



**INTERNATIONAL
CIVIL AVIATION
ORGANIZATION**



SAM/SRVSOP Workshop/Expert Meeting: Roadmap for the Implementation of UAS/RPAS in the Specific Category

SAM Regional Office

May, 2026

ICAO UAS Model Regulations (Overview of Part 101, 102, 149)



Leonardo Haberfeld
ICAO RPAS Technical Officer

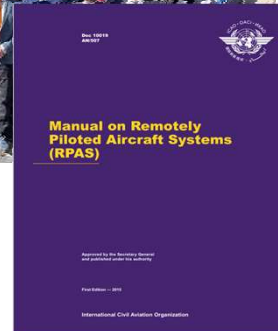
SCOPE OF ICAO WORK ON UNMANNED AVIATION

**UNMANNED AIRCRAFT SYSTEM STUDY GROUP (UASSG)
2008 - 2014**



CIRC 328 – Unmanned Aircraft Systems (2011)

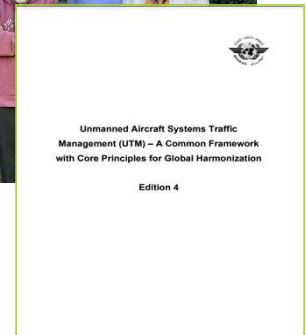
**REMOTELY PILOTED AIRCRAFT SYSTEMS PANELS (RPASP)
2014**



- ✓ > 130 experts
- ✓ 13 WGs/TFs
- ✓ 19 Annexes

DOC 10019 – Manual on Remotely Piloted Aircraft Systems (2015)

**UNMANNED AIRCRAFT SYSTEMS – ADVISORY GROUP (UAS-AG)
2015 - 2023**



- ✓ > 20 experts
- ✓ 6 Drone Enable
- ✓ UTM framework

**UTM
A Common Framework with Core Principles for Global Harmonization (4ed. 2023)**

REGIONAL
CARGO AND
PASSENGER
TRANSPORT



PUBLIC
GOOD

CONSUMER/
ENTERPRISE
GOODS AND
SERVICES



LOCAL
PASSENGER
TRANSPORT

ICAO

ADVANCED AIR MOBILITY (AAM) STUDY GROUP

What Are ICAO Model Regulations?



2nd HLSC

- February 2015
- Studies for UAS operations that pose a menace to International Navigation (Aerodromes...)



39th Assembly

- September 2016
- ✓ Development of [...] and **guidance material for UAS** out of IFR framework



13th ANConf

- October 2018
- Formulate & implement technical and regulatory solutions for UAS



40th Assembly

- Develop guidance material for safety risks of unauthorized presence of UA near aerodromes;
- Provisions for UAS and UTM.



**UNMANNED AIRCRAFT SYSTEMS –
ADVISORY GROUP (UAS-AG)**



What Are ICAO Model Regulations?

TASKS UAS-AG



a) Review and examine national and regional legal and **regulatory frameworks and initiatives** to identify commonalities and **existing best practices** with a view to **developing guidance material for routine SUAS operations** while maintaining the existing **level of safety of manned aircraft operations and people and property on the ground**;



b) **Develop guidance material to assist States with SUAS rulemaking** including assessing requirements for airworthiness, operations, licensing, communications, detect and avoid and air traffic management; and



c) Develop **training and outreach material** in order to **educate regulators, industry stakeholders, model aircraft associations and civil operators** and to establish a balanced long-term approach towards the **safe operation of SUAS in national airspace systems**.

What Are ICAO Model Regulations?

UAS for Humanitarian Aid and Emergency Response Guidance (U-AID)

ICAO Model UAS Regulations Part 101 & Part 102

ICAO Model UAS Regulations Part 149

Protection of Civil Aviation Infrastructure Against Unmanned Aircraft

UTM: A Common Framework with Core Principles for Global Harmonization (4ed)


RPAS CONOPS for International Operations

Response to Unauthorized UA in the Vicinity of Aerodrome Guidance Material

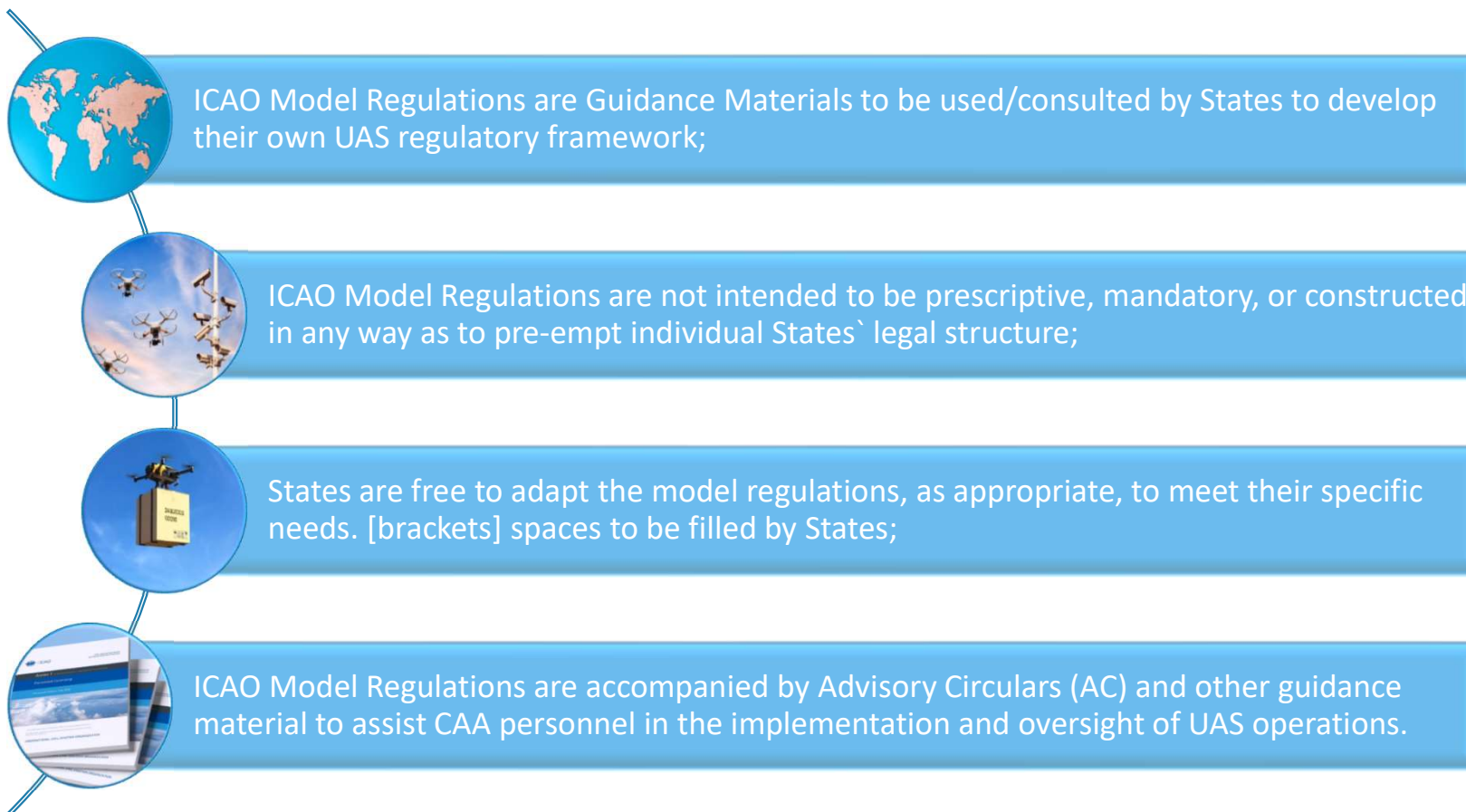
Advisory Circular (AC)

- ✓ 101-1
- ✓ 102-1
- ✓ 102-37

DOC 10019 – Manual on Remotely Piloted Aircraft Systems Vol. II 2026



What Are ICAO Model Regulations?



Overview of the 3 Key Parts

PART	FOCUS AREA	APPLIES TO
<p>101 (AC-101)</p>	<ul style="list-style-type: none"> - General Rules Guidance - Focus on Operations - “Open” Risk-Centric Operations 	<ul style="list-style-type: none"> - All UAS users*; - Hobbyists*; - Commercial uses*. <p>* Lower-Risk Operations</p>
<p>102 (AC-102)</p>	<ul style="list-style-type: none"> - Licensing & Certificate Guidance - Focus on Remote Pilot/UAS Operator Certificate - “Specific” Risk-Centric Operations 	<ul style="list-style-type: none"> - UAS users in Moderate-Risk Operations
<p>149</p>	<ul style="list-style-type: none"> - Approved Aviation Organization (AAO) Guidance - Focus on Certificate and Operation of AAO - Safety Management System (SMS) 	<ul style="list-style-type: none"> - Organizations/Companies intending to provide UAS environment services.

Approved Aviation Organization (AAO): AAO means an organization having appropriate expertise in the design, construction or operation of a UA, or appropriate knowledge or airspace designations and restrictions, and that has been approved by CAA to perform specific tasks, such as remote pilot (RP) qualification, RP training, UA inspection, UA modification,... (Part 101 – 101.21)

Part 101



General Rules

- **Low-Risk Operations;**
- **Visual-Line-Of-Sight (VLOS);**
- **Distance > 30m from not involved person (Exception: consent);**
- **No Pilot Certification Required (Exception: near aerodromes);**
- ...

Airspace

- **Operates below 400ft AGL (Exception: Segregated areas);**
- **Distance > 4km of any aerodrome (Exception: ATS Coordination)**
- **Daylight (Exception: shielded areas);**
- ...

UAS

- **Weight $\leq 25\text{Kg}$ (Note: $15\text{Kg} < \text{UAS} \leq 25\text{Kg}$ requires AAO approval or DoC)**
- **Not allowed to drop any object;**
- **Shall not put person and property in danger;**
- ...

Part 102

* Operations not subject to Part 101 (Moderate-Risk)



Remote Pilot Certification

- **Aeronautical Knowledge;**
- **RP Training, Flight Test by CAA, ...;**
- **Shall not operate more than an UA at a time;**
- ...

UAS Operator Certificate (UOC)

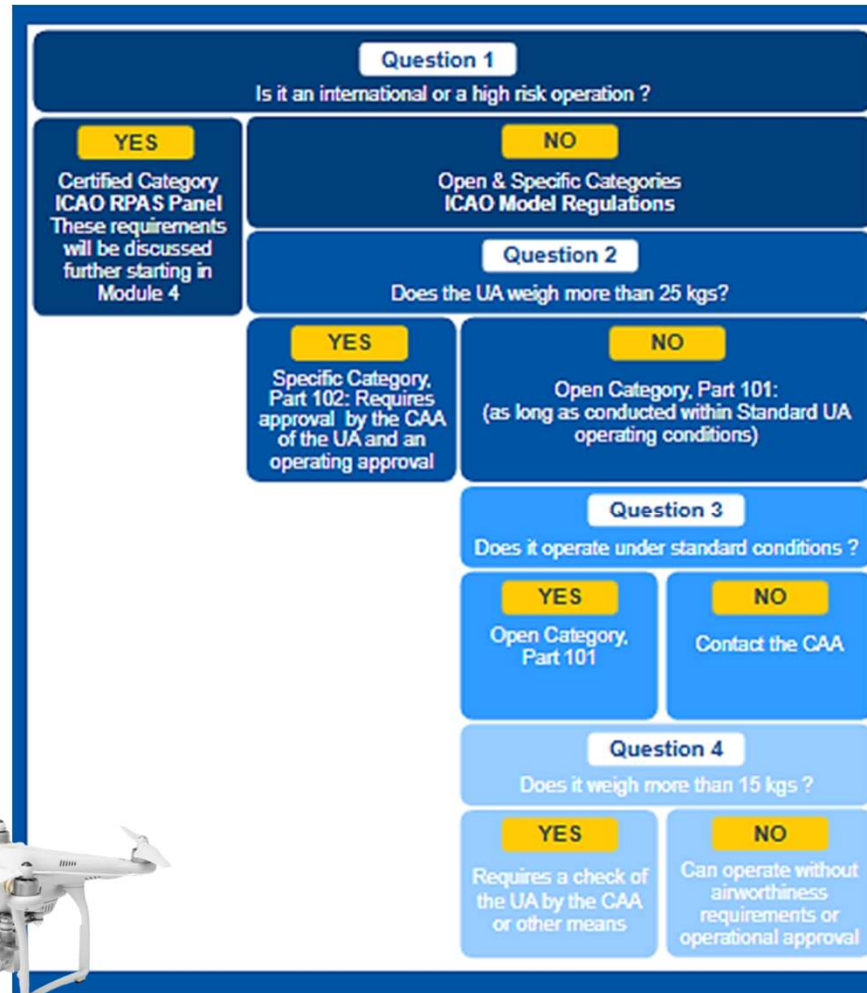
- **Local (Base) of Operations Details;**
- **Operational Risk Assessment and Mitigation Measures;**
- **Control System Details;**
- **Procedures of Maintenance;**
- ...

UAS Manufacturer

- **Means Of Compliance (MOC);**
- **Declaration of Compliance (DOC);**
- **Documentation;**
- ...

MOC: shall consist of data (tests, analysis, industry consensus standards) and the results or justification used to demonstrate the UAS meets the predetermined level of safety the [CAA] has established as acceptable.

Part 101 & 102 Flow Chart



Advisory Circular (AC) 102-37



Scope

- **UAS transporting Dangerous Goods.**

Dangerous Goods

- **Articles or substances that are capable of posing a hazard to health, safety, property or the environment and which are shown in the list of dangerous goods;**
- **Annex 18;**
- **Technical Instructions for the Safe Transport of Dangerous Goods (Doc 9284).**



Annex 18 – The Safe Transport of Dangerous Goods by Air

Doc 9284



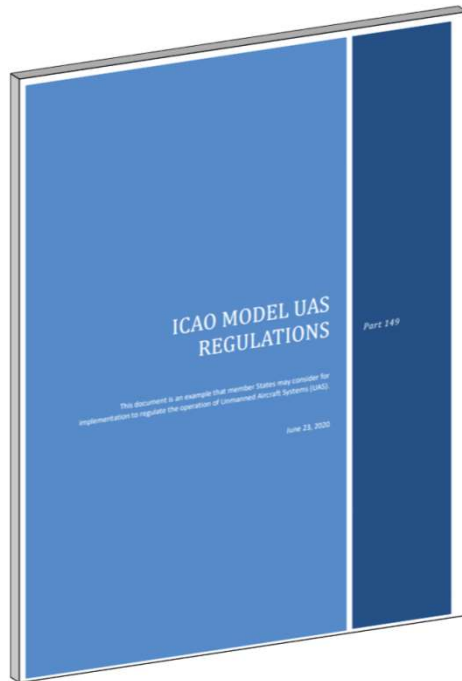
Content

- **Classes and Divisions of Dangerous Goods;**
- **Dangerous Goods Standard Operating Procedures (DG-SOP);**
- **Safety Risk Management.**

CLASSIFICATION OF DANGEROUS GOODS



Part 149



Approved Aviation Organization (AAO)

- **Administration Functions;**
- **Key Personnel;**
- **Requirements for a Safety Management System;**
- **Requirements for Audit and Surveillance System;**
- **Application Submission.**

Certification Requirements

- **A Qualified Person to Act as Chief Executive;**
- **Qualified People to Carry Out the Activities;**
- **Adequate Facilities to Carry Out the Activities;**
- **Hold Copies of All Relevant documents (manuals, Tech Bulletins, Legislations,...);**
- **Capacity to Manager and Record Data of Operations;**

Safety Management System (SMS)

- **Establishment of an internal SMS;**
- **Safety Policy;**
- **Quality Indicators;**
- **Procedures for Corrective and Preventive Actions;**
- **Internal Audit;**
- **Management Review.**

Comparison Table



FEATURE	APPLICABILITY		
	PART 101	PART 102	PART 149
Operation "Category"	"Open"	"Specific"	N/A
Risk Level	Low	Moderate	N/A
UAS Weight Applicable	UA ≤ 15Kg 15Kg < UA ≤ 25Kg	Depends	N/A
Hobbyists	Yes	Maybe	N/A
Shielded Operation	Yes	Maybe	N/A
Operator`s Org Require Certification	No	Yes	Yes
Safety Management System	No	Yes*	Yes
UAS Operator Certificate	No	Yes	N/A
Organization UAS Services Interest	Yes	Yes	Yes
Dangerous Goods	No	AC 102-37	AC 102-37*



SCAN HERE TO ACCESS ICAO MODEL REGULATIONS WEBPAGE

N/A: Not Applicable

Shielded Operation: operation of an aircraft within 100m of, and below the top of, a natural or artificial object.

Comparison Table



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Operator`s Org Require Certification	No	Yes	Yes
Safety Management System	No	Yes*	Yes
UAS Operator Certificate	102.49 (c) The operator's system for safety management shall be commensurate with the size of the organization, the nature and complexity of the activities undertaken by the operator, and the hazards and associated risks inherent in the activities undertaken by the operator.		
Organization UAS Services Inter			
Dangerous Goods			

N/A: Not Applicable

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Comparison Table



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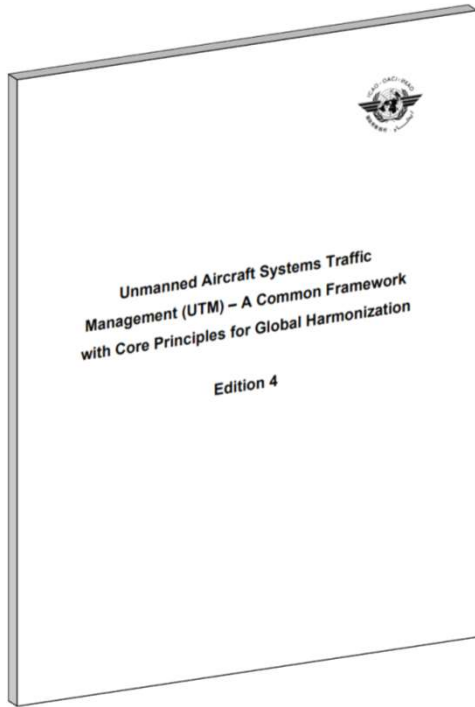
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Shielded Operation: operation of an aircraft within 100m of, and below the top of, a natural or artificial object.

Background & Context

This document is intended to provide a framework and core capabilities of a "typical" UTM system to States that are considering the implementation of one.



1st Edition

- Registration
- Identification
- Tracking
- Communications
- Geofencing
- Potential UTM Frameworks

2nd Edition

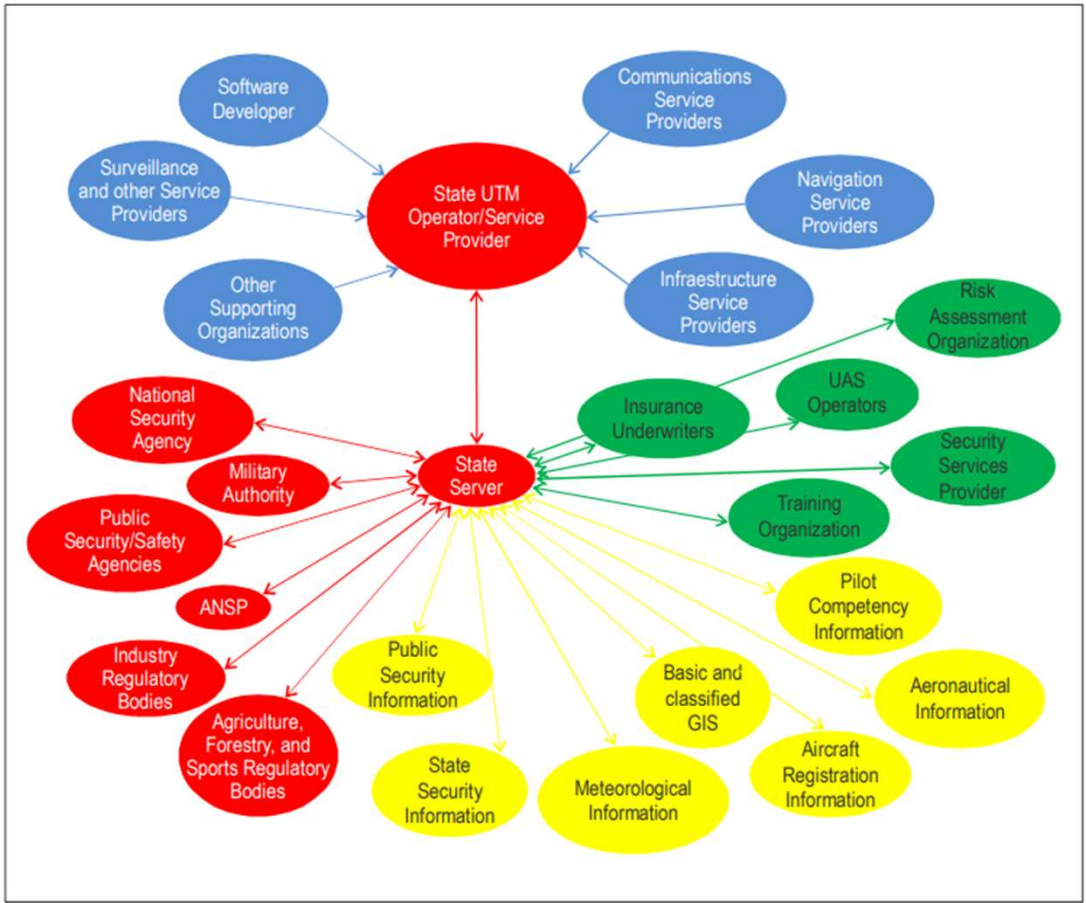
- UTM-ATM Boundaries
- UTM-ATM Transitions
- UTM-ATM Exchange of Information

3rd Edition

- UTM Risk Assessment
- Contingency Procedures
- UTM Service Providers
- Separation & Deconfliction on UTM

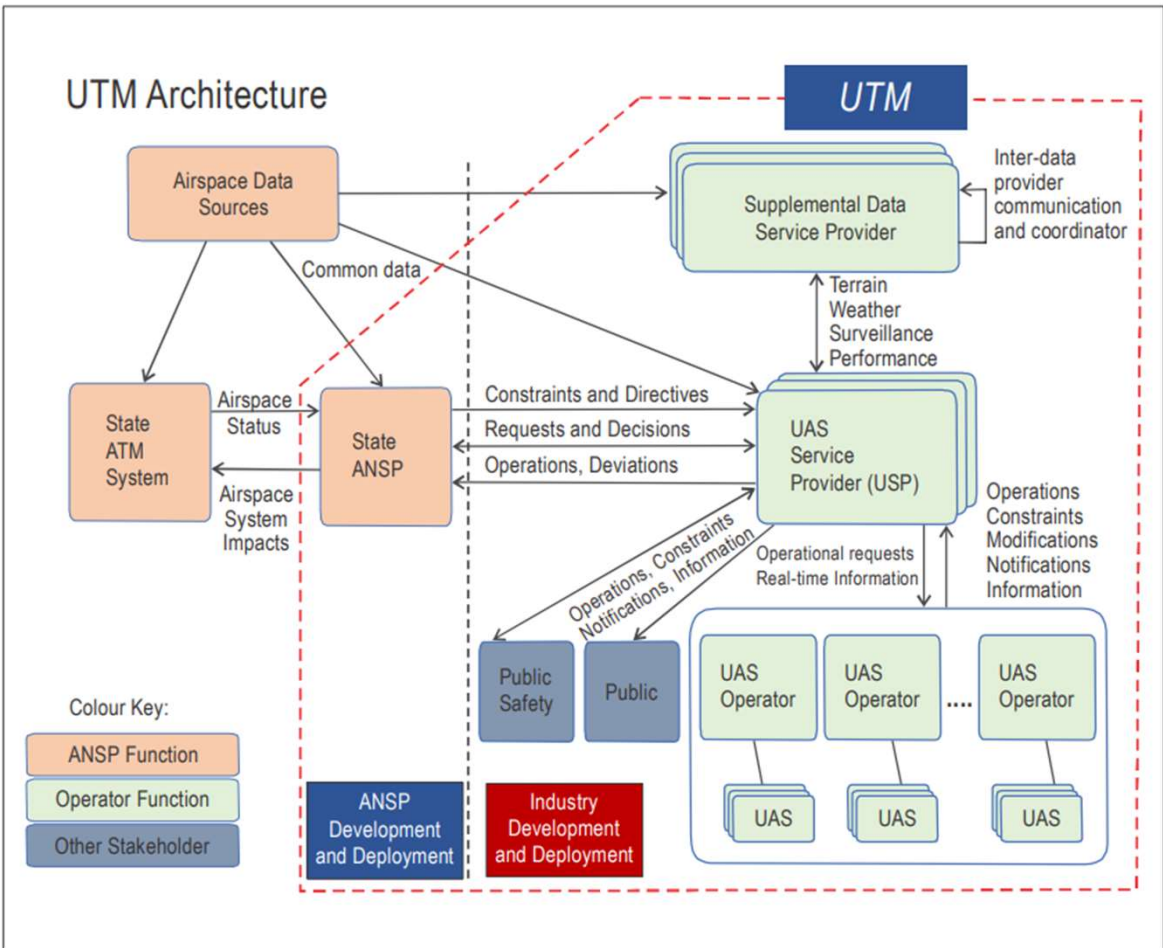


UTM Framework



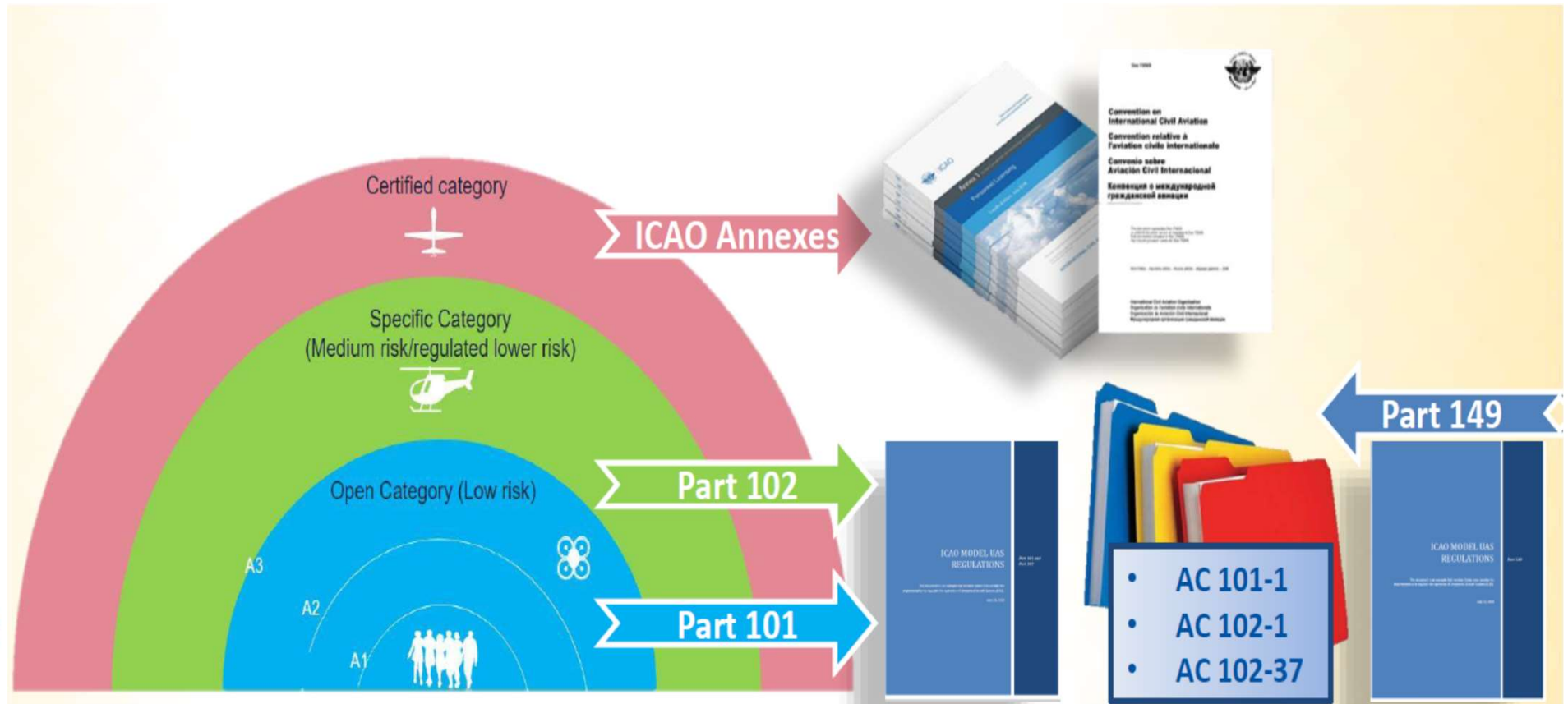
- ✓ Centralized Architecture;
- ✓ State Server
- ✓ UAS Service Provider (USP);
- ✓ Supplement Data Service Provider (SDSP);
- ✓ Remote Identification;
- ✓ Computational and Network Capacity.

UTM Framework



- ✓ Federated Architecture;
- ✓ UAS Service Provider (USP);
- ✓ Supplement Data Service Provider (SDSP);
- ✓ Remote Identification;
- ✓ Computational and Network Capacity.

Summary





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AAM 2026

1 - 3 December | Bangkok, Thailand

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สำนักงานการบินพลเรือนแห่งประเทศไทย
The Civil Aviation Authority of Thailand





*“By embracing innovation and working together, we can create a new era in aviation that is inclusive of a broad range of users and operations. To achieve this vision, **high levels of global cooperation** should be enabled by strategic planning while remaining adaptable to changes”.*

Thank You

