

INNOVATIVE AIR MOBILITY UN NUOVO MODELLO DI TRASPORTO PERSONE E MERCI

Giovanni Barraco
Ente Nazionale per l'Aviazione Civile



A new Era

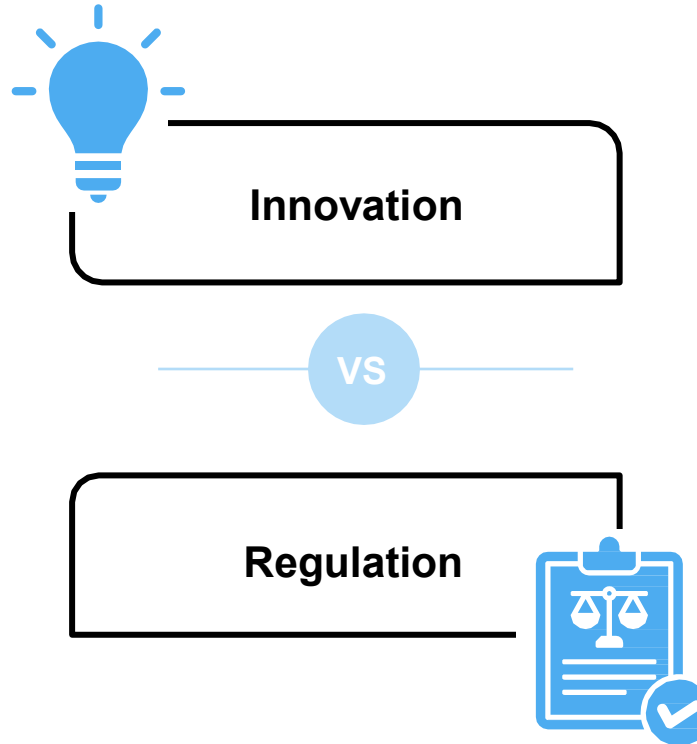
Emerging technologies and digital transformation mean a change in mindset and a rethinking of services, business models and strategies.

How do we maintain control, order and safety?



Change must be driven by a balanced strategy that promotes technology, protects rights, manages conflict, and engages people.

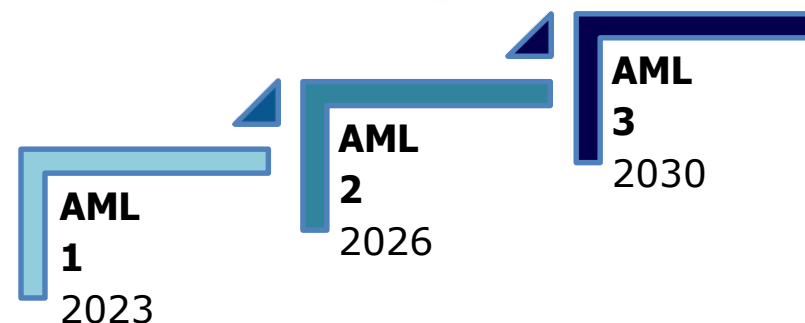
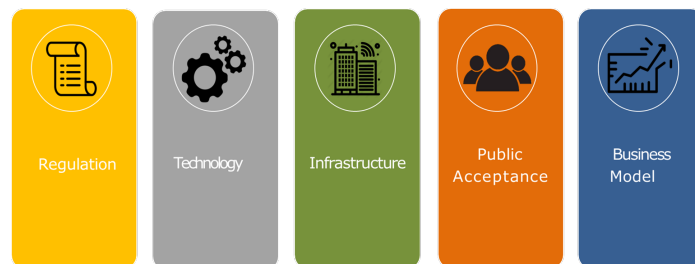
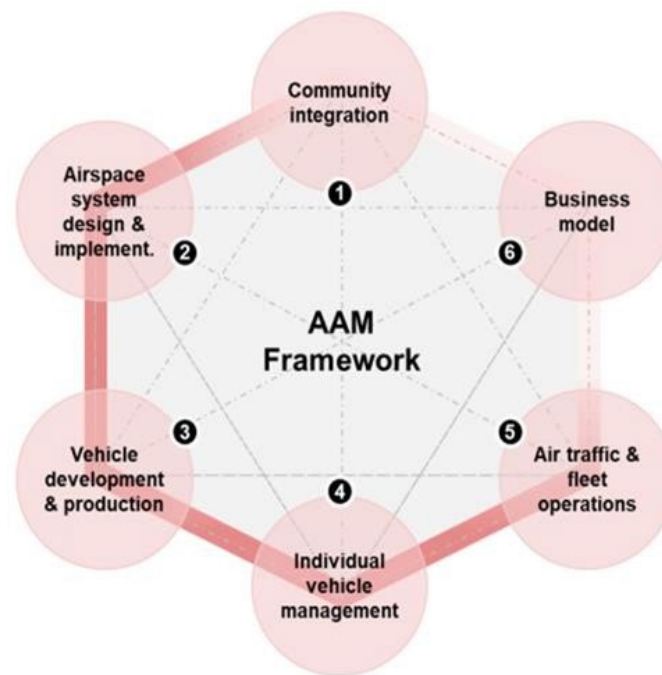
Challenges



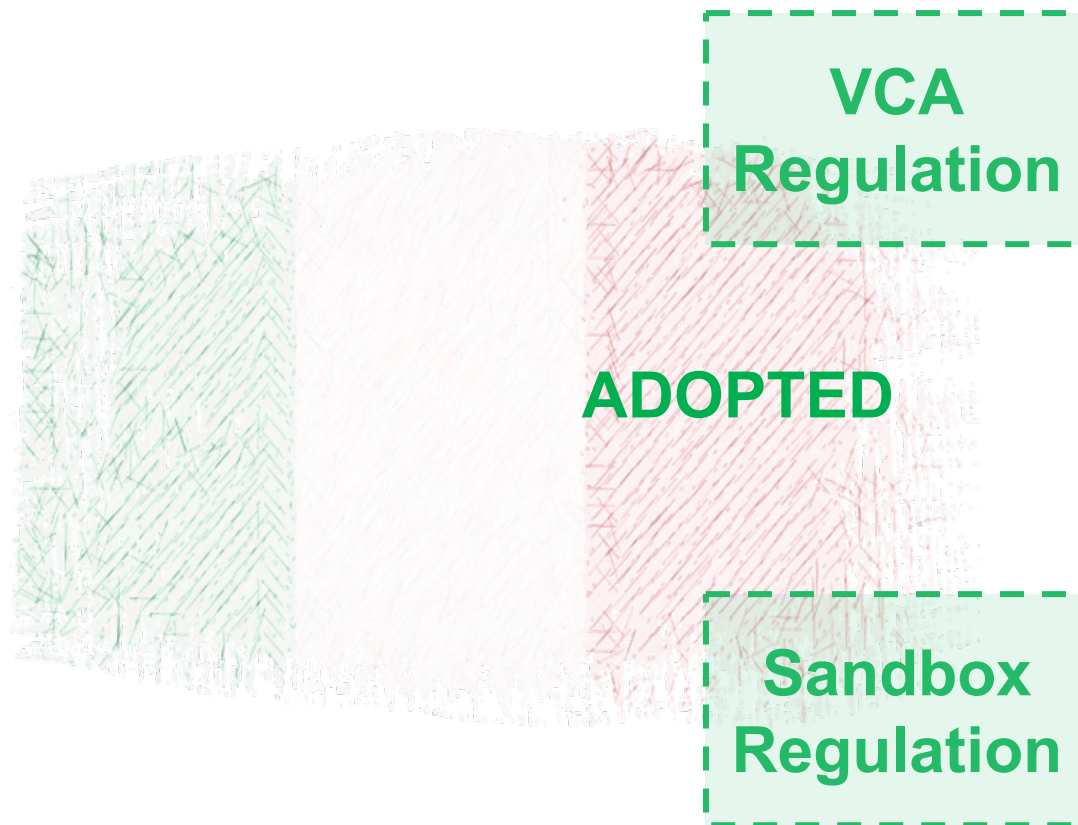
Regulation

- Proportionate, modular and scalable
- Risk & Performance Based
- Collaborative
- Adaptive
- Use of Regulatory Sandboxes
- Lessons learnt

Italian strategic Plan 2021-2030 | Strategy through applications



ENAC Regulation Framework | Pathway for manned VCA Operations



- **Sandbox:** a physical or virtual test environment where experiments can be conducted for a limited period in order to implement technological and or regulatory challenges
- **Create safe testing** to allow the Operators to perfect its design by way of an open dialogue with the authority (**regulatory sandbox**)
- **Sandbox Manager**
- **Regulatory challenge:** fill regulatory gaps, change rules, create new standards
- **Technological challenge:** fill technological gaps, evaluate new technical applications or projects, create new technical standards.



Airspace and Routes Management

- Integration of VCA traffic without affecting the airport capacity
- Mitigate ground and air Risk to fly over congested areas
- Wake turbulence risk
- Low level altitude
- Integration in U-space (*cospicuity*)

Operational

- Disruptions due to adverse weather conditions
- Limited energy reserve available for the first certified eVTOL
- Low level operation
- Weight balance



Technological

- Size, Weight, Power & Cost
- Low emission and noise
- Intermodality, touchless and seamless experience.

AAM Integration into the city

- Community engagement (preserve Heritage)
- Integration of vertiports inside the Sustainable Urban Mobility Planning (SUMP)
- Noise zoning plan and landscape and environment protection
- Protection and enhancement of the environment
- Security

New EASA Regulation complemented by National Regulation

ENAC Italian National Requirements for VCA (VTOL-Capable Aircraft) routes and related Innovative air mobility infrastructures

Part A: General

Part B: Airspace Design Criteria (Flight Corridors)

Part C: VCA enhanced operator requirements

Part D: Requirements for the construction and operation of vertiports (*ref. Reg. EU 2024/1111 and the EASA PTS-VPT-DSN*)

Part E: Final provisions.

ENAC VCA Reg. | Airspace Design Criteria (VCA Corridors)

- **Ground risk mitigation:** limited overfly of high densely populated areas and sensitive buildings (e.g. schools, hospitals, etc.);
- **"VCA corridor"** will be established by ENAC from the departure vertiport to the arrival vertiport in order to protect VCA from adjacent traffic. It will be mandatory in congested area and through controlled airspace;
- **VFR rule, "See and avoid"** principle and existing SERA requirements for 'minimum heights' are valid. Authorisation to fly under SERA minimum heights is included, when applicable, in the authorisation to fly a predefined VCA routes but not in the Corridor institution authorisation itself. Specific Safety Risk Assessment required.
- **Minimize flight distances** between different vertiports;
- **Allerting Service** and **Flight Information Service** should be available within the VCA corridor;
- In controlled airspace, the corridor is established in a strategic phase and activated in a tactical phase in coordination with the ATC;
- In uncontrolled airspace, the corridor is established just in a strategic phase.
- **Letter of Agreement** involving: Vertiport Operator(s), Corridor Service Provider, VCA Operator, other entities as necessary.



- **VTOL** Capable Aircraft (VCA) certification category: **enhanced** or **basic** according to required performance and type of operation
- **AOC** – Air Operator Certificate i.a.w. EU 0965/2012 (including EU 2024/1111)
- Operator must fly **predefined VCA routes** within **VCA corridors** when the routes: are contained (wholly or in part) in controlled airspace OR originate or end in a congested area
- Normal Operations Certified Vertiport(s)
- **Suitable DLs (vertiports not mandatory)** along the routes will be identified. At least one available at any time, to be reachable under CMP as result of a CFP
- **2 landing options** at the destination ("scheduled" and "alternate"), both of which must be reachable from a "point of commitment (PoC) for landing". «Scheduled» must be a certified Vertiport. «Alternate» may be a DL
- **Use of existing helipads** (when compliant for certification) **and airfields** (when adequate as DL)

Ref. Regulation EU 2024/1111

DL Diversion Locations need to be pre-surveyed and listed in the operator's manuals

CMP Certification Minimum Performance

CFP Critical Failure for Performance



Steps to accelerate | Alliances and Drivers

Alliances : MoUs

Territories

- **Regions:** Campania, Lazio, Lombardia, Veneto, Emilia Romagna, Piemonte
- **Municipalities:** Rome, Milan, Turin, Cortina d'Ampezzo (with the perspective of *Olympic Winter Games*), Venice, Florence and Bari



Aerodrome and Vertiport Operators:

ADR, SAVE, SEA, Urban V, and ENAV

Centre of Research: CIRA, ASI, MOST, Aerospace Clusters

Industrial stakeholders

International Organisation: EASA, Eurocontrol, ECAC, ESA, ICAO and now ICAO



Initial Drivers

- **Public-Private investments** models to accelerate a self-sustained ecosystem
- **R&D:** more tests are needed to fly these new entries (including autonomy)
- **Regulatory sandbox:** sandboxes are considered important and beneficial to test interactions between all actors of a new eco system, and foster dialogue between regulators and industry
- **From product-based to service-based** business models: MaaS, Intermodality, PUMS/PULS and a new Airport National Plan



Pilot projects: complex priorities applications, U-Space services and prototype vertiports

Seize opportunities provided by big events to accelerate IAM deployment and to attract investments

- **Rome: Jubilee 2025** - WG Pilot Project Air Taxi Rome
- **Milan-Cortina: Winter Olympic Games 2026**- Olimpic Project

Conclusion

- EU Agencies
- Public Institutions
- National Civil Aviation Authorities
- Environmental Protection Agencies
- Cultural Heritage Institutions
- Regions and Local Authorities
- Municipalities
- Citizens Associations



It is necessary a common approach

Grazie per l'attenzione

Giovanni Barraco
g.barraco@enac.gov.it

