

# Korea's Journey toward the new era with UAM and way forward

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with UAM and way forward

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Korea's Journey toward the new era with UAM and way forward

# 1. K-UAM Policy

# 1. K-UAM Policy

## K-UAM Cornerstones

### K-UAM Roadmap '20.6

▶ Policy Strategies for '25 Commercialization

### Technology roadmap '21.3

▶ Technologies required enabling feasible UAM Ecosystem

Milestone	Preparation '20~'24	Initial '25~'29	Growth '30~'35	Mature '35
	<ul style="list-style-type: none"> <li>Issue</li> <li>Law, Standard</li> <li>Test, Demo</li> </ul>	<ul style="list-style-type: none"> <li>Commercializing</li> <li>Urban</li> <li>Connected SVC</li> </ul>	<ul style="list-style-type: none"> <li>Expand routes</li> <li>Downtown</li> <li>Break-even point</li> </ul>	<ul style="list-style-type: none"> <li>Public Transportation</li> <li>Expand</li> <li>Autonomous</li> </ul>

Phase		Initiation (2025 - )	Growth (2030 - )	Maturation (2035 - )
Technology	Cruising speed	150km/h	240km/h	300km/h
	Autonomous flight	On Board	Off Board	Autonomous
	Traffic management	Automation introduction	Automation advancement & human surveillance	Complete automation
	Route design	Fixed Corridor	Fixed Corridor network	Dynamic Corridor network

### Concept of Operation 1.0 '21.9

▶ Basis for UAM service: preparation for commercialization and enactment

Roles and Responsibilities

Operation Structure

Operation Scenario

Test and Validation  
(K-UAM Grand Challenge)

# 1. K-UAM Policy

## K-UAM Grand Challenge (GC) Program

### ✍ GC 1 & GC2

- Evaluate the safety and capability of UAM and analyze the gap under “K” environments to support building K-UAM regulatory framework and launching initial commercial service in '25
- (GC-1) Evaluate basic performance and reliability of UAM elements at an isolated area
- (GC-2) Gradually demonstrate the safety of an integrated UAM ecosystem at urban area

K-UAM GC 1 ('23.)

Rural Area



K-UAM GC 2 ('24.)

Sub Urban Area



Urban Core Area



# 1. K-UAM Policy

## K-UAM Grand Challenge(GC) Program

- ✍ GC 1 participating Consortiums
  - GC-1 Participation : 6 integrated management consortiums
  - K-UAM GC 1 implementation : Aug. 2023 ~ (On Going)

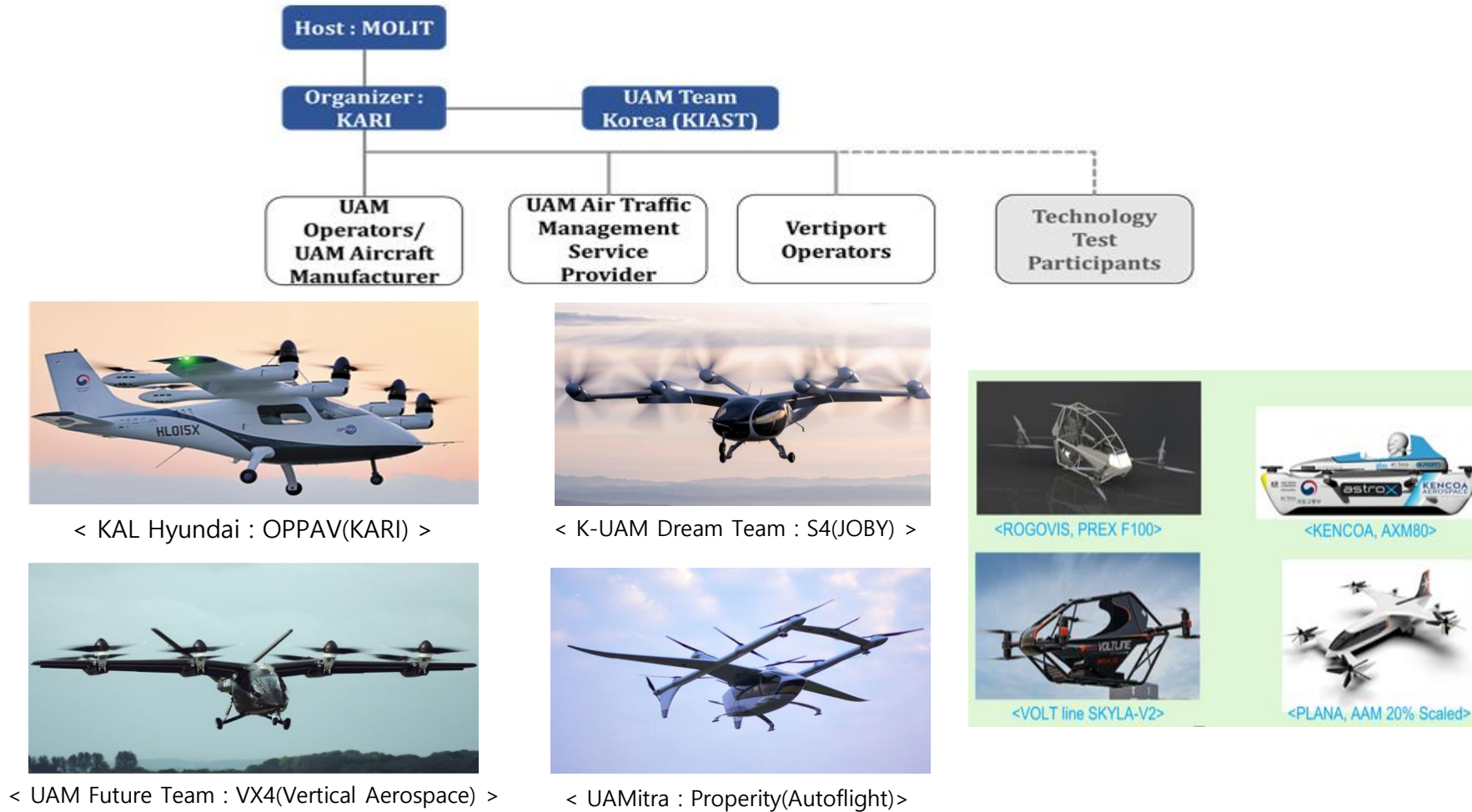


The consortiums are represented by the following logos:

- Top Row:** KOREAN AIR, Incheon Airport, Ministry of Land, Infrastructure and Transport, KAIRI (한국항공우주연구원), Korea Aerospace Research Institute, and Verty.
- Second Row:** HYUNDAI MOTOR GROUP, kt, HYUNDAI ENGINEERING & CONSTRUCTION, SK telecom, Hanwha Systems, KAC (한국공항공사), kakao mobility, LGU+, and GS 건설.
- Bottom Row:** KENCOA AEROSPACE, 롯데정보통신, 롯데렌탈, ROVIGOS, VOLT line, and FINEVT Robotics Lab.

# 1. K-UAM Policy

## K-UAM Grand Challenge(GC) Program





# 1. K-UAM Policy

## K-UAM Grand Challenge(GC) Program

### R&D ①

Development of Virtual Integrated Operation platform program for UAM



- (Period) 2022 ~ 2025
- (Purpose) To support initial commercialization of UAM ('25~), Establishment of a verification platform such as pre-operational capabilities and procedures
- (Contents) Develop and validate UAM virtual integrated operation platform that realized virtual flight environment

### R&D ②

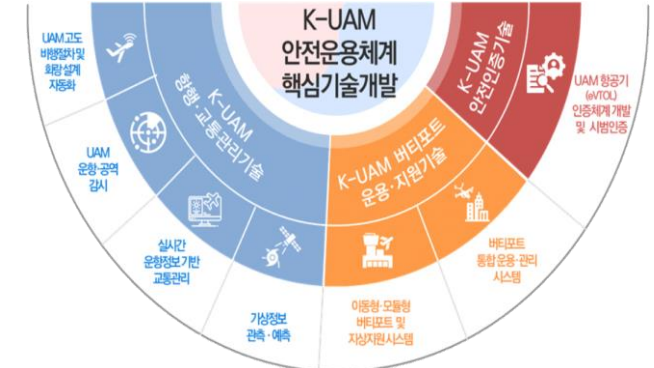
Development of Surveillance Information Acquisition System for UAM



- (Period) 2022 ~ 2025
- (Purpose) To support initial commercialization of UAM ('25~), acquiring surveillance information and developing reliability verification technology
- (Contents) Develop and validate flight surveillance information acquisition & sharing systems for UAM path deviation monitoring

### R&D ③

Development of Core Technologies for K-UAM Safety Operation System



- (Period) 2024 ~ 2026
- (Purpose) After growth period ('30~), Acquiring core technologies of the UAM traffic management and certification system to secure the safety operating system
- (Contents) Development design technology of UATM system based on real-time flight information / Vertiport integrated operation and Automated take-off & landing guidance system



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## 2. K-UAM Regulatory Framework

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### UAM law

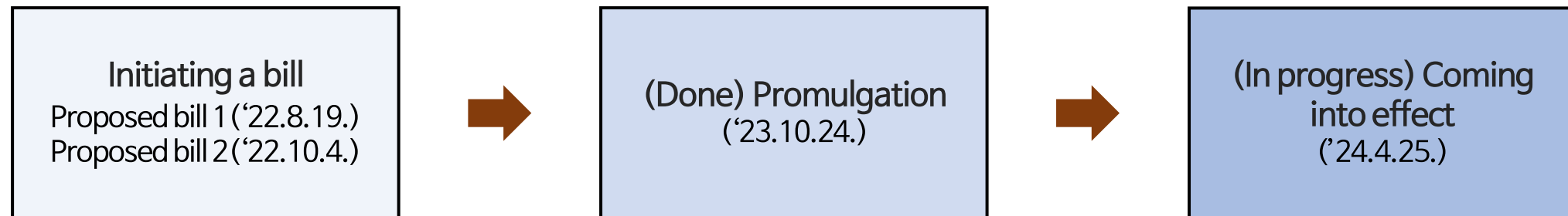


#### The need for UAM legislation

- Current aviation regulations are complex and stringent  
→ Requiring bold regulatory exemptions for rapid and stable demonstration, Initial commercialization
- Lack of institutions limits private sector's decision-making (e.g., investment decisions)  
→ Need to have a reasonable system



#### Progression



# 2. K-UAM Regulatory Framework

## Purpose of UAM law



### Concept Definitions

- Definition of concepts related to UAM necessary for establishing a new industrial ecosystem, roles of various stakeholders, and the project execution system. (ex. UAM, Vertiport, Urban Corridor)
- Establishment of basic plans, industry status surveys, UAM information systems, legal framework for committees and advisory bodies, etc.



### Deregulation of existing aviation laws

- Establishment of a system for demonstration and pilot projects excluding the application of existing aviation laws.  
→ Exclusion/Mitigation of the application of existing aviation business/safety/security/airport facilities regulation within the demonstration project areas and pilot operation areas (Except essential safety related regulations)



### Administrative Support

- Establishing legal grounds for workforce development, international cooperation, and financial support to promote the UAM industry and create an ecosystem.

## 2. K-UAM Regulatory Framework

### Aviation law vs UAM law

	Aviation law	UAM law (new concepts)
Safety	Aviation Safety Act (Based on Existing aircraft safety standards)	Establish <b>new concept of air traffic</b> , such as exclusive corridors and traffic management
Security	Aviation Security Act (Focus on Aircraft and Airports)	<b>Simplify security procedures</b> for "UAM Aircraft" and "Vertiports"
Business	Aviation Business Act (Focus on Air Carrier)	Establish <b>new UAM providers</b> (operator, vertiport, traffic management, etc.) standards
Facility	Airport Facilities Act (Government-led construction/operation)	<b>Private can participate</b> to construct/operate transport facilities, mixed-use developments, etc.

## 2. K-UAM Regulatory Framework

### Deregulation of Aviation laws

-  The Aviation Safety Act, the Aviation Business Act, the Airport Facilities Act, and the Aviation Security Act do not apply to UAM service providers conducting pilot projects in test area, except for the following matters\*.  
(\* Essential safety standard)

⇒ Matters under each subparagraph may be mitigated and applied after deliberation by the National Transportation Committee.

Category	Contents
Certifications	Airworthiness Standards, Type Certificate, Airworthiness Certificate, Noise Certificate, etc.
Qualifications	Types, Scope of services, Testing and Exemptions, Flight simulators, etc. for Personnel licensing
Air Operation Safety	Radio equipment, Flight instruments, Fuel, Flight crew experience, Fatigue management, Mandatory/Voluntary aviation safety reporting, Authority of PIC, Takeoff & Landing area, Flight rules, etc.
Air Operate Certificate	Air Operator Certificate including operating standards (operating conditions and limitations)

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# 3. UAM Team Korea



# 3. 정부 정책



## 1) UAM 팀코리아

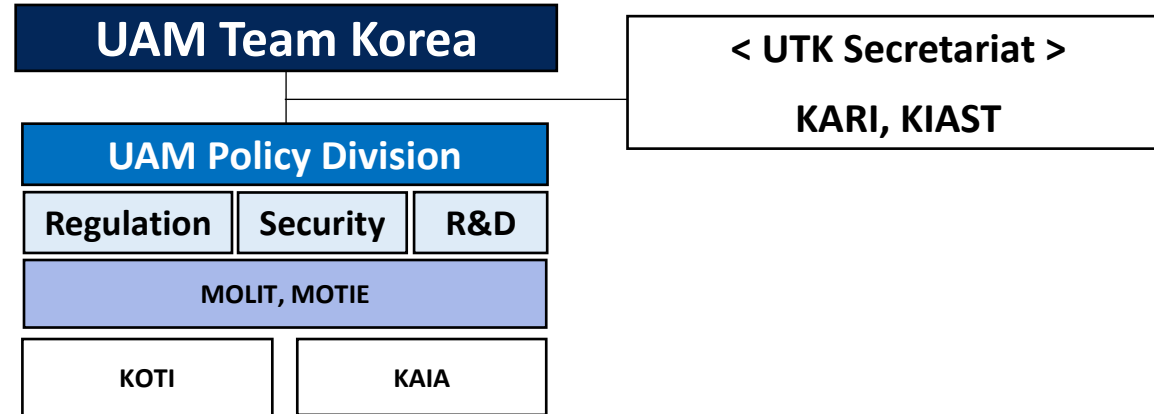


	Industry	Academia	Government Ministry	Local Government	Related Organization Research Institution	
<b>Key Participating (57)</b>						
	<b>General Participating (107)</b>	POSCO E&C Shinsegae Property Skyports Mobius Energy ANRA Technologies T'way Air Jejuair Boeing KOREA ROVIGOS	LOTTE E&C (73) TMAP Mobility KENCOA Aerospace Vertical Aerospace Gansam Co.,Ltd Wegoes LG CNS Voltline ... ..	Kyungpook National University (9) Kongju National University Chungnam National University Republic Of Korea Air Force Academy Kookmin University Cheongju University Korea National University of Transportation Keimyung University Korea University	Korea National Police Agency (2) Ministry of Oceans and Fisheries	Goyang special city (1)

# 3. UAM Team Korea

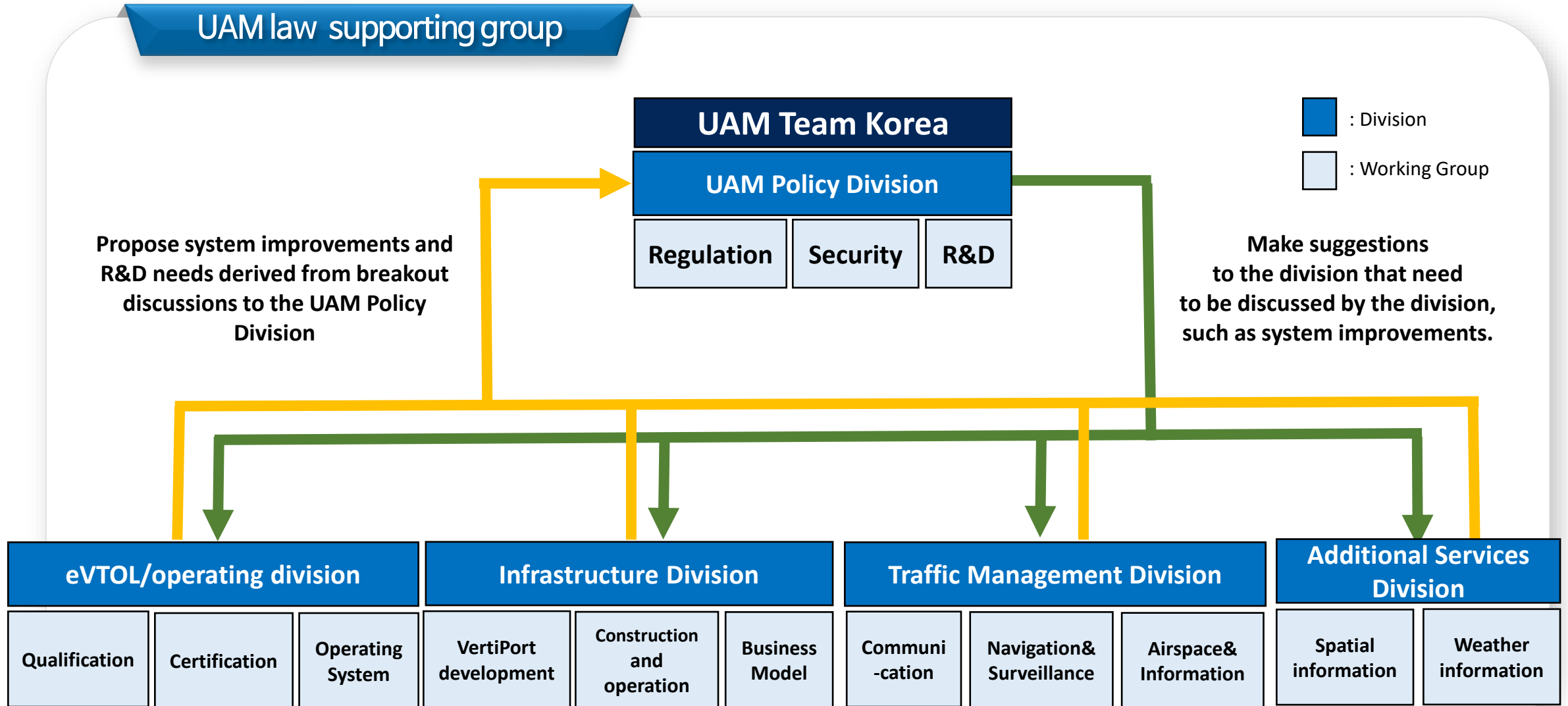
## UAM law supporting group

- : Division
- : Working Group
- : Competent department
- : Leading organization
- : Participating organizations



eVTOL/operating division			Infrastructure Division			Traffic Management Division			Add' Services Division	
Qualification	Certification	Operating System	Vertiport development	Vertiport Construction	Business Model	Communication	Navigation & Surveillance	Airspace & Information	Spatial information	Weather information
2 Divisions (MOLIT)	3 Divisions (MOLIT)	2 Divisions (MOLIT)	4 Divisions (MOLIT)	3 Divisions (MOLIT)	1 Division (MOLIT)	4 Divisions (MOLIT, MSIT)	2 Divisions (MOLIT)	3 Divisions (MOLIT, MND)	2 Divisions (MOLIT)	2 Divisions (MOLIT, KMA)
TS	KIAST	IIAC	LH	KARI	KOTI	KARI	KIAST	KAC	LX	KMITI
16 organizations	25 organizations	21 organizations	52 organizations	53 organizations	30 organizations	17 organizations	20 organizations	30 organizations	20 organizations	17 organizations

# 3. UAM Team Korea



# 3. UAM Team Korea

## UAM law supporting group



### Divisions and Working Groups

- Establishment of 5 practical divisions and 14 working groups
- Assignment of relevant departments to each working group and matching with related public institutions and government-funded research agencies (lead agencies).

#### UAM Policy 3 WGs

- A center platform for policy discussions (regulation, R&D, Security) developed from 4 divisions(11 working group)
- ⇒ Reflect policy discussions and propose necessary improvements to each division.

#### eVTOL and Operations 3 WGs

- Research on UAM eVTOL-related standards (VTOL classification, certification standards) and institutional improvement.
- Research and draft preparation of operation standards (operational certification, personnel qualifications, etc.).

#### Infrastructure 3 WGs

- Preparation of drafts for vertiport design and operation standards, qualifications for vertiport developers, etc.
- Research on UAM business models and ways to establish a transfer system.

#### Traffic Management 3 WGs

- Research on the UAM communication, navigation, and surveillance systems, as well as procedures for traffic management.
- Development of initial aeronautical information and service support methods.

#### Additional Service 2 WGs

- Research on the establishment and provision of information networks for spatial and weather information necessary for UAM operations.

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# 4. Interantional Co-operation

# 4. International co-operation

## UAM CO-OP



[ FAA and KOCA sign a declaration of mutual cooperation on UAMs ] (Jan. 2023~)

- UAM certification, pilot qualification, concept of operation, demonstration projects, etc.



[ US FAA Roundtable ] (Sep. 2021~)

- Cooperation on research and development projects such as UAM traffic management system, etc.



[ ICAO AAM Study Group (SG) ] (May. 2023~)

- UAM-related international standardization study group with members from 15 countries and others.



[ Korea-EU Aviation Partnership Project (APP) ] (Dec. 2021~)

- UAM mutual safety & tech information sharing, development air navigation plan and other coop.



# Q&A