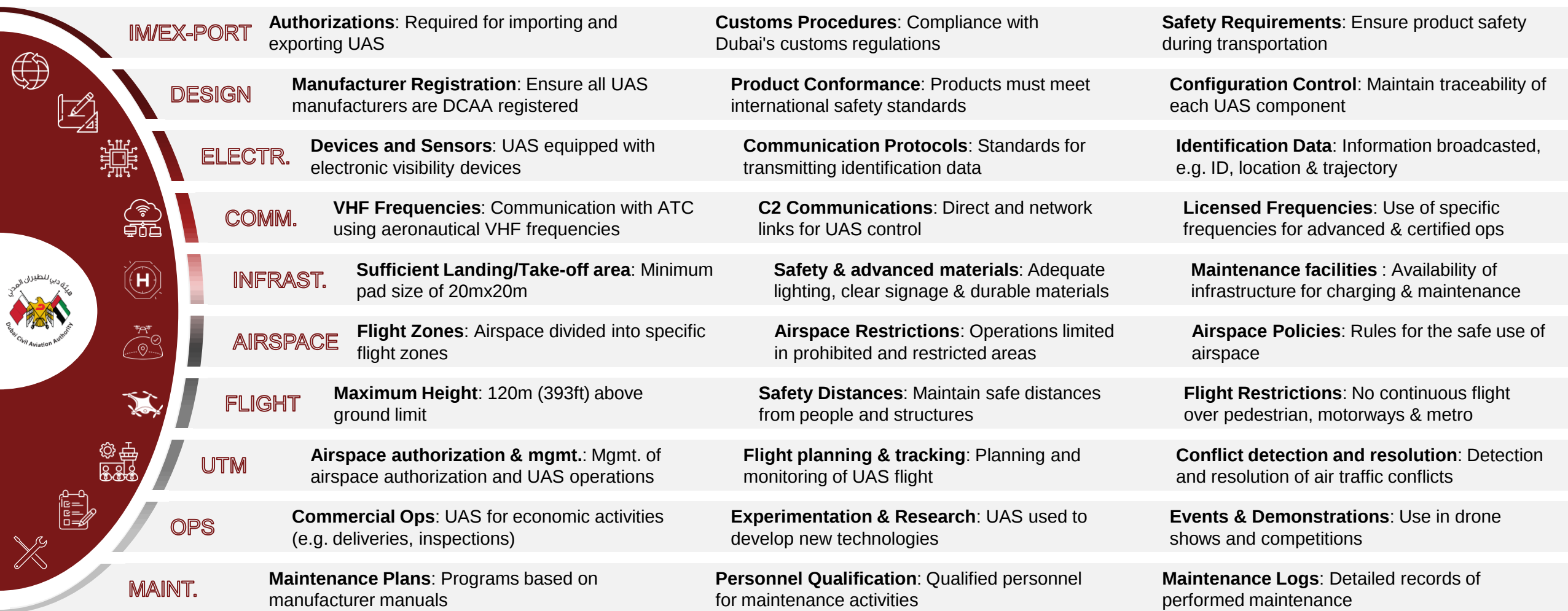


The initiative is funded with a total of **€17M** from the Free State of **Bavaria** and **€24M** from the Federal **Government**. Together with the **industry's own funds**, this results in a **total activity** of **€ 86M** over a period of **three years**



Numerous comprehensive elements are examined by the UAS regulation issued in late 2023 in the Emirate of Dubai

UAE: Regulatory framework



UAE is investing heavily into AAM technologies following government vision to operate air taxi services by 2026

UAE: Partnerships with AAM companies

UAE Vision on AAM



*“The adoption of advanced aerial mobility technologies is a **testament** to our commitment to **transforming urban mobility** as well as ushering in a **greener future**”*

His Excellency Mattar Al Tayer, Director General, of Roads and Transport Authority (RTA)



*“By introducing electric air mobility, we’re not just **connecting tourists** to our attractions, we’re **forging a sustainable path** forward for our **Emirate**”*

Esmaeel Hasan Al Blooshi, Director General of Ras Al Khaimah Transport Authority (RAKTA)

Main partnerships

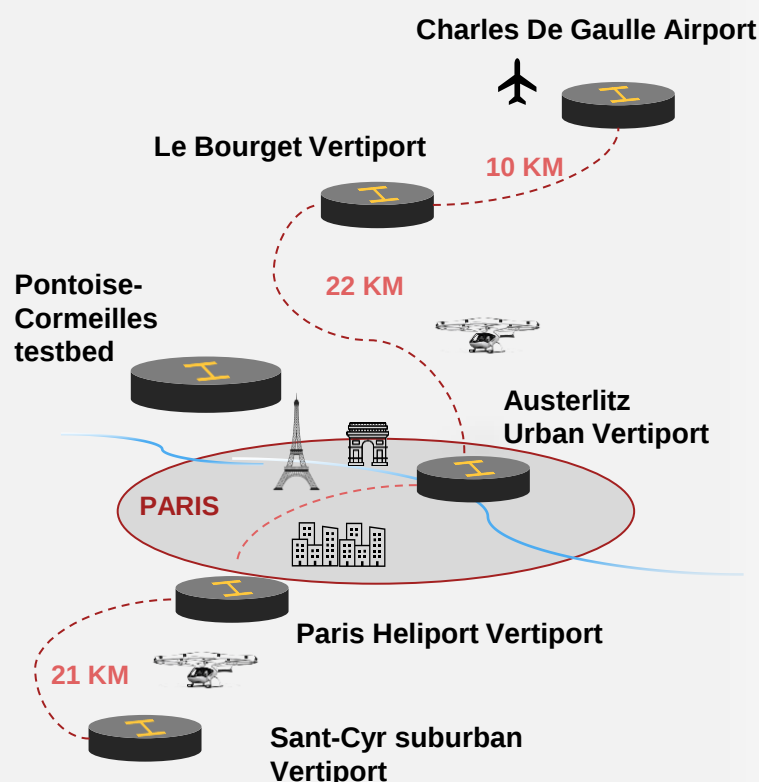
Type	Players involved	Description
Smart mobility hub		Smart mobility hub aimed at facilitating and funding innovation and streamlining regulatory services, located in Masdar’s city - It houses academia, test zones, R&D labs, testing and certification facilities, large-scale workshops, hangars and manufacturing facilities
AAM integrator center		World’s first AAM integration centre, with dedicated flight-testing airspace, assigned blocked airspace and innovative new technologies - Initial investments of \$40 million, expected to generate \$7 billion in direct revenues and create 1,500 high-quality direct jobs
Vertiports		- Agreement with RTA for the exclusive rights to build and operate four vertiports located in key locations across Dubai - Partnership to develop a network of vertiports connecting Dubai and Abu Dhabi, operating Archer Midnight aircrafts
Air taxi service		- Agreement with Dubai government to begin air taxi operations, with an exclusive right to operate air taxi services for 6 years - Agreement with Wings Logistics Hub (subsidiary of THC) to order +100 EH216 series eVTOLs starting from 2024



France has launched EU's 1st passenger terminal testbed, aimed at developing the capabilities necessary to build new vertiports in Paris

France: Infrastructure & planning

Vertiport infrastructure planning in the Paris region



INFRASTRUCTURE ROADMAP

Launch of the 1st Passenger Terminal project...

- **Groupe ADP and Skyports** unveil the **passenger terminal testbed** for future eVTOL at **Pontoise-Cormeilles** airfield

Years of testing to ease new potential use case...

- More than **20 flights**, **200km** travelled and **1000 visitors** in a **115 m² space**
- Tests and simulations for:
 - Vehicle integration, ground movement, and charging procedures
 - Flight scheduling and situational awareness
 - Passenger experience, including security, check-in, and boarding processes

Operational launch and expansion...

Administrative procedures are underway for the creation of **5 vertiports** in the Paris region to be operational for **commercial routes**

Scale up...

- Planning of necessary **infrastructure requirements** to respond to the expected **market growth**



CHALLENGES

...to test technology readiness

- Required several testing to assess the **technology readiness**

...with controversial results

- Above the expected **noise levels** registered by the **Autorité environnementale** (i.e., 65 decibel)
- Documented opposition of the public related to **visual impact and noise**
- **Restrictions** on expected urban routes (i.e., expected permission to fly only above the Seine)

...when certifications will be granted

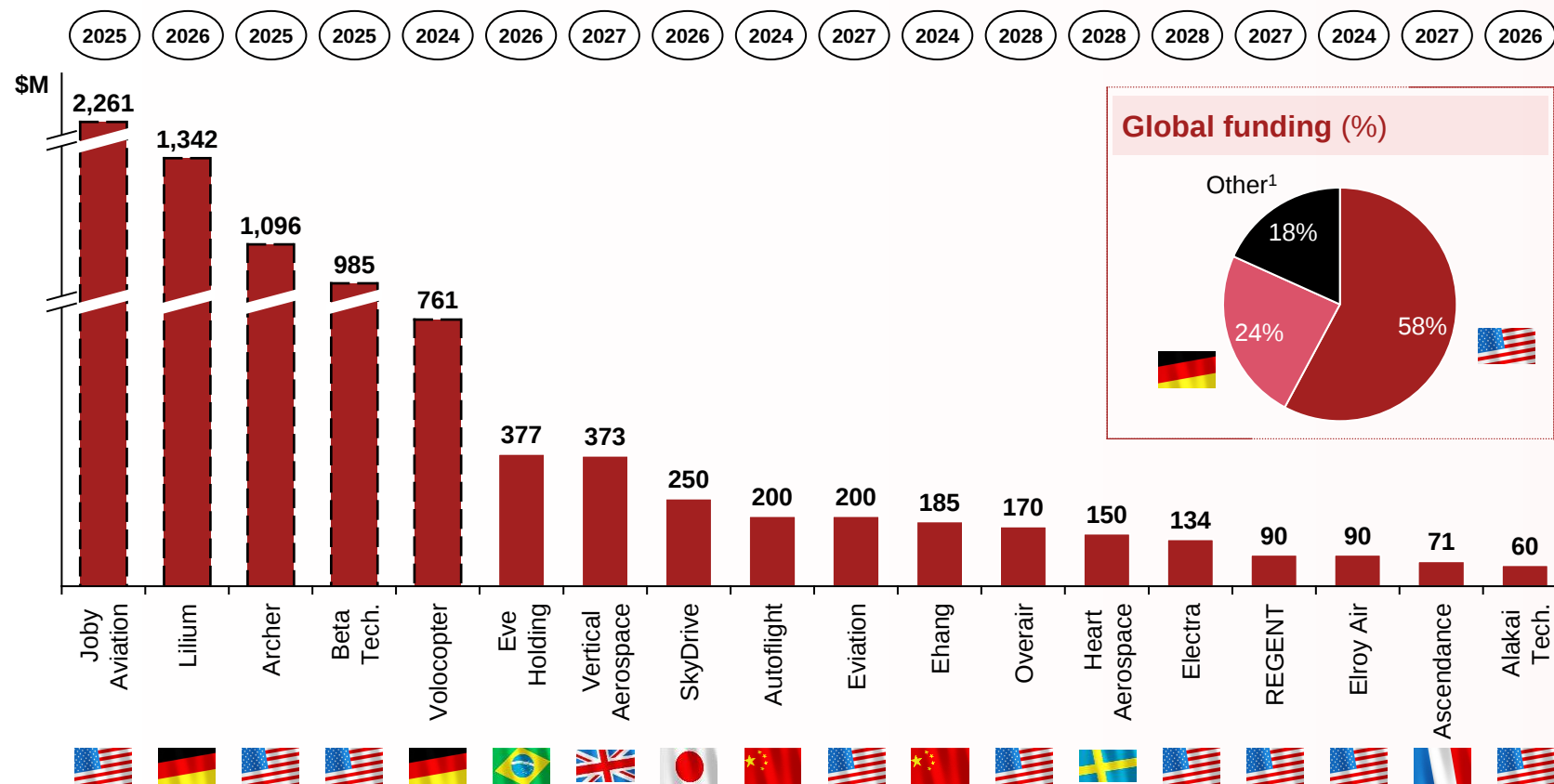
- Lags in achieving **EASA certifications** for vehicles

...ensuring long-term sustainability aligned with public demand

US and German OEMs rank among the top 5 globally in terms of funding, indicating investor confidence in technology

US and Germany: Top funded OEMs

Top funded OEMs globally (\$M, up to 2024)



Comments

- The **dominance** of **US** and **German OEMs** among the **top 5** funded global players reflects the substantial **trust investors** place in the **proprietary technologies** of these **established players**
- The top 5 OEMs capture **73%** of the **disclosed funding** within the displayed sample
- Notably, the **US** hosts **9** of the most heavily funded OEMs, demonstrating its stronghold in the AAM industry
- In terms of total global orders, the **US** secures a commanding **37% share**, while **Germany** captures **8%**

Notes: 1) Includes Brazil, UK, Japan, China, Sweden and France
Sources: AAM Reality Index, PwC Strategy& analysis



The UK actively seeks involvement of expert stakeholders to develop strong evidence showcasing AAM benefits for society

UK: Effort in public acceptance initiatives

Research Initiatives



*The Future Flight Challenge (FFC) is investing **£1.8 million** in **social science research** through the **Economic and Social Research Council***

Socio-economic Analysis



PwC Report** estimating the potential **socioeconomic benefits** of AAM for the UK in **2040

Stakeholder

Assessment areas and results



Impacts on Rural and Urban Environments



Communities and Social Impacts



Public and Social Readiness



Trustworthiness, regulatory frameworks and implications



Understanding the Innovation Ecosystem



2.1B£

in **socioeconomic benefit** (including time, carbon and avoided accidents)



297M£

in **fare values**



222M

tons of CO₂ emission reduction, equivalent of taking 120k diesel cars off the road a year