Exploration of Interoperability and Harmonization of Critical Elements in Advanced Air Mobility (AAM)

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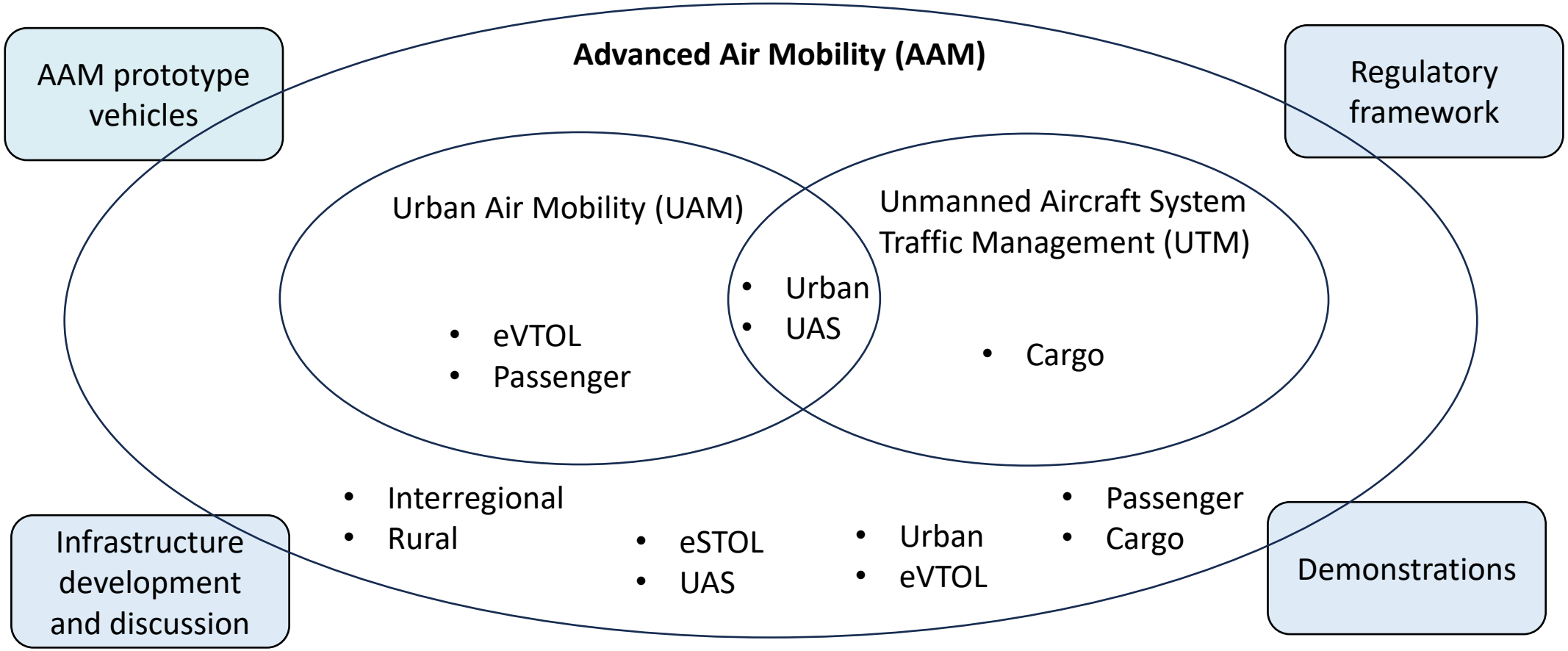
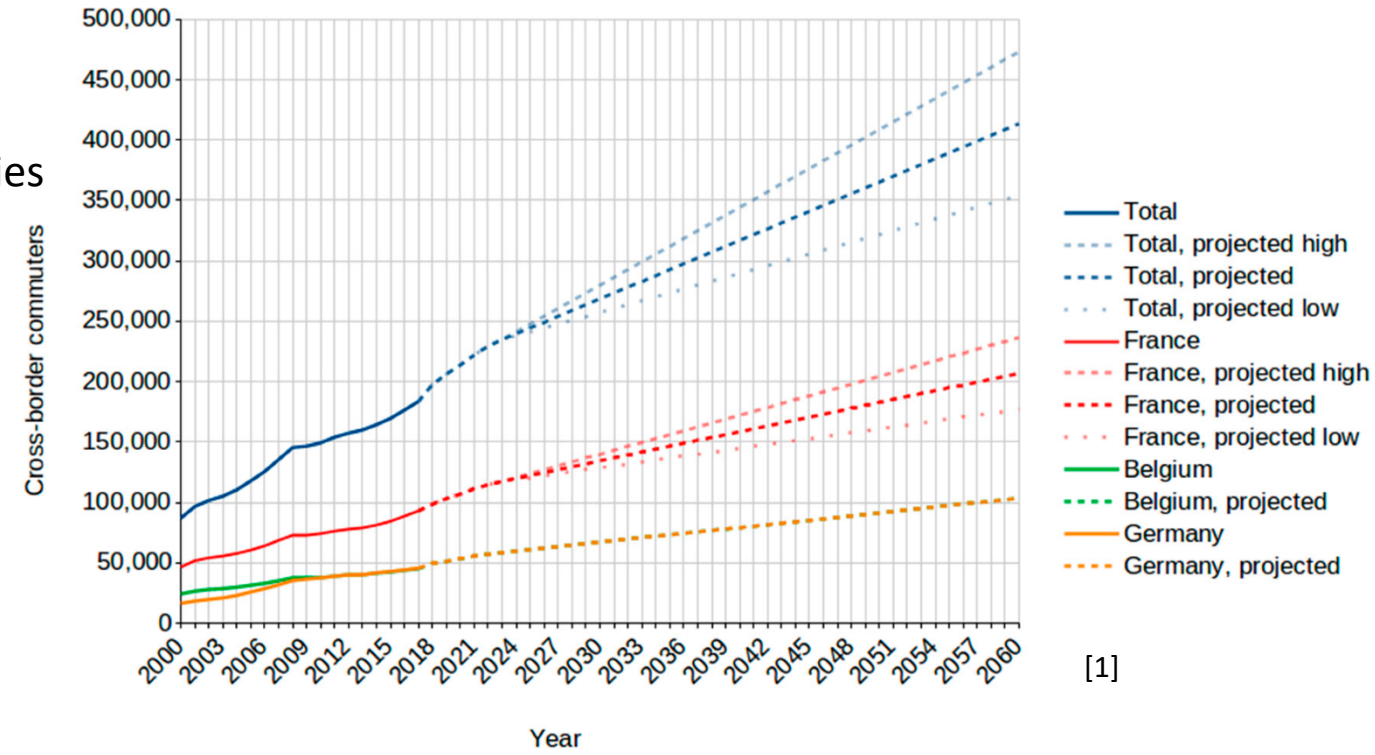
Background and development of current AAM



Motivation for global AAM

- Prompt connectivity between countries
- Boost economy between connecting cities
- Relief traffic congestions between neighbouring countries
- Reduce pollutants



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[1] Baustert, P., Navarrete Gutiérrez, T., Gibon, T., Chion, L., Ma, T. Y., Mariante, G. L., ... & Benetto, E. (2019). Coupling activity-based modeling and life cycle assessment—A proof-of-concept study on cross-border commuting in Luxembourg. Sustainability, 11(15), 4067.

Proposed global AAM architecture

Established within local context

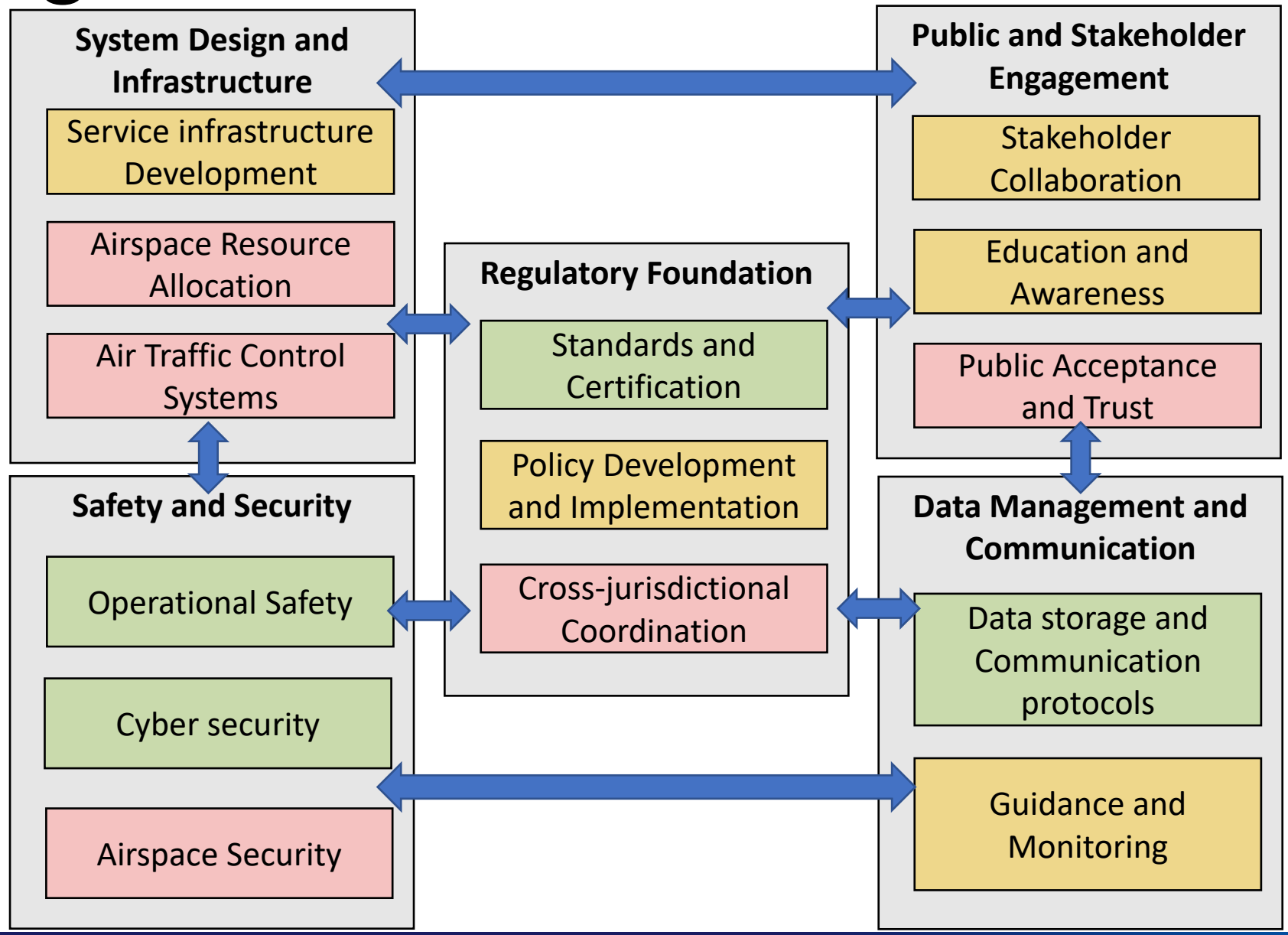
Developing / inheritable

Exploratory

Iteration/ interaction

Assumptions:

- Global AAM is an extension of local/regional AAM
- Bridge between different local/regional AAM is the gap



Contribution from critical elements to interoperability and harmonization

Interoperability

- critical elements of the AAM that can be developed locally/regionally
- Only interface between these critical elements are required in context of global AAM

Data storage and communication protocols	Operational Safety
Standards and Certification	Cyber security
Policy Development and Implementation	Service infrastructure Development
Stakeholder Collaboration	Cross-jurisdictional Coordination
Air Traffic Control Systems	Airspace Security

Harmonization

- Global consensus are required before the development of critical elements

Airspace Resource Allocation	Public Acceptance and Trust
Guidance and Monitoring	Education and Awareness

Inheritable critical elements from local/regional AAM

Service infrastructure Development	Education and Awareness	Policy Development and Implementation	Stakeholder Collaboration	Guidance and Monitoring
• Vertiport design • eVTOL/eSTOL design • Integration of existing transport system	• Public education campaign • Provide training for potential employees	• Cross-border agreements • Airspace sharing • Cross-boarder operations	• Consistent collaboration with varies domestic and international agencies	• CNS technologies

Next step to promote global AAM

Cross-jurisdictional Coordination	Public Acceptance and Trust	Airspace Resource Allocation	Air Traffic Control Systems	Airspace Security
• Interoperability of the traffic management • International / intra-regional liability	• Balance public perception across cities / countries	• Airspace identification • Air route design and allocation	• Account for a magnitude more of traffic compared to now	• Mitigate potential low level airspace security threats

Conclusion

- Current AAM definition and development
- Benefit of extent AAM globally
- Proposed global AAM architecture
- Critical elements that requires attention in the future

Thank You!

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