Legal framework and status of sUAS･RPAS･AAM in Japan

UAS/AAM Division
Aviation Safety and Security Department
Japan Civil Aviation Bureau

ICAO APAC UAS Workshop
November 2025

MLIT
Ministry of Land, Infrastructure, Transport and Tourism

Topics on UAS･RPAS･AAM

1, sUAS status

2, RPAS status

3, AAM status

Categorize of UAS in Civil Aeronautics Act

- An "Unmanned Aircraft" is defined as "cannot be board by a person due to its structure".
- An "Pilotless Aircraft" is classified as an "aircraft" because has the capability to carry people and used for aviation purposes.

Unmanned Aircraft (UA)

An apparatus that can be used for air navigation but **cannot be boarded by a person due to its structure** and can be flown by remote control or automatic pilot.

Radio-controlled airplane

Image source : YAMAHA

Drone
(Multi-rotor type)

Image source : YAMAHA

Crop-dusting helicopter

Aircraft

Any aeroplane, rotorcraft, glider and airship which can be used for air navigation **with a person on board**.

Pilotless aircraft

Any aircraft **equipped with an apparatus which enables it to fly without being boarded by a pilot**.

Image source : Japan Coast Guard

Fixed wing aircraft (pilotless)

Aircraft

Image source : Boeing Japan HP

Rotorcraft

Image source : Japan Coast Guard

Advanced Air Mobility (AAM) aircraft

(Electric・VTOL capability , Pilotless in the future)

Image source : AIRBUS

Image source : SKYDRIVE

Topics on UAS･RPAS･AAM

1, sUAS status

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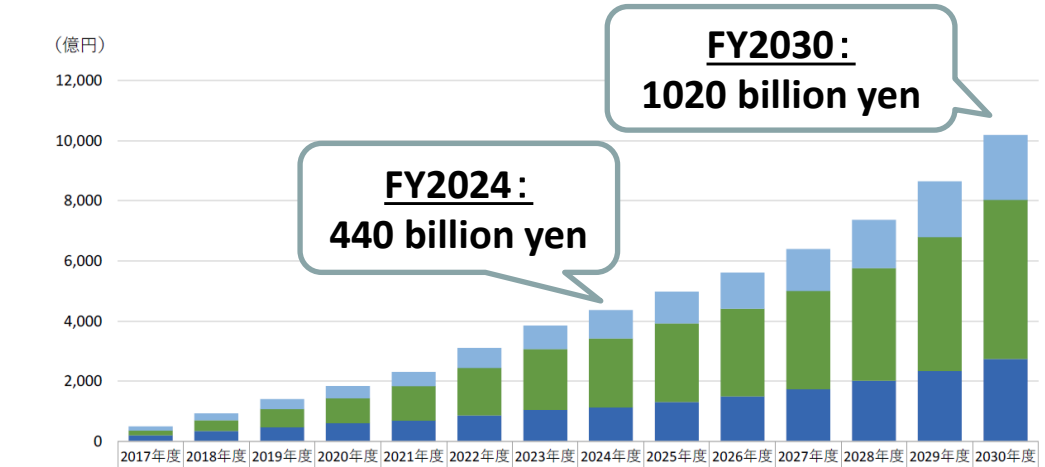
3, AAM status

UAS market Trends in Japan

UAS market

○ The domestic UAS market is already worth approximately 440 billion yen. It is expected to expand rapidly in the future.

○ The market for business applications such as surveying, monitoring, disaster support, infrastructure inspection, and distribution of goods is expected to expand in the future.



	2017年度	2018年度	2019年度	2020年度	2021年度	2022年度	2023年度	2024年度	2025年度	2026年度	2027年度	2028年度	2029年度	2030年度
合計	503	931	1,409	1,841	2,308	3,111	3,854	4,371	4,987	5,621	6,402	7,369	8,658	10,195
周辺サービス	138	224	326	405	468	657	778	942	1,055	1,203	1,386	1,604	1,858	2,161
サービス	155	362	609	828	1,147	1,587	2,025	2,295	2,625	2,919	3,274	3,742	4,455	5,288
機体	210	346	475	607	693	868	1,051	1,134	1,307	1,499	1,742	2,023	2,345	2,746

出典：「ドローンビジネス調査報告書2025」(インプレス総合研究所)

Expansion of UAS applications

Shot from high altitude

Agriculture

Land surveying

Disaster support

Infrastructure Inspection

Distribution of goods

Categories for UAS operation in Japan

Manual control → Automated/Autonomous control

VLOS → BVLOS

Operation away from people
(e.g. isolated islands or mountainous area)

Operation over people

Level 1
Manual control + VLOS

e.g. Photo shooting

e.g. Bridge inspection

Level 2
Automated/ Autonomous +VLOS

e.g. Agricultural chemical spraying

e.g. Civil engineering survey

Level 3
BVLOS away from people

e.g. Transportation between post offices

Level 4
BVLOS over people
e.g. Cargo transport

Effective on Dec 5, 2022

First Level 4 Flight on March 24, 2023

Transition of Rules for UAS

- In 2015, first regulation for UAS was introduced
  - under the Civil Aeronautics Act of Japan (rules for airspace and ways of flying).

In order to introduce the Level 4 flight, a series of amendments to the Civil Aeronautics Act of Japan have been adopted.

1. Registration system

1. Effective from June 20, 2022

2. UAS certification system(Class1※/2)

3. Pilot qualification system(Class1※/2)

4. Rules of operation

2.～4. Effective from Dec. 5, 2022

※：Class1 is the requirement for Level 4 flight

Flight Permission/Approval

① **Prohibited Airspace** (around airport、150m or more、DID etc…)
② **Prohibited ways to flight** (Night flight、BVLOS etc...)

When operating UAS in these conditions,
the following procedures are required.

Flight level	Minimum Flight Requirements	
	Certification/license	Permission/Approval
over people (mainly level 4)	Must **UAS : class 1** UAS certification **Pilot : class 1** license	**Permission and approval required for each flight**
away from people by grand entry control measures (mainly level 3)	If you have **UAS : class 1 or 2** UAS certification **Pilot : class 1 or 2** license	**Permission and approval generally not required for each flight.**
	Otherwise	**Permission and approval required for each flight**

Current Operational Status

○ Operational status of Permission, Approval, Registration and Certification

Permitted + Approved	77,947 (2024)

Registered UAS	352,976 (Sep. 30, 2025)

Certification		(As of Oct. 31, 2025)
UAS type certification	Total issued: 13	(class 1 : 1, class 2 : 12)
UAS certification	Total issued: 706	(class 1 : 2, class 2 : 704)
License		(As of Sep. 30, 2025)
Registered training organization	835	
Class 1 License	Issued: 3,686	
Class 2 License	Issued: 30,018	

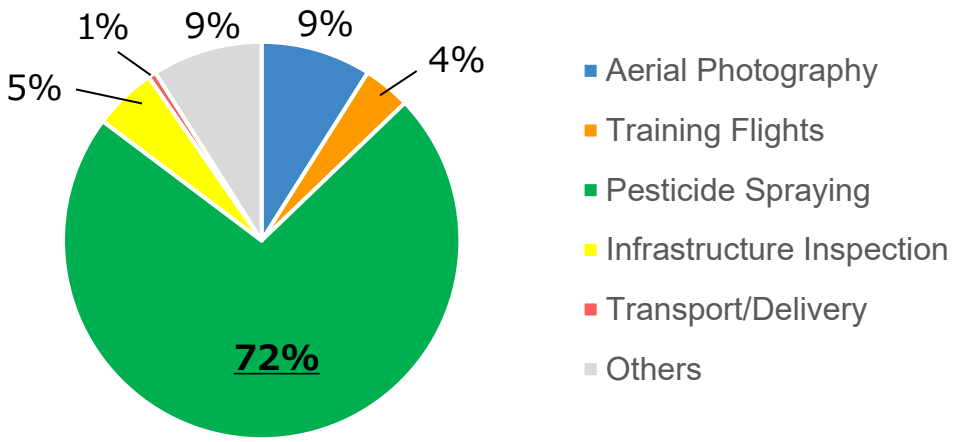
Drone Accidents/Incidents and Policy Response

○ In December 2022, the revised Aviation Act was enforced, **mandating the reporting of drone-related accidents and providing first aid to injured persons**.

○ Since the implementation of the reporting system (over the past two years), **there have been 156 cases involving harm to third parties or third-party property.**

- 72% of accidents occurred during pesticide spraying, which is defined as a specific flight under the Civil Aeronautics Act
- Additionally, large drones used for pesticide spraying (typically weighing 25kg or more) cause significantly greater damage when they crash compared to hobby or personal-use drones.

Breakdown of Cases Involving Harm to Third Parties or third-party property by Flight Purpose (Total: 156 cases)



Policy Response

- Based on survey feedback and actual accident data, **third-party liability insurance was made mandatory in principle for "specific flight" when operating drones weighing 25 kg or more.**

  (In many foreign countries, insurance is generally required for drones above a certain weight.)

Prospects for UAS

Prospects

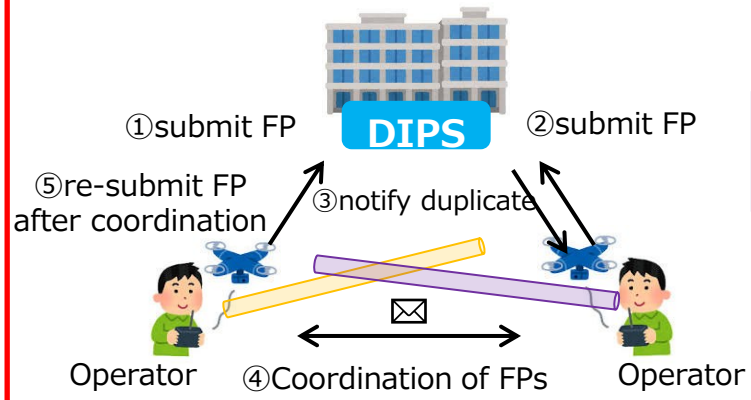
UAS will be utilized in various regions, including urban areas.
UTMS will be introduced to improve the efficiency and reduce the cost of coordination among the operators involved in the flight, and available to high level operation such as simultaneous operation of multiple UAS.

UTM Plans in FY2025

＜Current Status＞

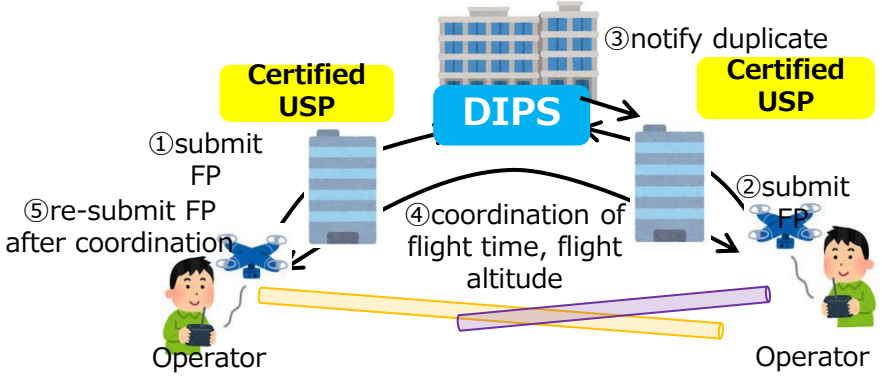
Though DIPS* function notifies operators of duplicate flight plans (FPs), coordination of FPs is done manually by operators, and it causes time-consuming work.

※: Drone/UAS platform system managed by JCAB.
Function: registration, flight permission, certification, flight plan, accident report etc.



＜Future：Scheduled to be introduced in FY2025＞

Reduces the burden of flight coordination for operators by providing flight plan coordination support using a system provided by a certified UTM service providers (certified USPs).



Support for FPs coordination- Step2 Early Stage

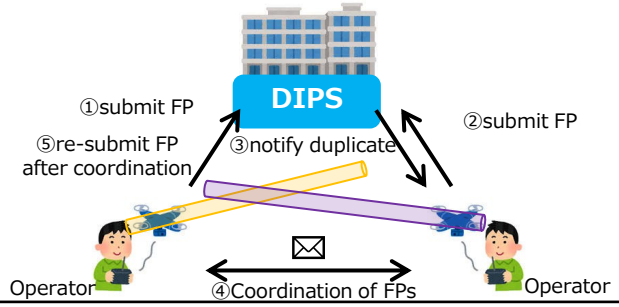
Introduction of UTMS in step-by-step basis (Step1 - Step3)

Step 1

【Current Status】

<Coordination of Flight Plans(FPs)>

- Notify operator in case of duplicate FPs by using of DIPS function
- Coordination among operators are conducted by e-mail and so forth, which causes time-consuming work for operators



Step 2

【The UTM Service Provider Certification System】

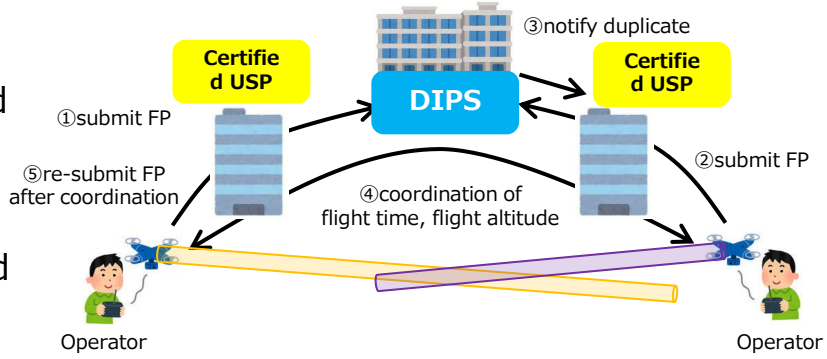
<Early Stage>

- Support for FPs coordination by using systems provided by certified UTM service providers (certified USPs) (Right Figure is image only)

<Middle-Late Stage>

- In addition to FPs support services*, monitoring of drone operation, sharing information among certified USPs, alerts in case of route deviation

(*To prevent excessive load on DIPS, it is assumed that a separate system from DIPS will be used to manage FPs)

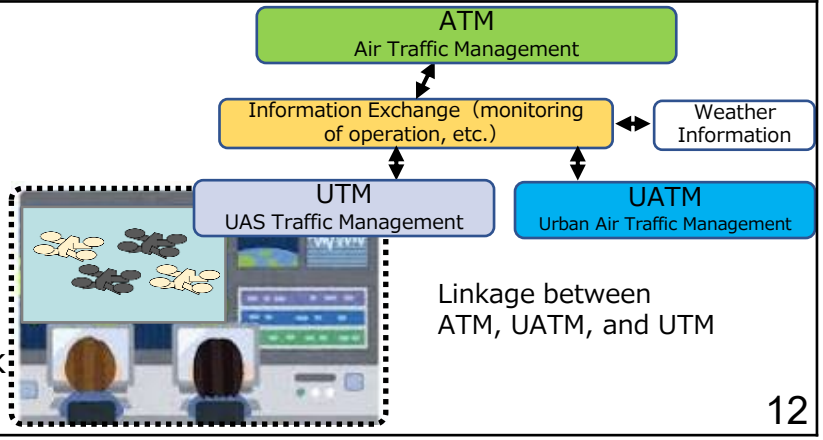


Support for FPs coordination- Step2 Early Stage

Step 3

【The Airspace Designation System】

- Designate an airspace with a mix of aircraft and establish an environment for consistent traffic management (low altitude airspace management) from pre-flight to post-flight for that airspace
- Reduce the risk of collision in advance by coordinating of FPs at pre-flight phase
- Conformance monitoring and detecting & avoiding other unmanned or manned aircraft to reduce the risk of collision at operation phase



Linkage between ATM, UATM, and UTM

sUAS/Drone Roadmap in Japan

JCAB JAPAN CIVIL AVIATION BUREAU

Roadmap towards Air Industry Revolution 2024 Main Policy

Public-Private Council for Environment Preparation on small unmanned aircraft dated November 15, 2024

			FY2024	FY2025	FY2026+	Society to be realized
			Promote implementation of drone operations starting with depopulated areas in step-by-step	Expanding operation areas from depopulated areas, and promotion of utilization and dissemination for a wide variety of purposes and flight modes		
Social implementation	General	Social Acceptance Improvement	Promote cooperation with the community, Safety awareness. Promote the use of Level 3.5 flights, Support Simultaneous operation of many aircraft, Promote acquisition of type certification, Expand the area of Level 4 flight operations, Improvement of aircraft performance			Transform industry, the economy, and society through more efficient and sophisticated operations by utilizing drones in various fields
	Logistics and medical services	Expansion of service area	Development of considerations for crossing infrastructure, etc.	Continuous dissemination and revision of case studies		
		Individual Initiatives	Support for Last One Mile Delivery Service (Includes pharmaceutical delivery and shopping services, etc) implementation			
	Disaster prevention and response	Institutional arrangement	Review of "Basic Plan for Disaster Prevention", Clarification of applicability of special provisions of Aviation Law	Positioning of drone utilization in regional disaster prevention plans, Facilitation of information linkage with manned aircraft, etc.		
		Maintenance of equipment Promotion of Utilization	Promotion of drone deployment, Development, trial, and promotion of satellite communications, infrastructure improvement such as Smart River Spot, and utilization methods			
	Patrols and inspections	Infrastructure Buildings	Improvement, expansion, and dissemination of guidelines related to Drone patrols and inspections of rivers, dams, erosion control, roads, railroads, ports, etc., and facility inspections including building exterior walls ▶▶ Sequential implementation and expansion of utilization			
		Smart Security	Expansion of voluntary plant inspections, simplification of procedures by utilizing the "Certified Advanced Security Implementer System"			
	Agriculture, forestry and fisheries	Act on the Promotion of Smart Agricultural Technology Utilization	Enforcement	Expansion of drone utilization based on the Act on the Promotion of Smart Agricultural Technology Utilization to Improve Agricultural Productivity		
		Expanding Utilization	Technology development, demonstration testing, expansion of utilization, and implementation related to sensing data, pesticide application, seedling transport, and pest control			
	Surveying	Promotion of Utilization	Promotion of utilization in public surveying and surveying of ICT-utilized construction works, including continuous dissemination and revision of the working rules and regulations			
	Security	Information sharing	Strengthening coordination with surveillance personnel or ground robots when a drone detects a suspicious person or object.			
Environment arrangement	Traffic management	UTM	Consideration and coordination for realization of UTM Step2 (UTM providers certification system)	Realization of UTM Step2 (Formulation of UTM certification requirements)	Expansion of UTM Step2	Realization of easy and safe drone operations to meet diverse needs
			Consideration and coordination for realization of UTM Step3 (airspace designation system), Consideration to introduce equipment and functions for sharing dynamic information (e.g., networked remote ID)			
	Pilot license	Save manpower in operation	Environment arrangement for realization of leading-edge initiatives such as Simultaneous operation of many UAS	Investigation of overseas trends and systems for traffic management, skill assurance, etc., in response to Simultaneous operation of many UAS		
	Aircraft certification	Operational improvement	Expansion of Class 1 Type Certification Guidelines	Consideration of further operational improvements to the system		
	Application System [DIPS]	System improvement	System modifications to shorten permit and approval processing time, continuous UI/UX improvement, stability improvement, API enhancement, etc.			
	Communication environment	Over-the-air use of radio waves	Institutionalized over-the-air use of 5GHz wireless LAN	Consideration of over-the-air use of 5G frequencies, etc. ▶▶ institutionalization	Consideration of technical and institutional aspects including satellite communications, etc.	
	Others	Clarification of system operation	Clarification of applicability of special provisions of Aviation Law in the event of a disaster, Applying the considerations and coordination cases related to crossing over infrastructures to reflect in the standards, etc.	Continuous dissemination and revision of Guidelines, etc.		
			Clarification of situations in which Level 3.5 flight are feasible			
		Others	Establishment of specifications and standards for drone routes	Implementation of drone routes		
			Educating drone users about safety improvements, Promoting international and industrial standardization, etc.			
Technology development	Development of aircraft	Responding to Administrative needs	Promotion of development by domestic companies through "Performance of Drones to Meet Government Needs" etc. ▶▶ Demonstration of drones utilizing the administrative field	sequential implementation		Development and strengthen integrated air mobility policy, including airplanes and AAM
		Performance Evaluation Methodology	Update manual for Class 2 Type certification	Formulation of manual for Class 1 Type certification		
		SBIR Phase 3 Project	Technical development and demonstration support for aircraft, ports, and related systems to meet the needs for inspection, surveying, and patrol inspection of roads, rivers, etc.	Expected to be market launched sequentially with overseas expansion in mind.		
		K Program	Development of airframe-related technologies for use in times of disaster, long-distance cargo transport, and autonomous and decentralized control, as well as wind observation technology and UTMS for disasters and emergencies			
	Traffic management	Simultaneous operation of many UAS	Demonstration of simultaneous operation of many unmanned aircraft (1 pilot : 5 aircraft) and preparation of case study	Consideration for simultaneous operation of a many more unmanned aircraft		
		Traffic management technology	Airframe development for UTM Step2, Verification of performance requirements in dynamic adjustment for UTM Step 2 expansion, Demonstration of connection of flight plan and dynamic information with manned aircraft toward UTM Step 3			

Prospects for UAS

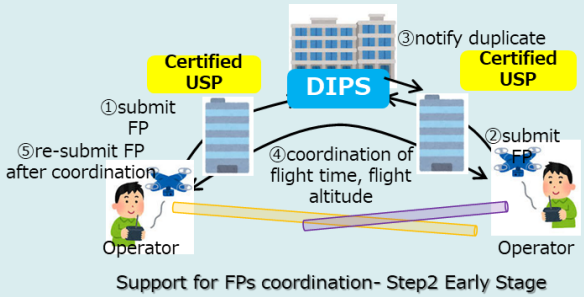
Future

<u>Various UAS will be utilized in diverse areas, including urban regions.</u>
In certain airspace, UTMS will be introduced, enabling advanced operations with multiple UAS.

Main Action

UTM

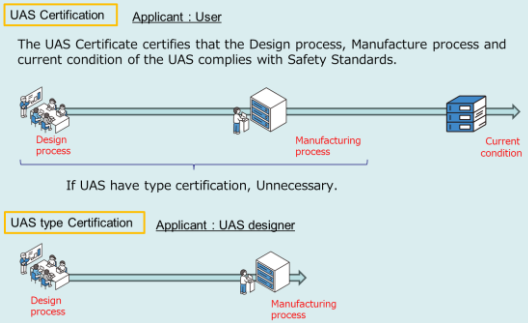
Introduce UTMS to prevent proximity and collisions between UAS and manned aircraft in high-density airspace.



Support for FPs coordination- Step2 Early Stage

Aircraft safety

Ensure aircraft safety through UAS certification and UAS type certification, for achieving Lv. 4 flights in urban areas.



Operation

・Expand the number of UAS that a single operator can control simultaneously. (5 or more)
・For expansion of flight operations (Lv. 4 flights), Lv. 4 flights, leverage AI and other technologies.

Promoting utilization

Promote further utilization by rationalizing regulations according to new applications and technologies.

Topics on UAS･RPAS･AAM

1, sUAS status

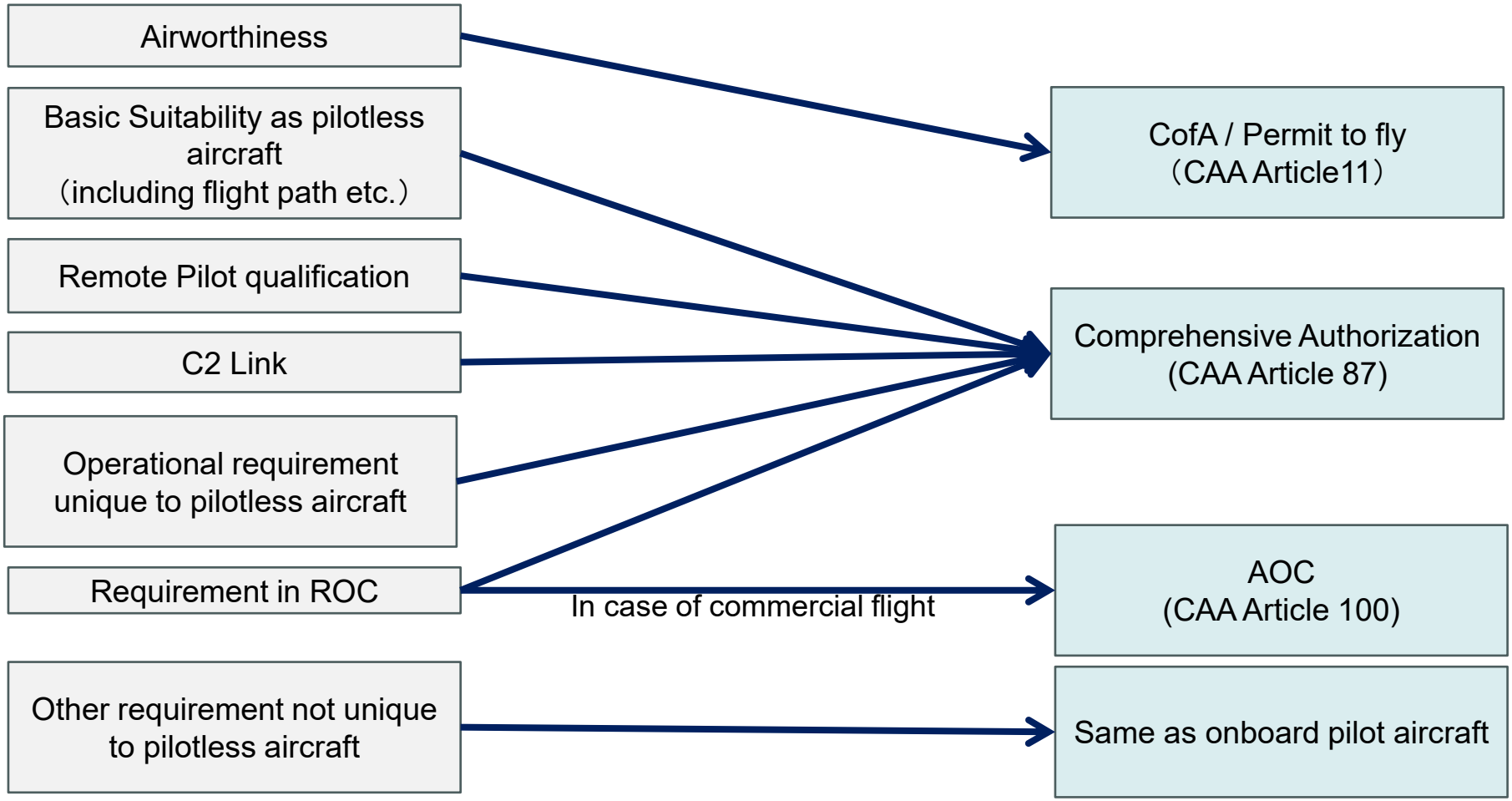
2, RPAS status

3, AAM status

Japan‘s Situation regarding pilotless aircraft

- ✓ Currently in Japan, there have only been cases of pilotless aircraft flying under a “Permit to Fly”.
- ✓ Therefore, Japan has not yet fully implemented regulations related to RPAS and plans to introduce them once the ICAO RPAS package is complete.
- ✓ Until then, comprehensive applications have been submitted based on Article 87 of the Civil Aeronautical Act (CAA), which was introduced in accordance with Article 8 of the Convention.

Basical regulation structure until introduction of RPAS Package



Permit status under CAA related to pilotless aircraft

✓Number of Permits to Fly Issued Under Article 87 of the CAA

- ✓ FY2023　32 issues （Number of flights beyond visual line of sight ：0）
- ✓ FY2024　55 issues （ Number of flights beyond visual line of sight ：2）
- ✓ FY2025*　43 issues （ Number of flights beyond visual line of sight ：3） *～2025/10/24

※Applications submitted for the purpose of modifying content, in addition to new applications, are also included in the count.

✓Challenging aspects of licensing and permits

- ✓ Visibility and duty of watching during BVLOS operations under VFR
  - ✓ We have a proven track record of deploying cameras and surrounding drones on the aircraft, confirming conditions that ensure 1 km of visibility, and granting VFR flight clearance.
  - ✓ Achieved BVLOS operations using only the aircraft's onboard cameras
  - ✓ Electric conspicuity：It is expected to be used as a substitute for visual information. But in Japan, there is no mandatory requirement for ADS-B Out installation on conventional aircraft, making it difficult for pilotless aircraft operators to acquire other aircraft's movement information.
    - ✓ Currently, there is no operational history, so flights are conducted under the pilot's visual control.
- ✓ Only a limited number of aircraft are equipped with Detect-And-Avoid systems like airborne surveillance radar, making prior coordination such as strategic deconfliction crucial.
- ✓ It’s necessary to confirm whether pilot requirements can be reduced during the automation phase.

Recent activity for specific category pilotless aircraft

- ICAO Annex 6 Part IV categorized unmanned aircraft into 3 categories
  - Open(low risk), Specific (medium risk/regulated lower risk) and Certified (high risk)
- In Japan, there are growing needs for the use of small pilotless aircraft (middle size UAS)* to transport cargo in mountainous area and during disasters.

  *Pilotless Aircraft of Article 87 of CAA is categorized as Specific or Certified Category (ICAO Annex VI Vol.4) because the size is larger than small UAS. And this small Pilotless Aircraft (=middle size UAS) is categorized Specific.
- To promote the development of this aircraft and realize its operation, we plan to conduct a cross-sectionally review of all standards and requirements related to small pilotless aircraft.
- JCAB is currently considering the introduction of risk-based regulation, such as SORA.

Topics on UAS･RPAS･AAM

1, sUAS status

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Potential Applications of AAM

Urban Use

Enables fast and comfortable transportation

(Solves traffic congestion without massive infrastructure investment)

Disaster Response

Enables rescue operations and supply delivery

(Without waiting for restoration of existing infrastructure)

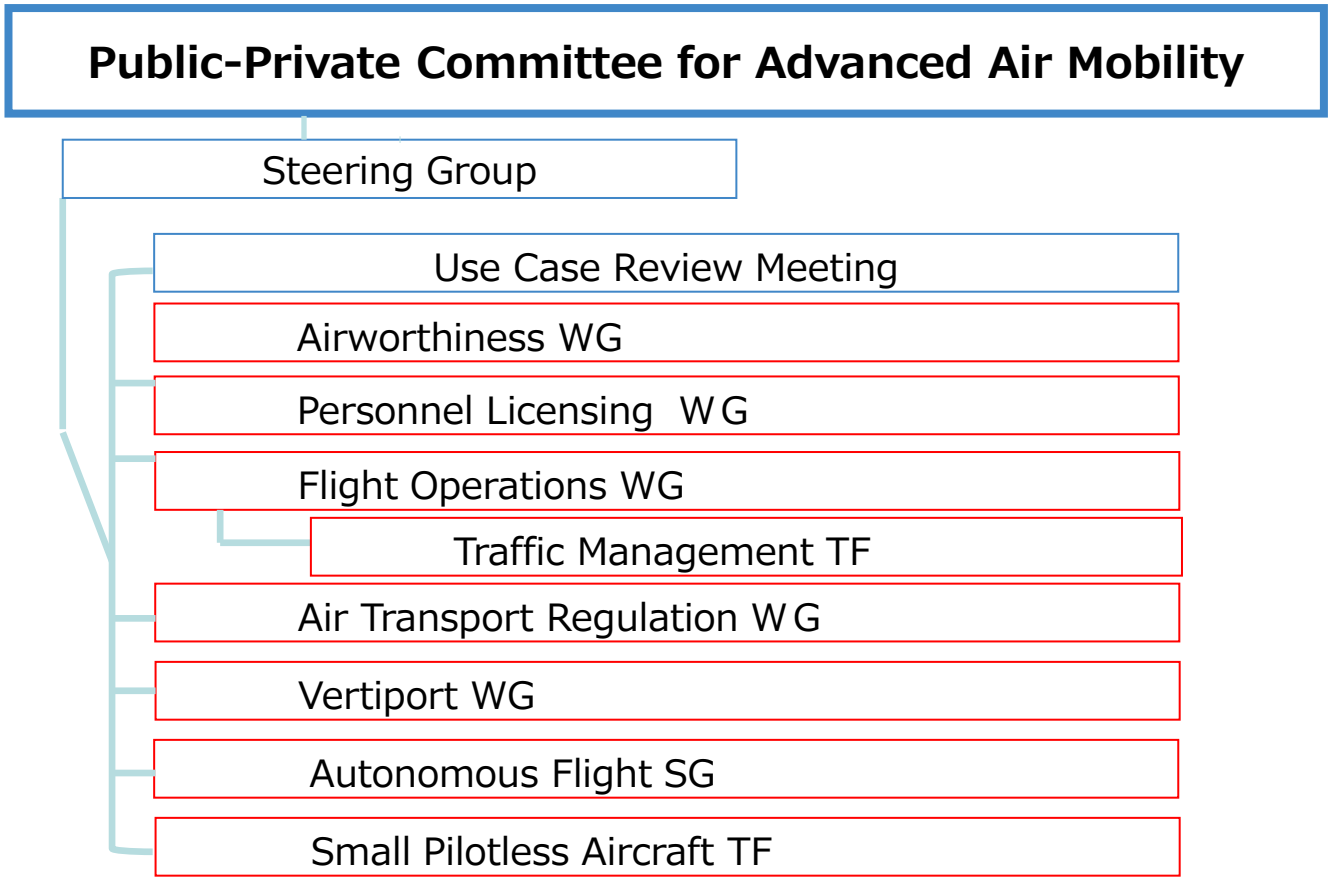
Remote and Mountainous Areas

Makes transportation possible in hard-to-reach regions

(Useful in depopulated areas and for creating new tourism demand)

Public-Private Committee for AAM

◆ JCAB and Ministry of Economy, Trade and Industry (METI) have jointly established the Public-Private Committee for Advanced Air Mobility, bringing together stakeholders in the public and private sectors to realize AAM in Japan.

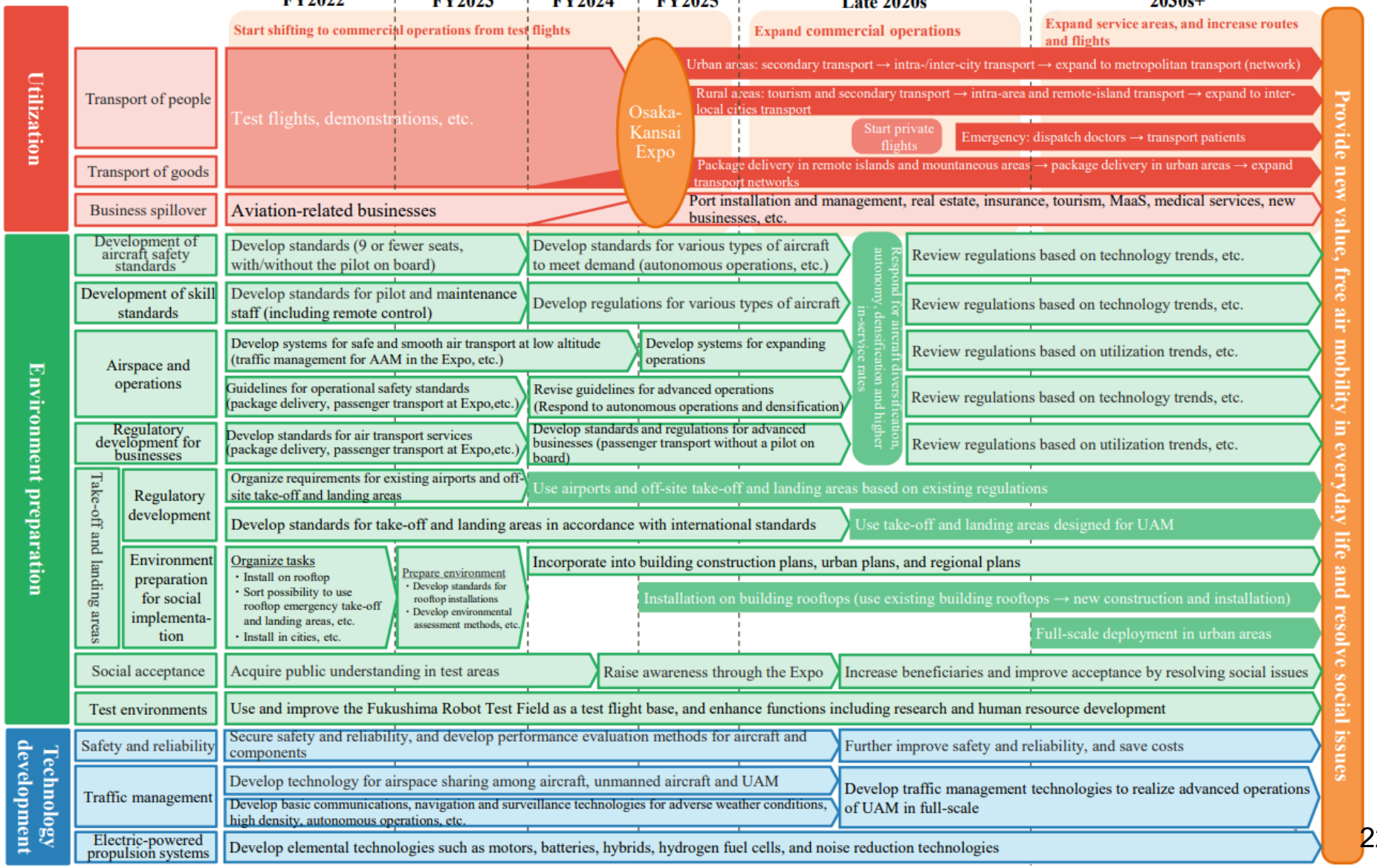


Roadmap of AAM in Japan

Advanced Air Mobility Roadmap

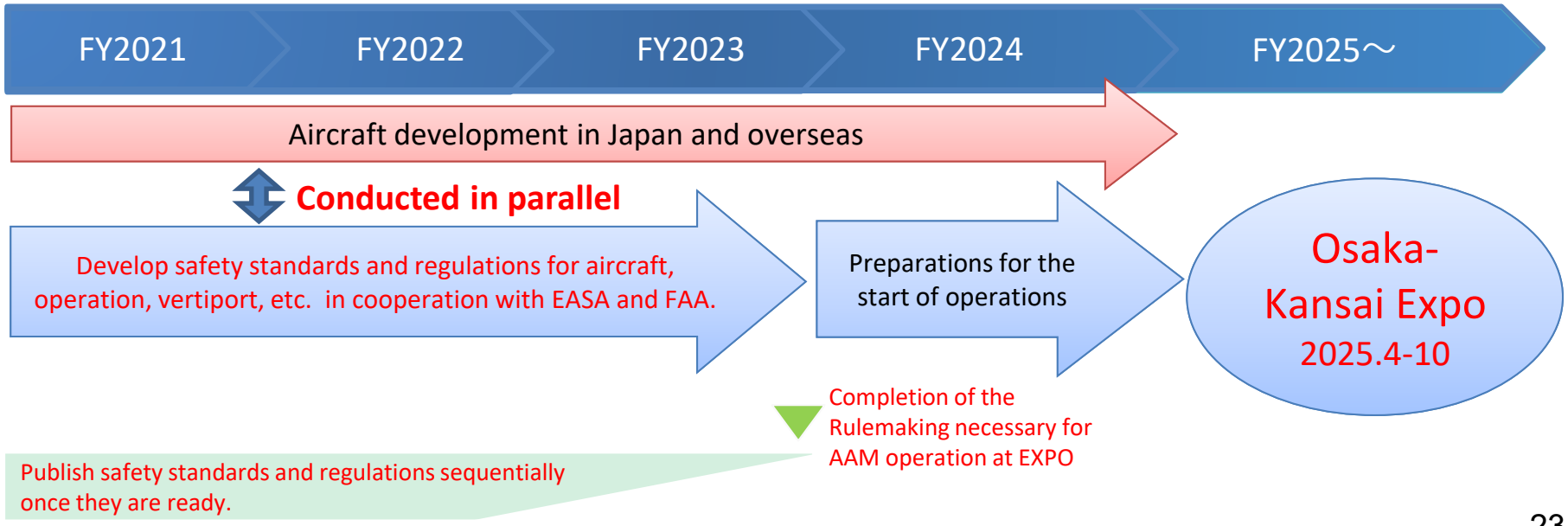
Public-Private Committee for Advanced Air Mobility
dated March 18, 2022

This roadmap outlines a flow of technology development and establishment of regulations which should be conducted with public-private cooperation. The roadmap focuses on possibility that challenges in urban and rural areas will be resolved with realization of more familiar and convenient means of air mobility, "Advanced Air Mobility (AAM)" – electric-powered vertical take-off and landing, and pilotless aircraft.



Rulemaking activities for AAM in Japan

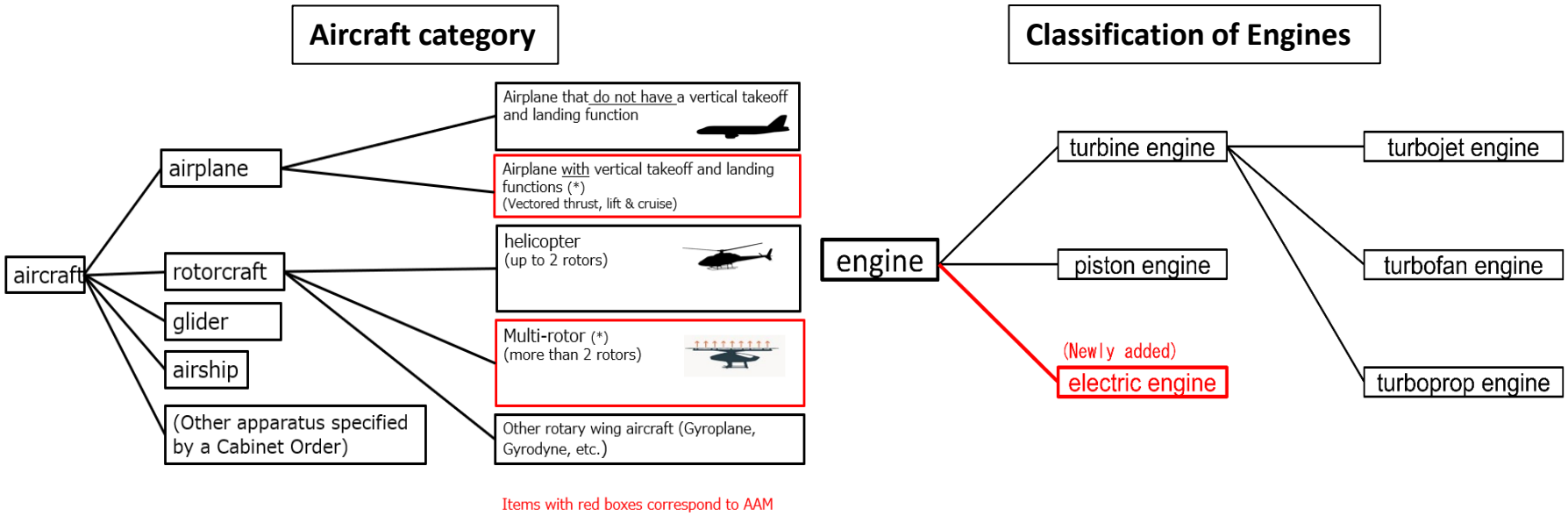
- Safety standards and regulations in aviation field have been established based on a long history of aircraft development and lessons learned from accidents and incidents.
- However, internationally-harmonized standards for AAM have not been established yet.
- In Japan, relevant safety standards (aircraft, pilots, operations, and vertiports) were established sequentially and completed by the end of FY2023 in order to realize the AAM operation at Osaka-Kansai Expo in 2025.
- To ensure safe and smooth flights around the Expo site and above airports, a system for traffic management has been established.



Rulemaking for AAM（1）

Legal framework of AAM

- **AAMs are defined as “Aeroplane with VTOL capability” and “Multi-rotor”.**
- **The term of "fuel" is defined to include electric energy.**
- **The term of "engine" is defined to include electric engine.**



Rulemaking for AAM（2）

Aircraft

<Characteristics of AAM>

AAM has unique design features, such as **electrification, VTOL capability, and remotely piloted**

⇒ **Establishment of "special conditions"** for those unique design features as additional safety standards

Operations

<Characteristics of AAM>

Flight range and time are limited due to battery performance.

⇒ The necessary amount of fuel (electrical energy) **can be flexibly set according to aircraft performance and flight route.(performance based criteria)**

Personnel Licensing

< Characteristics of AAM>

Maneuvering characteristics vary by aircraft type

⇒ The flight experience requirement for pilot licence **can be set for each aircraft type.**

Air Transport Regulation

< Characteristics of AAM>

- **Flight range and time are limited** due to battery performance, etc.
- **Operation at relatively low altitude airspace.**

⇒The minimum flight altitude **can be relaxed under conditions such as keeping distance from obstacles and complying with requirements to prevent altitude deviation**.

Vertiport

< Characteristics of AAM>

Capability of vertical takeoff and landing (However, the aircraft is currently under development and its performance is not clear at this time.)

⇒ **Vertiports Design Guideline was published** with reference to guidance in Europe.

Osaka-Kansai Expo Overview

(1) Theme/Concept

Theme : **Designing Future Society for Our Lives**

Concept : **A testing ground for future society**

(2) Location : Yumeshima (Osaka City waterfront area)

(3)Duration: April 13 - October 13, 2025 (184 days)

(4) Number of potential visitors: about 28.2 million people

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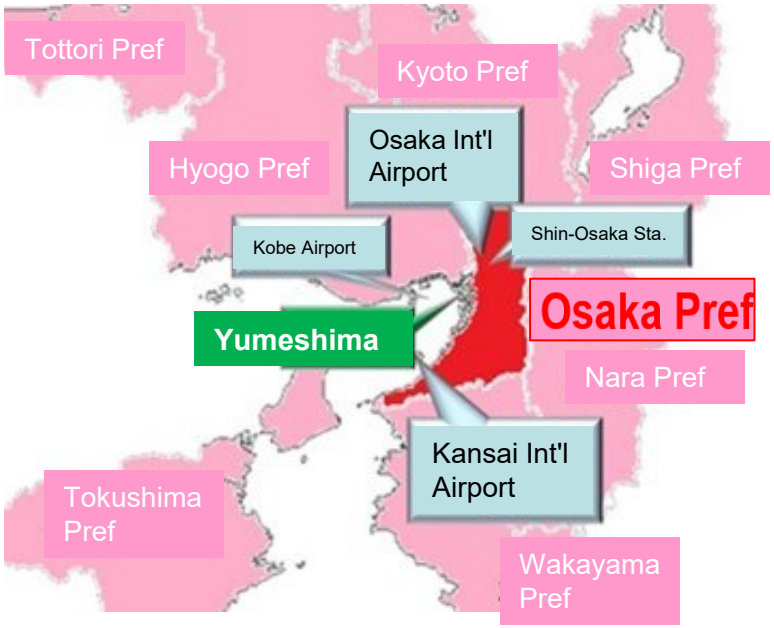
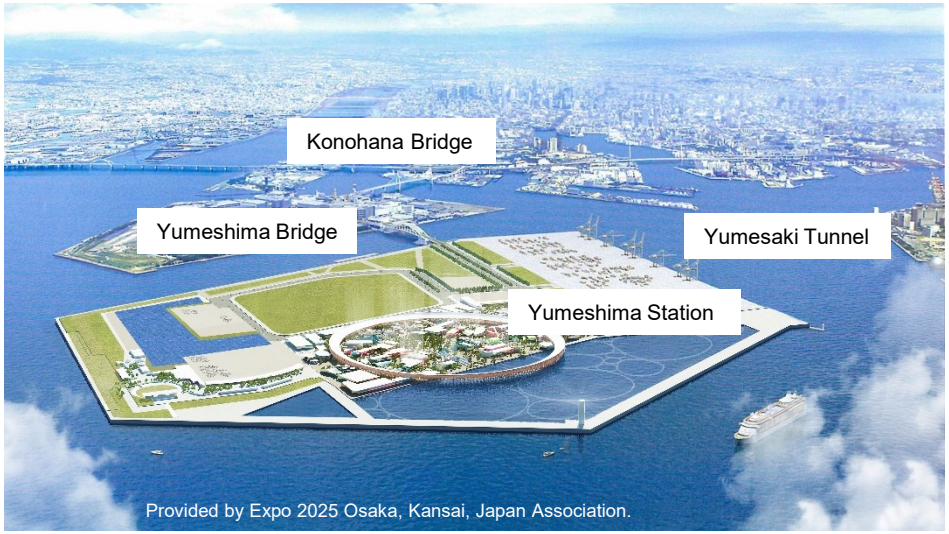


【 Overhead view of the venue】



JCAB reconstructed the above documents published by Expo 2025 Osaka, Kansai, Japan Association.

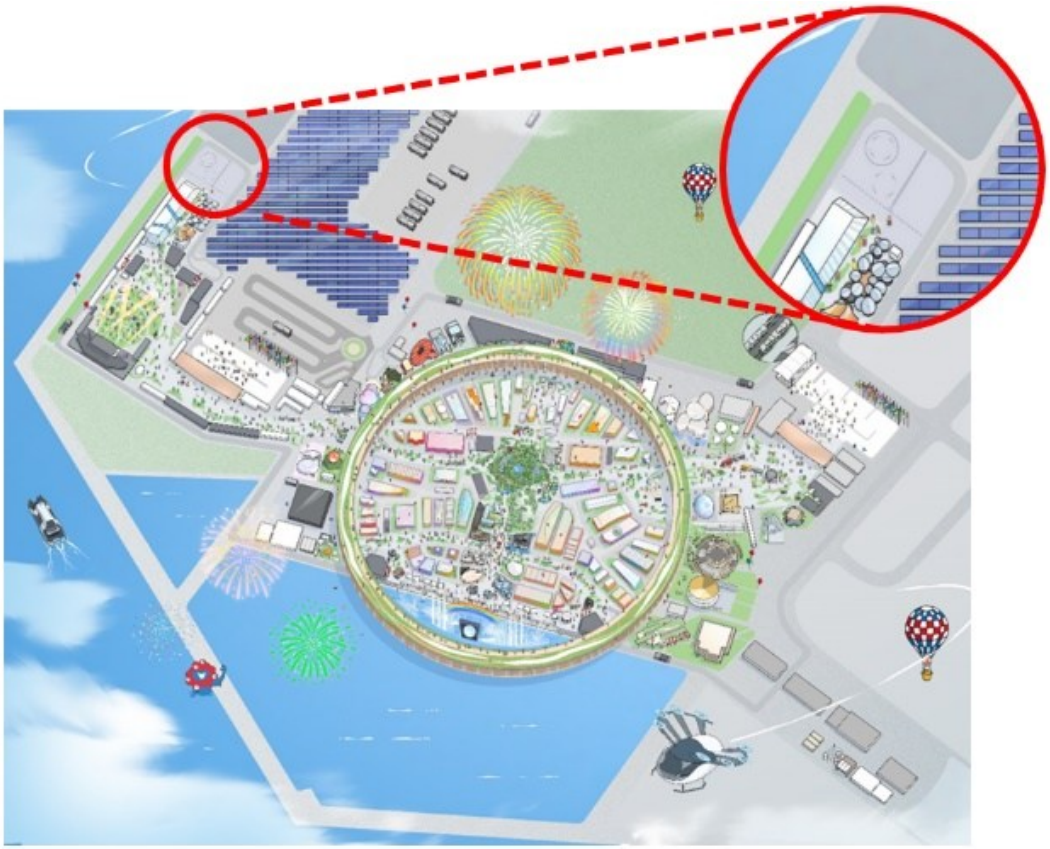
Smart Mobility Expo: Advanced Air Mobility（AAM）

Operators	Marubeni		SkyDrive	ANA HOLDINGS / Joby Aviation	Soracle (JV of Sumitomo Corp. and Japan Airlines)
Aircraft	 **LIFT Aircraft (USA)** **HEXA** Flight Range : 25km Capacity:1 persons	 **Vertical Aerospace (UK)** **VA1-100 (VX4)** Flight Range : 160km Capacity: 5 persons	 **SkyDrive (JPN)** **SD-05 (SKYDRIVE)** Flight Range : 15km Capacity: 3 persons	 **Joby Aviation (USA)** **JAS4-1 (Joby S4)** Flight Range: 160km Capacity: 5 persons	 **Archer Aviation (USA)** **M001 (Midnight)** Flight Range : 160km Capacity: 5 persons
Details	**A demonstration flight in the Expo Vertiport.**	**Due to the progress of flight tests, the flight has been postponed.**	**An orbital flight based on the EXPO Vertiport.**	**A demonstration flight from the Expo Vertiport to the sea on the west side of the venue.**	**Display of full scale mockup, no flight during Expo period.**
Period	**Operation period : April and early July to July 21st.**		**Operation period : July 31st to August 24th.**	**Operation period : Late September to October 13th.**	**Exhibition period : July 8th to July 15th.**

As of September 9, 2025

*Note: The information might change due to the status of aircraft development.

EXPO Vertiport



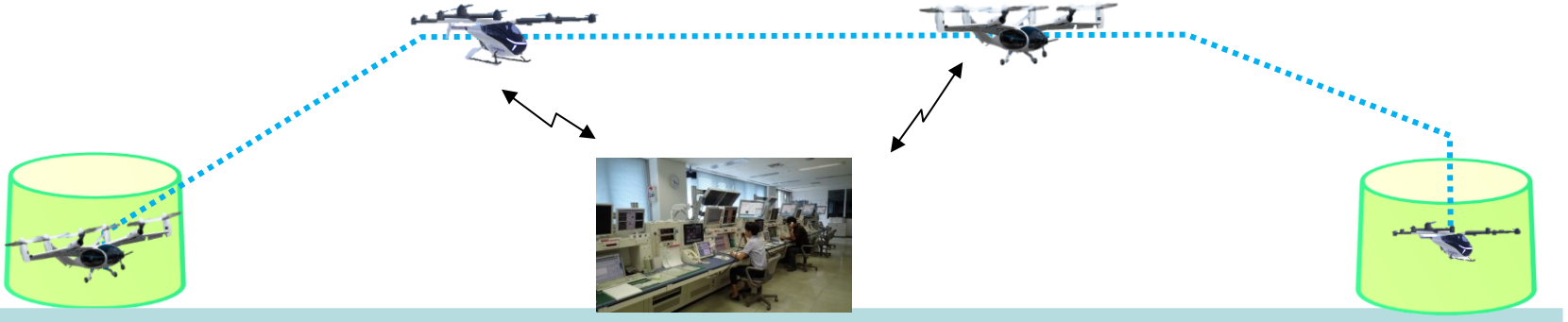
Facility Overview	
Area	7,944.39㎡
Facility	Apron, Landing area, Aircraft stand (parking space) , Hangar, Airport lounge/Office building etc.
Equipment	Entrance/Exit gate, Meteorological instrument, Aircraft Battery Charger etc.

Provided by Expo 2025 Osaka, Kansai, Japan Association.
JCAB reconstructed these documents published by Expo 2025 Osaka, Kansai, Japan Association.

EXPO2025 UATM Service

UATM(Urban Air Mobility Traffic Management) Service

- Initially, UATM Service will be provided by JCAB(ANSP) according with current ATM Service
- Develop “Guidance for UATM Service” collaborating with stakeholders.



Vertiport

Vertiport

Notification of Airspace and Routes

Notice the AAM routes and airspace around the EXPO vertiport in AIP.

Strategic Deconflict

Adjust flight plan (route etc.)before the flight so as not to hold for long time.

Conformance Monitoring

Monitor AAM by ADS-B and position report and confirm AAM deviation.

Information Service

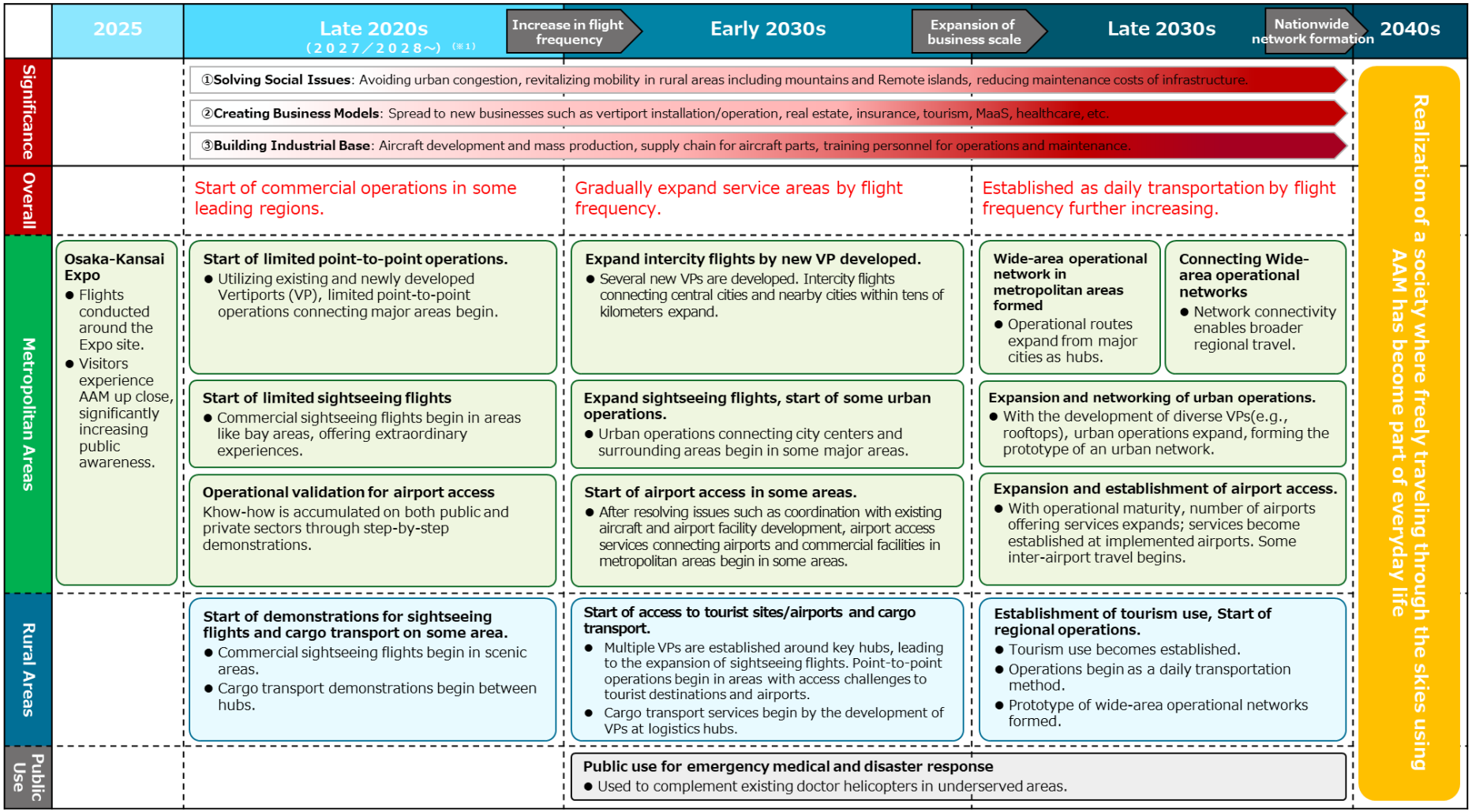
Provide necessary information by VHF to AAM and VFR traffic around vertiport.

Information Exchange

Flight Intent(FPL,ADS-B), Aeronautical and Meteorological Information exchange by SWIM.

Post-Expo vision for social implementation of AAM

Public-Private Committee for Advanced Air Mobility dated August 28, 2025



（※1）Some areas may lead ahead of schedule.　（※2）Private use is expected to spread alongside commercial operations.