هيئة دبي للطيران المدني
Dubai Civil Aviation Authority

DUBAI CIVIL AVIATION REGULATION

DCAR-UAS UNMANNED AIRCRAFT SYSTEM OPERATIONS - ISSUE 02

These regulations represent the minimum requirements designed to achieve an acceptable level of safety for UAS Commercial operations, considering the various nature of operations within the Emirate of Dubai

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1. Purpose

An Appropriate Authority – for aviation purposes - is any person or organization that has the legally delegated or invested authority, capacity, or power to perform a designated function and is responsible for the development, implementation and maintenance of the local civil aviation programme.

1. The Ruler of Dubai promulgated Law no 11 of 2020 (replacing Law no 19 of 2010), which prescribe the establishment of the Dubai Civil Aviation Authority (DCAA), as a local authority (Appropriate Authority) having legal personality and legal capacity required to undertake all acts and dispositions that ensure the achievement of its objectives in accordance with Article 5 of Law no 11 of 2020
2. The DCAA is required, under Article 6 of Law no 11 of 2020, to establish regulatory policies and circulars for all Operators, Practitioners, and Regulated Airfreight Carriers in the Emirate.
3. In addition, The Ruler of Dubai promulgated Law No. (4) of 2020 Regulating Unmanned Aircraft in the Emirate of Dubai that assigns duties and powers to the DCAA with the objective to maintain Airspace Safety and security.
4. As the Appropriate Authority, the DCAA has implemented DCAR-UAS (Unmanned Aircraft System Operations) for the rules governing the operation of UAS in the Emirate of Dubai.
5. These regulations represent the minimum requirements designed to achieve an acceptable level of safety, considering the various nature of operations within the Emirate of Dubai.

2. Interpretation

1. The following terms have the corresponding meaning within this Regulation:
    i. Shall: The term ‘shall’ is used in the DCAA regulation to impose an obligation or a requirement or a prohibition.
    ii. Should: The term ‘should’ is used to indicate any specification which is recognized as necessary in the interest of safety unless an alternative is accepted by the DCAA.
2. The terms ‘Appropriate Authority’, or ‘DCAA’, may be used to refer to the Dubai Civil Aviation Authority.

2.1. Implementing Rules Requirements (IR)

1. Implementing Requirements are supported by Technical Standards in the Appendices of this Regulation.
2. Each implementing requirement is designed in a manner that it addresses one or more safety objective(s), through creating or limiting rights, creating, or limiting duties and responsibilities.
3. Compliance is mandatory, unless a waiver has been granted by the DCAA, and are binding in their entirety and used to specify a high and uniform level of safety and uniform conformity and compliance.

2.2. Technical Standards

1. Are standards (but not necessarily the only standards) adopted by the DCAA to illustrate means to establish compliance with the DCARs.
2. An entity/or a person wishing not to comply with the Technical Standards must comply using other means accepted by the DCAA.
3. Where multiple Technical Standards exist for an Implementing Rule then all Technical Standards are applicable unless specified otherwise.
4. Applicants may propose to show compliance with the requirements using other means. Organisations may propose 'Alternative Means of Compliance' (AltMoC) that propose an alternative to an existing Technical Standards, but this is subject to review and approval by the DCAA. Alternative Means of Compliance proposals shall be accompanied by evidence of the ability to meet the intent of the IR.
5. The Alternative Means of Compliance (AltMoC) is therefore a regulatory instrument that serves as:
    i. an alternative to an existing Technical Standard; or
    ii. a means to establish compliance with an implementing requirement contained in a DCAR or Directive for which no associated Technical Standards has been promulgated by the DCAA.
6. Compliance with Technical Standards is mandatory unless an Alternative Means of Compliance has been accepted by the DCAA.
7. Once an AltMoC is accepted by the DCAA, compliance therewith is mandatory.

3. References

Federal decree No (12) of 2024 states that:

1. **The International Conventions, Protocols, and Agreements - related to the Civil Aviation Sector - shall be enforced in the State and deemed supplementary to the provisions of this law.**
2. **In the event any provisions of this law contradicts with any provision stipulated in any of the International Conventions, Protocols, and Agreements related to Civil Aviation Sector and enforced in the State, the priority in implementation shall be for the provision of the said Conventions, Protocols, and Agreements**

1. Federal Law No. (20) of 1991 Issuing the Civil Aviation Law
2. Law No. (7) of 2015 Concerning Airspace Safety and Security in the Emirate of Dubai
3. Law No. (4) of 2020 Regulating Unmanned Aircraft in the Emirate of Dubai
4. Executive Council Resolution No 4 of 2017 for approving fees and fines of the Dubai Civil Aviation Authority.
5. GCAA CAR-ASP part U-Space
6. DCAR-UAS Issue 1
7. European Union, European Aviation Safety Agency (EASA)

4. Summary of changes in this version

1. New rules regarding UAS Registration services.
2. Amended rules for UAS operations.
3. Supplementary U-Space rules.
4. New Technical Standards
5. Editorial amendments.

5. SUBPART – DEF (UAS.DEF) TERMS AND DEFINITIONS

5.1. UAS.DEF.001 Applicability

1. The definitions within this part shall be applicable within:
    i. DCAR-UAS
2. Definitions shall be interpreted in the following order of precedence:

i. The definitions specific to the discipline (DCAR-UAS)
ii. The definitions in GCAA CAR-ASP part U-Space
iii. The definitions in GCAA CAR-DEF
iv. ICAO

5.2. UAS.DEF.005 Common Reference Systems & Units of Measurement

1. The horizontal (geodetic) reference system is the World Geodetic System - 1984 (WGS-84).
2. Reported aeronautical geographical coordinates (indicating latitude and longitude) shall be expressed in terms of the WGS-84 geodetic reference datum.
3. The vertical reference system is the Mean Sea level (MSL) datum, which gives the relationship of gravity-related height (elevation) to a surface known as the geoid.
4. The temporal reference system is the Gregorian calendar in Coordinated Universal Time (UTC).
5. Subject to (g), the units of measure used for aeronautical purposes in the United Arab Emirates are those specified in the International System of Units as adopted in ICAO Annex 5.
6. Non-International System Units are used in accordance with the following table within the UAE:

QUANTITY	**NON-SI SYMBOL.**
Altitude	Foot (ft).
Distance	Nautical Mile (NM).
Elevations	Foot (ft).
Heights	Foot (ft).

Speed, including wind speed	Knot (kt).
Vertical speed	Feet per minute (ft/min).

5.3. UAS.DEF.010 Definitions

1. The definitions, acronyms and abbreviations in GCAA CAR-DEF shall be considered when there is no conflicting definition in the specific DCAR publication.
2. In the context of DCAR-UAS, additional definitions include:

Airspace Risk Assessment

An evaluation of operational, safety and security risks that considers the required levels of safety performance, the type, complexity and density of the traffic, the location, altitudes or heights and the airspace classification.

Beyond Visual line-of-sight operation.

An operation in which the remote crew does not maintain direct visual contact with the aircraft but is operated remotely to manage its flight and meet separation and collision avoidance responsibilities.

Common Information Service

a Service consisting in the dissemination of static and dynamic data to enable the provision of U-space services for the management of traffic of unmanned aircraft.

C2 Link

The data link between the remotely piloted aircraft and the remote pilot station for the purposes of managing the flight.

Controller

A qualified Person assigned by an Operator to assist the pilot of a Remotely Piloted Aircraft in

safely operating it, or to supervise Autonomous Aircraft Operations.

Controlled ground area

The ground area where the UAS is operated and within which the UAS operator can ensure that only involved persons are present.

Crew

Qualified person or person(s) assigned by an Operator to perform any duties related to Unmanned Aircraft systems throughout a flight.

Detect and avoid

The capability to see, sense or detect conflicting traffic or other hazards and take the appropriate action.

Dynamic Airspace Reconfiguration

The temporary modification of the U-space airspace in order to accommodate short-term changes in manned traffic demand, by adjusting the geographical limits of that U-space airspace.

Extended Visual Line of Sight

See UAS.ORG.610

Flight geography

A geographically defined volume (or chained set of volumes), which can be spatially and temporally defined, that is wholly contained within Operation Volume.

Geo-awareness

a function that, based on the data provided by Member States, detects a potential breach of airspace limitations, and alerts the remote pilots so that they can take immediate and effective action to prevent that breach.

Geofence

A virtual three-dimensional perimeter around a geographic point, either fixed or moving, that can be predefined or dynamically generated and that enables software to trigger a response when a device approaches the perimeter (also referred to as geo-awareness or geo-caging).

Remote Control Station

A set of devices which are used for controlling a UA and which form part of its operating system. This includes any equipment, or other components used to pilot the UA.

UA Pilot

A person charged by the operator with duties essential to the operation of a remotely piloted aircraft and who manipulates the flight controls, as appropriate, during flight time.

UAS Operations Safety Assessment

An assessment process aiming to validate the safety of the operations.

U-space Airspace

a UAS geographical zone designated by the Authority, where UAS operations are only allowed to take place with the support of U-space services.

U-space Service

a Service relying on digital services and automation of functions designed to support safe, secure and efficient access to U-space airspace for a large number of UAS.

U-SPACE Service Provider

Any organisation that is providing unmanned air traffic management services to unmanned air traffic operators and that is functionally separated from its regulator.

U-SPACE Traffic

All unmanned aircraft in flight or operating in the manoeuvring area of an aerodrome, heliport or vertiport.

U-SPACE Traffic Management

The dynamic integrated management of unmanned traffic and airspace including U-SPACE services, unmanned traffic airspace management and unmanned traffic flow management—safely, economically, and efficiently—through the provision of facilities and seamless services in collaboration with all parties.

U-SPACE Unit

A generic term meaning variously a U-SPACE facility or vertiport control tower.

U-SPACE Domain

A collective term referring to anything within the Services Providers performing U-SPACE services,

U-SPACE occurrence

Any event, including an accident, unlawful interference, serious incident, or incident, associated with the operation of an unmanned aircraft, which could be hazardous to the safety of aircraft operations, or which compromises the provision of U-SPACE services.

Visual line-of-sight operation.

An operation in which the remote crew maintains direct visual contact with the aircraft to manage its flight and meet separation and collision avoidance responsibilities.

5.4. UAS.DEF.015 Acronyms and Abbreviations

1. In the context of DCAR-UAS, additional acronyms include:

USSP	U-SPACE Service Provider
EASA	European Aviation Safety Agency

EUROCONTROL	European Organisation for the Safety of Air Navigation
UAS	Unmanned Aircraft System
UAV	Unmanned Aerial Vehicle
AEH	Airborne Electronic Hardware
ATOL	Automatic Take-off and Landing
BVLOS	Beyond Visual Line of Sight
C2	Command and Control
C3	Command, control and communications
COTS	Commercial Off-The-Shelf
DAA	Detect And Avoid
DEM	Digital Elevation Model
DoC	Declaration of Conformity
DRI	Direct Remote Identification
EMC	Electromagnetic Compatibility
EMI	Electromagnetic Interference
EVLOS	Extended Visual Line of Sight
FCS	Flight Control System
FH	Flight Hour
FPV	First Person View
FTL	Flight Time Limitations

GCS	Ground Control Station
HMI	Human Machine Interface
HW	Hardware
NRI	Network Remote Identification
OM	Operations Manual
OSO	Operational Safety Objectives
RTK	Real Time Kinematics
SAIL	Specific Assurance and Integrity Level
SW	Software
SWAL	Software Assurance Level
UA	Unmanned Aircraft
UTM	Unmanned Aircraft System Traffic Management
VTC	Validation Test Campaign
VLOS	Visual Line of Sight
VTOL	Vertical take-off and landing

6. SUBPART – GEN (UAS.GEN) GENERAL REQUIREMENTS

6.1. UAS.GEN.100 Applicability

Section 1 - General

1. This regulation applies to any UAS Organizations and UAS Operations within the Emirates of Dubai.
2. This regulation does not apply to private recreational UAS flights. Private recreational UAS

flights are not authorized in the Emirates of Dubai.

3. This regulation does not apply to Military or State UAS flights.
4. This Regulation shall apply within the UAS geographical zones established as U-space airspace by the Competent Authority within the Emirate of Dubai, within special segregated airspace specifically established for UAS Operations, or any other airspace where UAS operations have been authorized by the DCAA.

6.2. UAS.GEN.105 Advanced Notification

1. Any Organization (Government or Private) that wants to implement UAS based operations, or wants to operate UAS based emerging technologies, shall obtain a DCAA No Objection Certificate (NOC) prior to initiating discussions, or signing an agreement/contract, with a supplier/operator. Applications for an NOC shall include:
    i. The scope of the proposed operation.
    ii. The proposed geographical area of the operation.
    iii. The added value for the Emirate of Dubai.
    iv. A GANNT chart indicating proposed timelines and milestones for implementation.

6.3. UAS.GEN.110 UAS Operations

1. UAS Operations are defined as any UAS activity including but not limited to:
    i. Non-commercial activities,
    ii. Commercial activities,
    iii. Experimentation, research, and development activities,
    iv. Demonstration flights, and
    v. UA events.
2. Non-commercial activities are flight activities that are performed within an entity to serve the internal business operations of that entity without seeking commercial benefits.
3. Commercial activities are activities where a person or operator uses the drone for the purpose of its economic activity. These activities would be including but not limited to:
    i. Delivery operations of non-Dangerous Goods,
    ii. Inspections of buildings, structures, power lines, etc.
    iii. Entertainment (display),

iv. Photography,
v. Aerial survey,
vi. Building cleaning and firefighting.

4. Experimentation, research, and development activities would be including but not limited to:
   i. Unmanned Aircraft research & development,
   ii. Performing UA operations in development of new technologies,
   iii. Installation or integration of a new equipment or function to the UAS,
   iv. Experimenting new Uses of UA,
   v. Scientific or academic research purposes,
   vi. Manufacturing quality check flights.
5. Demonstration flights would be for the purpose of marketing and selling UAS.
6. UA events would include, but are not limited to, drone shows or drone competitions where multiple drones are used at the same time in the same area.

6.4. UAS.GEN.120 Military and State Aircraft

1. This Regulation does not apply to UAS that carry out military, customs, police, search and rescue, border control and coastguard or similar activities and services undertaken in the public interest.
2. Although military and State aircraft operations are in principle excluded from the scope of this Regulation, the safety of such operations is paramount when conducted in airspace that is subject to DCAA regulations. In this context, the safe separation between military and State aircraft also in the U-space airspace is always expected during all stages of flight.

6.5. UAS.GEN.130 Support to Passenger Operations

1. At this stage of the implementation, this Regulation is not foreseen to support passenger operations, which are today carried out with manned VTOL-capable aircraft, and which ultimately could be autonomously performed with e-VTOL UAS.

7. SUBPART – ORG (UAS.ORG) ORGANIZATIONAL REQUIREMENTS

7.1. UAS.ORG.100 ORGANIZATION REGISTRATION

Section 1 - General

1. All UAS Organizations intending to operate UAS, as defined in UAS.GEN.110, within the Emirate of Dubai shall be registered with the DCAA.
2. UAS Organizations shall be registered in accordance with Technical Standards in Appendix 1 - UASORG.
    i. Organizations shall be certified for Basic or Advanced Categories of operations.
    ii. Organizations shall be certified for any non-standard operations.
3. All UA shall be registered in accordance with Technical Standards in Appendix 2 - UASREG.
    i. UA shall be certified for Basic or Advanced Categories of operations.
    ii. UA shall be certified for any non-standard operations.
4. All UAS Training Organizations shall be certified by DCAA as a certified Training Organization in accordance with Technical Standards in Appendix 3 - UASTRNG.
    i. UAS Training Organizations shall issue UAS Pilot licenses
    ii. UAS Training Organizations shall issue UAS Flight Instructor licenses
5. All UA pilots shall be licensed by a DCAA certified Training Organization in accordance with Technical Standards in Appendix 3 - UASTRNG.
    i. UA pilots shall be certified for Basic or Advanced Categories of operations.

8. SUBPART – CAT (UAS.CAT) UAS OPERATIONS CATEGORIES

8.1. UAS.CAT.100 UAS Categories

1. Three categories of operation are used in the Dubai Emirate as follows:
    i. Basic Category.
    ii. Advanced Category.
    iii. Certified Category.

8.2. UAS.CAT.110 UAS Basic Category

1. An UAS operation shall be categorized as Basic Category if:
    i. MTOM of the UA is less than 25 kg, including all ancillaries, payloads, batteries, add-ons, and any other installations on the UA, and
    ii. it is a VLOS operation, and

iii. the UA Pilot remain in a fixed location throughout the operation, and
iv. the UA have been limited to 122m (400ft) maximum attainable height above the ground, and
v. the UA have a maximum dimension of less than 3m, and
vi. the UA maximum operating speed is less than 19 m/s, and
vii. All operations are conducted in uncontrolled airspace.

8.3. UAS.CAT.120 UAS Advanced Categories

1. UAS operation in the Advanced Category is sub-divided in:
   i. Advanced Category A, and
   ii. Advanced Category B, and
   iii. Advanced Category C.

8.3.1. UAS.CAT.121 UAS Advanced Category A

1. An UAS operation shall be categorized as Advanced Category A if:
   i. MTOM of the UA is less than 25 kg, including all ancillaries, payloads, batteries, add-ons, and any other installations on the UA, and
   ii. The UA have a maximum dimension of less than 3m, and
   iii. The UA have been limited to 122 (400 ft) maximum attainable height above the ground, and
   iv. The intended operation is a high-risk operation.
   v. An operation shall be considered as high-risk operations if at least one of below cases are valid:
      a. any UA operation requiring flights beyond visual line of sight (BVLOS) for any MTOM, or
      b. any operation required to carry, transport, deliver or drop external materials, or
      c. any operation requiring flights over infrastructure, buildings, private, public, residential, commercial, or industrial areas, or
      d. any operation requiring flight in the vicinity of or overflight of uninvolved or assembled people,
      e. any cross-border operation between different Emirates,

f. any operation in an urban environment.

8.3.2. UAS.CAT.122 UAS Advanced Category B

1. An UAS Operation shall be categorized as Advanced Category B if:
    i. MTOM of the UA is 25 kg or more, but less than 600 kg, including all ancillaries, payloads, batteries, add-ons, and any other installations on the UA, or
    ii. The UA has a maximum dimension of more than 3 m but less than 8 m, or
    iii. The UA operation is conducted above 122m (400 ft) height above the ground, or
    iv. The intended operation is to take place in segregated airspace within controlled airspace.

8.3.3. UAS.CAT.123 UAS Advanced Category C

1. An UAS Operation shall be categorized as Advanced Category C if:
    i. The UA operation is conducted above 122m (400 ft) height above the ground, and
    ii. The intended operation is to take place in non-segregated airspace within controlled airspace.

8.4. UAS.CAT.130 UAS Certified Category

1. UAS operation in the Certified Category is defined as:
    i. Freight carrying UA using controlled airspace and/or certified airports.
    ii. under IFR conditions, that is not segregated operations.
    iii. People carrying e-VTOL operations,
    iv. Any UA operation involving international cross-border operations.

9. SUBPART – OR (UAS.OR) UAS OPERATIONAL REQUIREMENTS

9.1. UAS.OR.100 Basic Category UAS Requirement

Section 1 – Basic Category Operations

1. UAS that are to be used in Basic Category Operations shall:
    i. provide the UA Pilot with clear and concise information on the height of the UA above

the ground.

ii. be safely controllable with regards to stability, handling, maneuverability, and the command and-control link performance, by a remote pilot following the manufacturer's instructions, as necessary under all anticipated operating conditions including failure conditions.

iii. be able to withstand all possible loads and flight conditions stated by the manufacturer's operational instructions.

iv. be equipped with a data link protected against unauthorized access to the command- and control functions.

v. provide the UA Pilot with an alert when the link is degraded or lost.

vi. be exclusively powered by electricity.

vii. have a unique physical serial number on the UA.

viii. provide the UA Pilot with clear warning when the battery of the UA or its Command Unit decreased to a low level ensuring that the remote pilot has sufficient time to safely land the UA.

ix. be equipped with lights.

x. be equipped with a DCAA approved remote identification system providing clear and detailed information about the UAS, Operator and the intended operation.

xi. be equipped with DCAA approved geo-awareness system managing the approved operations area information and limitations,

xii. have a user´s manual providing operational and maintenance instructions.

9.2. UAS.OR.200 Advanced Category A UAS Requirements

1. UAS that are to be used in Advanced Category A Operations shall:

i. have clearly demonstrated that the mass and center of gravity of the UA for the specific flight configuration are within the manufacturer's user manual specifications and limits for safe operations.

ii. have clearly demonstrated that the flight envelope information, environmental conditions, and limitations for the specific flight configuration are within the manufacturer's user manual specifications and limits for safe operations.

iii. have a unique physical serial number and other relevant markings and placards

necessary for its maintenance and operation,

iv. be equipped with a DCAA approved emergency recovery system.

v. be equipped with a DCAA approved Geo-Fencing and Flight Termination System.

vi. be equipped with a DCAA approved parachute recovery system or an equivalent recovery system.

vii. be equipped with a DCAA approved Detect and Avoid functionality.

viii. provide a human factors study demonstrating that the UAS has been designed using environmental qualification standards and shall provide evidence of its compliance with the stated operational and adverse environmental conditions.

ix. be able to operate safely within the environmental conditions applicable to the UAE.

9.3. UAS.OR.300 Advanced Category B UAS Requirement

1. The requirements for UAS that are to be used in Advanced Category B Operations are currently under development.

9.4. UAS.OR.400 Advanced Category C UAS Requirements

1. The requirements for UAS that are to be used in Advanced Category C Operations are currently under development.

9.5. UAS.OR.500 Certified Category UAS Requirements

1. The requirements for UAS that are to be used in Certified Category Operations are currently under development.

9.6. UAS.OR.600 VLOS

1. Visual Line of Sight (VLOS) Operations are contained within a distance of 500 meters from the UA pilot.
2. VLOS Operations are at an altitude below 122m (400 ft) height above the ground.
3. The UAV must be clearly visible to the operator without any additional aids (such as binoculars or FPV goggles).
4. The operator monitors the area and controls the UAV to avoid collisions or obstacles.

9.7. UAS.OR.610 EVLOS

1. The Appropriate Authority may provide an Extended Visual Line of Sight (EVLOS) approval for a specific operation based on:
    i. Extended Visual Line of Sight (EVLOS) Operations are contained within a distance of 3700 meters (2 nm) from the UA pilot.
    ii. EVLOS Operations are at an altitude above 122m (400 ft) height above the ground.
    iii. The submitted safety case, hazard analyses and mitigating actions support such an operation.
    iv. The Appropriate Authority has approved the operator's EVLOS operational procedures.
    v. EVLOS requires additional communication equipment to ensure UAS control and safety during the flight.
    vi. Trained and instructed visual observers shall keep visual contact with the UAS during the flight.
    vii. Trained and instructed visual observers shall communicate with the drone operator and alert the pilot if necessary.

9.8. UAS.OR.620 BVLOS

1. The Appropriate Authority may provide a Beyond Visual Line of Sight (BVLOS) approval for a specific operation based on:
    i. Beyond Visual Line of Sight (BVLOS) Operations are in excess of 3700 meters (2 nm) from the UA pilot.
    ii. BVLOS Operations are at an altitude above 122m (400 ft) height above the ground.
    iii. The submitted Specific Operational Risk Assessment (Appendix 4 - DUOSAM) supports such an operation.
    iv. The Appropriate Authority has approved the operator's BVLOS operational procedures in accordance with Appendix 1 - UASORG.
    v. BVLOS requires a remote pilot station or ground control station to monitor and control the mission.
    vi. The pilot relies on instruments and communication systems to control the flight.
    vii. BVLOS flights require robust communication solutions to ensure real-time

connectivity even in challenging or remote areas.

2. Beyond Visual Line of Sight (BVLOS) requirements are stipulated in Appendix 1 - UASORG

9.9. UAS.OR.700 HIGH RISK OPERATIONS

1. An operation shall be considered as high-risk operations if at least one of below cases are valid:
   i. any operation requiring flights beyond visual line of sight (BVLOS).
   ii. any operation transporting, delivering, or dropping materials or cargo.
   iii. any operation requiring flight over critical infrastructure, buildings, private, public, residential, commercial, or industrial areas.
   iv. any operation requiring flight in the vicinity of or over uninvolved or assemblies of people.
   v. any cross-border operation.
   vi. any operation in an urban environment

10. SUBPART – ASR (UAS.ASR) UAS AIRSPACE REQUIREMENTS

10.1. UAS.ASR.100 AIRSPACE CLASSIFICATION

1. U-spaceis an airspace system that is used to manage UAS It encompasses a set of specific services and procedures designed to ensure safe and efficient access to airspace for UAS operations. The final goal is to facilitate the integration of drones into the existing airspace while maintaining safety and security.
2. To ensure separation between manned and unmanned aircraft, the U-space airspace is limited to 122 m (400 ft) height above the ground or water. Considering the novelty of the U-space and the lack of experience with its implementation, this limitation is deemed desirable to ensure safety of operations in the U-space airspace across the Emirate of Dubai.
3. U-Space operations can only be conducted in a UAS geographical zone designated by the Authority, where UAS operations are only allowed to take place with the support of U-space services
4. The purpose of the table below is to show where u-space services are authorized/provided

in each ICAO airspace classification type.

Class	Type of flight (Aircraft)	Allowed in the airspace	Allowed in U-Space	Services in U-space airspace by USSPs
A	Manned IFR	Yes	No u-space allowed	NIL
	UAS	No – unless airspace is segregated		
C & D	Manned IFR and VFR	Yes	No u-space allowed	NIL
	UAS	No – unless airspace is segregated		
G	Manned VFR	Yes	N/A	NIL
	UAS	Yes		
U-Space	Manned VFR	Yes	Yes, subject to sharing position with USSP's	UAS flight authorization Traffic information about UAS and VFR
	UAS	Yes – provided u-space is established	Yes	

1. The purpose of the table below is to show the services related to U-space airspace provided in U-space airspace class in a concise manner. For airspace classifications refer to CAR-ASP PART ROA.

Class	Flight Type	Separation Provided	Service Provided	Speed Limitation	Radio-Communication Requirement	Subject to a Clearance
U-SPACE	IFR	NOT AUTHORIZED	NIL	NIL	NIL	NIL
	VFR	NIL	Network Identification Geo-Awareness Flight Clearance Traffic Information	250 kt IAS below 3 050 m (10 000 ft) AMSL	Yes	Yes
	UAS			87 kt IAS (45 m/s)	No	

10.2. UAS.ASR.110 U-SPACE SERVICES

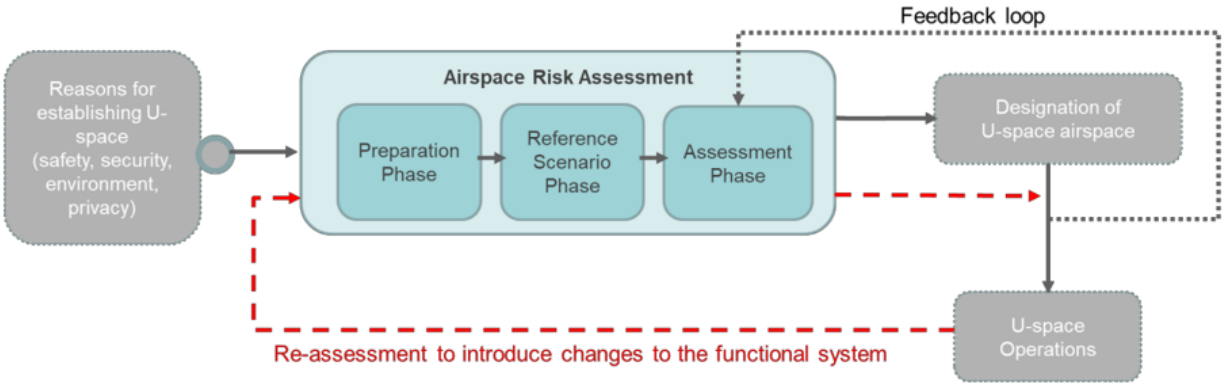
1. U-space Service Providers (USSP) shall be certified by the Competent Authority in accordance with CAR-ASP part U-Space.

2. USSP shall be responsible for providing the UAS operators with the U-space services during all phases of operations in that U-space airspace.
3. All UAS operations in the U-space airspace shall be subject to at least the following mandatory U-space services:
    i. Network Identification Service: This service provides the identity of UAS operators and the location and trajectory of UAS during operations. It ensures that manned aircraft are aware of nearby drone activity and can maintain safe separation.
    ii. Geo-Awareness Service: The geo-awareness service offers information on operational conditions, airspace limitations, or existing time restrictions. It helps manned aircraft pilots understand the UAS activity in their vicinity and make informed decisions.
    iii. UAS Flight Authorization: UAS flight authorization is a critical service. It allows manned aircraft operators to request and obtain clearance for their flights in U-space airspace. This authorization ensures coordination between manned and unmanned operations.
    iv. Traffic Information Service: This service alerts manned aircraft operators about air traffic that may be present near their aircraft. It helps prevent conflicts and ensures safe coexistence between manned and unmanned traffic.
    v. Additionally, there may be optional services provided to manned aircraft, such as weather information.
4. For each U-space airspace, based on the airspace risk assessment, the Appropriate Authority may require additional U-space services.
5. For each U-space airspace, based on the airspace risk assessment, the Appropriate Authority, in coordination with the Operator and the U-space service provider, shall determine:
    i. The UAS Operational Category.
    ii. the UAS capabilities and performance requirements.
    iii. the U-space services performance requirements.
    iv. the applicable operational conditions and airspace constraints.
6. Where the Appropriate Authority designates U-space airspace for safety, security, privacy, or environmental reasons such designation shall be supported by an airspace risk assessment.

7. The airspace risk assessment is the responsibility of the U-space service provider.
8. The operational risk assessment (DUOSAM) is the responsibility of the UAS Operator wishing to conduct operations within the U-space airspace.

10.3. UAS.ASR.120 AIRSPACE RISK ASSESSMENT

An airspace risk assessment is a process composed of different phases that can be represented as detailed below:



1. The designation of the U-space airspace is driven by safety, security, privacy or environmental considerations.
2. The preparation phase begins with defining the airspace in the scope of the assessment, including operational, procedural and infrastructure design requirements from all involved stakeholders, as well as defining any assumptions and An assessment team needs to be created to ensure that no area is left unexamined.
3. The reference scenario phase concerns only the analysis of the use of the airspace assessed before changes are introduced. An important step in this phase is conducting interviews with stakeholders (including non-aviation entities), assessing ground infrastructure, identifying technical support infrastructure, and collecting the necessary data in a common data format. This would ensure a harmonized approach for all entities involved.
4. The assessment phase includes hazard identification, risk analysis and mitigation planning. These processes should be applied separately to safety, security, privacy, and environmental hazards, and their associated risks. As the nature of hazards, risks, and mitigation measures are specific to each of these four areas, the methodologies employed by USSP to identify

hazards, assess risks, and plan appropriate mitigation measures should fit the specific needs of the area assessed. Nevertheless, the assessment should guarantee that the risk is acceptable or tolerable while identifying the requirements that are to be met in that perspective. Ultimately, the appropriate mitigation measures from each assessment should be compatible with each other and they should not adversely impact on the other areas.

5. For the designation of the U-space airspace, USSP are expected to assess numerous safety-significant factors, including, among others:
    i. the type, density, and complexity of existing and planned unmanned traffic, including UAS operations taking place in the context of authorized model aircraft clubs and associations.
    ii. the type, density, and complexity of existing and planned manned traffic, including air sports activities.
    iii. the operational capacity of the designated ANSP to interface with the Common Information Service Providers and USSP in the designated U-space airspace.
    iv. the operational capacity of USSP and, when relevant, the single Common Information Service Providers.
    v. the complexity of the airspace structure.
    vi. the availability of safe and secure communication mechanisms to enable UAS operators and USSP to exchange digital information.
    vii. the classification of the airspace and the services provided to instrument flight rule (IFR) and visual flight rule (VFR) aircraft.
    viii. existing UAS geographical zones; and
    ix. the topographical environment and prevalent meteorological conditions.
6. Initial designations of U-space airspace are expected to take place at low-level altitude, e.g. below 120 m (400 ft), and where there is very little expected manned traffic.
7. Besides the four mandatory U-space services, The Authority may decide that additional U-space services are needed to support the safe, secure, and efficient conduct of UAS operations in specific volumes of U-space airspace.
8. The regular reassessment of the U-space airspace is expected to be conducted by the USSP to evaluate its effectiveness in supporting the safe, secure, and efficient conduct of UAS operations.

10.4. UAS.ASR.130 OPERATIONAL RISK ASSESSMENT

1. Operators that are intending to conduct operations in U-space airspace shall conduct a specific operations risk assessment (SORA). UAS operators are entitled to take credit for their SORA of the residual air risk class (ARC) determined through the U-space airspace risk assessment.
2. The risk assessment primarily considers the air risk and the related ground risk as a collateral effect of UAS mid-air collisions and should ensure that the related hazards are adequately addressed.
3. The risk assessment shall cover, as a minimum:
    i. hazard identification, including safety, security, privacy, and environmental hazards.
    ii. risk analysis, meaning the evaluation of the likelihood and severity of harmful effects induced by the identified hazards.
    iii. based on the previous analysis, the definition of mitigation actions that should be taken when necessary to ensure an acceptable risk level.
4. The risk assessment should further account for the U-space airspace design, performance requirements, constraints, etc. to enable safe operations.
5. The initial risk assessment shall be reviewed to:
    i. support the introduction of major changes to the designated U-space airspace; and
    ii. dynamically evaluate its adequacy and adjust its definition based on the experience gained from operations and major evolutions that may occur in its environment (e.g. emergence of critical ground infrastructures, extension of populated areas).
6. Detailed procedures regarding the Operational Risk Assessment required in the Emirate of Dubai are reflected in Appendix 4 - DUOSAM.

10.5. UAS.ASR.140 CONTINGENCY MEASURES

1. UAS Operators shall establish contingency measures for the following conditions:
    i. sudden, total or partial unavailability of the U-space airspace,
    ii. restriction or revocation of the UAS flight authorization,
    iii. unlawful interference,
    iv. engine failure,
    v. loss of signal,

vi. loss of control,
vii. loss of payload,
viii. loss of power,
ix. loss of energy reserves,
x. adverse weather conditions,
xi. foreign object debris (FOD),
xii. unidentified aircraft entering protected volume around the UAS,
xiii. unavailability of landing area.

10.6. UAS.ASR.150 SAFETY DISTANCE LIMITATIONS FOR UAS OPERATIONS

1. For applicable UAS operation, a safety distance shall be calculated at a ratio of 1 to 1. This rule implies that the distance to any people or object shall be at a minimum equal to the height of the UA from the ground.
2. Any UAS operation shall be planned in a way to ensure a safety distance from:
    i. assemblies of uninvolved people,
    ii. from any buildings and structures,
    iii. from other UA,
    iv. airport, heliports, helicopter landing sites or airfields.
3. Any UAS operation shall not fly over:
    i. Military areas,
    ii. Prohibited, Restricted or Danger areas,
    iii. Any other airspace restricted for operations as determined by the DCAA.
4. Unless specifically authorized for a particular mission, no UAS operation shall be allowed to fly continuously over:
    i. pedestrian paths,
    ii. motorways,
    iii. metro and tram lanes

11. SUBPART – UOR (UAS.UOR) UAS OPERATOR RESPONSIBILITIES

11.1. UAS.UOR.100 UAS OPERATOR ORGANIZATIONAL AUTHORIZATION

1. UAS Operator Organizations shall be authorized and registered with DCAA to perform UAS operations in Dubai airspace.
    i. UAS Operator Organizations shall apply to DCAA to obtain Dubai UAS Operator Authorization.
    ii. UAS Operator Organizations shall declare compliance with DCAR-UAS.
2. UAS Operator Organizations intending to perform operations under the advanced category, shall apply for DCAA UAS Operations Safety Approval (Refer Appendix 4-DUOSAM) to obtain a Dubai UAS Operator Authorization.
3. UAS Operator Organizations shall register all its personnel and assets involved in operation including but not limited to UA Pilots, operation crew, maintenance crew, safety personnel, UA(s), UA ground controller(s), payloads, external safety add-ons etc.
4. UAS Operator Organizations shall update any change on its registered UA Pilot, operation crew and assets.
5. Dubai UAS Operator Organizations Authorization shall be valid for a period as defined by the DCAA.
6. Amendments to Categories of operations shall be applied for through the DCAA services on the DCAA website and accompanied with a change management proposal.
7. All certified Organizations shall be subject to DCAA oversight activities through audits/inspections.

11.2. UAS.UOR.200 UAS OPERATOR ORGANIZATION RESPONSIBILITIES FOR BASIC OPERATIONS

1. The UAS operator Organization shall ensure that all UA are registered and appropriately insured before commencement of any operation.
2. The UAS operator Organization shall ensure that all UA instruments and equipment required for safe operation are available and serviceable and maintained in accordance with the manufacturer and operator's maintenance instructions.
3. The UAS operator Organization shall ensure that UA Pilots are competent to perform the intended operation and possess the skills and the knowledge about the law, regulations and procedures.
4. The UAS operator Organization shall establish and implement procedures to control the UA

operation records. Records shall be stored in a manner that ensures protection from damage, alteration and theft. Records shall be retained for at least 24 months.

5. Records should include, but not limited to the following:
    i. Flight mission logs containing:
        a. Date of the flight
        b. Route information/ GPS coordinates
        c. Time of start and End of Flight
        d. Name of Pilot
    ii. Observations / incidents/ equipment failure reports
    iii. DCAA Approval
    iv. UA details including UA model, UA serial number, UA registration, UA weight and UA main color.
6. UAS operator Organization shall ensure its operations (including pre-flight, flight and post-flight phases) are planned and performed in strict adherence to DCAR-UAS and the applicable laws of Dubai.
7. UAS operator Organization shall establish and maintain its operational and safety related processes and procedures.
8. The UAS operator Organization processes and procedures shall be made available to UA Pilot and operation crew.
9. The UAS operator Organization processes and procedures shall define the roles and responsibilities of the UA Pilot and operational crew.
10. UAS operator Organization shall notify DCAA regarding any amendments to the UAS Operator´s processes, procedures and manuals, including but not limited to pre-flight, flight operations and post-flight phases, training, safety, and emergency management.
11. UAS operator Organization shall ensure all the required insurances are obtained before applying for a flight authorization.
12. UAS operator Organization shall obtain a DCAA flight authorization prior to any flight operation.
13. UAS operator Organization shall ensure that it has obtained approval from both private and public property owner(s) that the UA will fly over during the conduct of its operations.
14. UAS operator Organization shall ensure strict compliance with the UAE Privacy laws.

15. UAS operator Organization shall ensure that the operations are conducted in compliance with ASR.150 Safety Distance Limitations for UAS Operations
16. UAS operator Organization shall plan and perform its operations ensuring the safety of individuals, property, aircraft, and the environment within the operational area.
17. UAS operator Organization shall ensure that:
    i. Priority is given to manned aircraft operations in accordance with GCAA CAR-ROA.
    ii. The UA is contained within the planned and approved operational area.
    iii. Contingency and emergency plans are in place for every operation.
    iv. The UA is equipped with a DCAA approved Remote Identification System and ensures that it is operational for the duration of the operation.
    v. Remote Identification System is integrated to UTM providing required information accurately.
    vi. The UA is equipped with a DCAA approved geo-awareness system and the geo-awareness system data is updated with the intended operation and operational area.
    vii. Those operations are planned and performed minimizing noise and nuisances to people and animals.
    viii. UAS operator Organization shall immediately terminate its operation in a safe manner in compliance with its declared operational procedures in the event of an incident.
    ix. The DCAA is informed in the event of any incident, accident, or unplanned termination of operations in compliance with the DCAA Occurrence Reporting Process in UOR.230 Operator Responsibilities for Occurrence Reporting.
18. UAS operator Organization shall ensure the serviceability (i.e., airworthiness) of its UAS.
19. UAS operator Organization shall ensure its operational crews are qualified and competent for the intended operations. In doing so, UAS Operators shall ensure that:
    i. UA pilots and operational crew are competent in all the intended operations of the organization.
    ii. UA pilots and operational crews are fully familiar with and strictly adhere to relevant applicable Laws in the Emirate of Dubai and DCAR-UAS.
    iii. UA pilots and operational crews are trained and fully familiar with the UAS manufacturer and operator´s procedures.
    iv. UA Pilots and operational crews are unimpaired in their capacity to perform the

intended operations.

v. UA pilots and operational crews have obtained updated information regarding the operational area.

20. UAS operator Organization shall ensure that the UA is used, and operations are performed for the intended and authorized purposes.
21. UAS operator Organization shall ensure that the:
    i. UA shall not be used for any people carrying operation.
    ii. UA shall not be used for any kind of live animal transportation.
    iii. UA shall not be used for transportation of dangerous goods unless specifically approved by DCAA.
    iv. For advanced operations, the UA shall only be used for activities authorized in accordance with the Operator´s DUOSAM.
    v. UA shall not be used for hobby or recreational purposes if approved for experimental, demonstration or commercial use.
22. The UAS operator Organization shall ensure the approved radio spectrum is used and radio intentional interferences are avoided.
23. UAS operator Organization shall only conduct an operation when all relevant requirements are fulfilled, and all approvals have been obtained.
24. UAS operator Organization shall ensure that the approved ground risk mitigations are enforced for all operations inside the Emirate of the Dubai,
25. Prior to the commencement of an operation, UAS operator Organization shall ensure that:
    i. All personnel in the controlled ground area are briefed regarding the operation.
    ii. All personnel participating in the operation and personnel in the controlled ground area are briefed and agree to the risks associated with the operation and this agreement is recorded.
    iii. UA is serviceable and all flight and maintenance logs are complete.
    iv. All tools and equipment, including but not limited to, ground controller, payloads, batteries, attachments, spare parts, and add-ons are serviceable.
26. During the operation, the UAS operator Organization shall ensure that flight logs are maintained properly, all observations and incidents are recorded, and the flight log is signed by the UA Pilot at the end of the operation.

27. UAS operator Organization shall ensure that operational personnel can be contacted by DCAA at any time during an operation, and that the operational personnel shall promptly implement any action requested by DCAA.
28. The UAS operator Organization shall retain operational information in a secure manner.
29. The UAS operator Organization shall provide records, logs and any other documentation to DCAA upon request in compliance with DCAR-UAS.
30. The UAS Operational crew shall have in their possession copies of all approvals, permits and NOC relevant to the operations.

11.3. UAS.UOR.210 UAS OPERATOR ORGANIZATION RESPONSIBILITIES FOR ADVANCED OPERATIONS

1. In addition to the general responsibilities defined in UOR.200, the UAS operator Organization conducting advanced operations shall comply with the following rules.
2. UAS operator Organization shall ensure that they have an operational plan and procedures adapted with the limitations and requirements of Dubai published U-Space and DCAR-UAS.
3. UAS operator Organization shall conduct each operation in compliance with the limitations, conditions, mitigations, and safety measures as approved in the DUOSA.
4. UAS operator Organization shall ensure the adequacy and availability of any external services required for the intended operation.
5. UAS operator Organization shall ensure that the UAS is equipped with:
    i. A DCAA approved emergency recovery system.
    ii. DCAA approved Geo-Fencing and Flight Termination System.
    iii. DCAA approved a parachute recovery system or an equivalent recovery system.
6. The UAS operator Organization shall ensure that coordination with the appropriate authorities and affected third parties has been done and all permits, approvals and NOC have been obtained.

11.4. UAS.UOR.220 UAS OPERATOR ORGANIZATION RESPONSIBILITIES FOR U-SPACE OPERATIONS

1. When operating in the U-space airspace, the UAS operator Organization shall:

i. ensure that the UAS that will be operated in the U-space airspace complies with the capabilities and performance requirements determined by the USSP.
ii. ensure that during U-space airspace operations, the provided U-space services are subscribed to, and the U-space airspace requirements are complied with.
iii. comply with the operational conditions and airspace constraints.

2. UAS operator Organization shall comply with the requirements of the U-Space including:
   i. where relevant, hold an operational authorization or a certificate issued by the General Civil Aviation Authority.
   ii. Comply with the operational limitations set by a USSP's in any UAS geographical zone.
   iii. submit an UAS flight authorization request to the USSP, through the UAS flight authorization service.
3. Prior to the commencement of the flight, the UAS operator Organization shall request for the activation of the UAS flight authorization. Operations can only proceed once the operator has received the confirmation of the activation for the UAS flight authorization from the USSP.
4. UAS operator Organization shall comply with the UAS flight authorization. The USSP may introduce changes to the authorization during any phase of the flight and shall inform the UAS operator with regards to any amendments to the flight authorization.
5. Where UAS operator Organization are not able to comply with the UAS flight authorization, they shall request a new UAS flight authorization.
6. UAS operator Organization shall develop and maintain contingency measures and procedures. They shall make their contingency measures and procedures available to the USSP.

11.5. UAS.UOR.230 UAS OPERATOR ORGANIZATION RESPONSIBILITIES FOR OCCURANCE REPORTING

1. The UAS operator Organization shall report any accident and serious incident.
2. The report shall contain all pertinent information, known to the operator, about the accident or serious incident.
3. Reports shall be made within 3 hours of the accident/ serious incident occurrence.
4. Where relevant, the operator shall produce a follow-up report to provide details of actions it

intends to take to prevent similar occurrences in the future.

5. Reports shall be submitted to the DCAA via the DCAA website at: **DCAA - Safety Report**
6. The following list while not exhaustive includes types of occurrences involving UA Operations, which shall be reported:
   i. Crashes
   ii. Interferences with signal or control of the UA.
   iii. Near miss with a manned aircraft or other UA.
   iv. Collisions with other objects.
   v. Operation which results in a public nuisance.
   vi. Operations out of the area assigned for the UA operation.
   vii. A serious or fatal injury (third parties and own personnel)
   viii. UA lost whilst in operation.

12. SUBPART – IMP (UAS.IMP) UAS IMPORTING, EXPORTING AND TRADE REQUIREMENTS

12.1. UAS.IMP.100 UAS IMPORTING

1. Any organization that is intending to distribute, sell or export UAS or UAS parts and components shall be registered and authorized by the DCAA.
2. Organization importing UAS or UAS parts shall be authorized in accordance with Appendix 5 - UASIMP

12.2. UAS.IMP.200 UAS EXPORTING AND TRADE

1. Any organization that is intending to import UAS or UAS parts and components shall be registered and authorized by the DCAA.
2. Organization that distributes, sell or export UAS or UAS parts and components shall be authorized in accordance with Appendix 5 - UASIMP

13. SUBPART – MNT (UAS.MNT) UAS MAINTENANCE REQUIREMENTS

13.1. UAS.MNT.100 UAS MAINTENANCE

1. Any organization that is intending to maintain UAS or UAS parts and components shall be registered and authorized by the DCAA.
2. Organization maintaining UAS or UAS parts shall be authorized in accordance with Appendix 6 - UASMAN

14. DUBAI CIVIL AVIATION TECHNICAL STANDARDS FOR UAS OPERATIONS

14.1. APPENDIX 1 UAS ORGANIZATIONAL REQUIREMENTS

Dubai UAS Operator Organizational Requirements Methodology

1. Dubai UAS Organizational Requirements (UASORG) is defined to provide a systematic approach for UAS Organizations to:
    i. Register as a UAS Organization.
    ii. Obtain a UAS Organizational Authorization for Operations based on the category of operations (Basic and Advanced).
    iii. Obtain approvals for special operations (BVLOS, Demonstration, Event, Experimental etc.)
    iv. Obtain an operational flight/mission authorization
    v. Register a UA in the Emirate of Dubai

STEP 1 WEB SERVICES

UAS Operator Organizational User Registration – Web Services

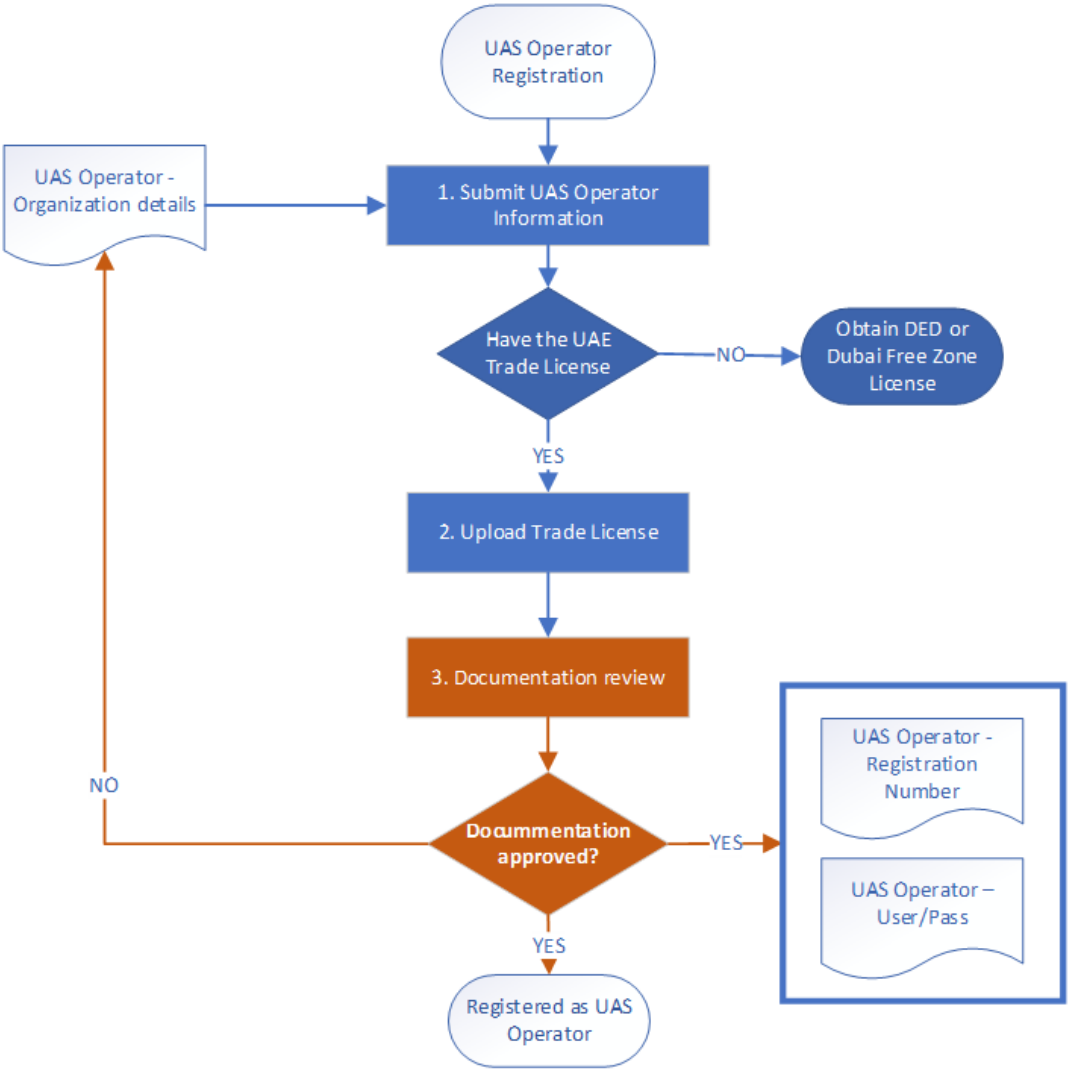
1. The UAS Organizational User Registration as a web-based service available on the DCAA website.
2. The following information is required to complete the application:
    i. Organization details:
        a. Organization legal name.
        b. Organization Address.
        c. Organization Legal representative information (name, phone number and email).
        d. Organization Other points of contact (name, phone number and email, Emirates-

ID number, or Passport ID number).

e. Organization DET or Dubai Free Zone license specifying the requested activity.

ii. A formal declaration from the Organization describing its intended category of operation and commercial services that will be provided.

3. The output information and documentation of this process are:
   i. UAS Organization registration number.
   ii. DCAA platform username/password. This username/password will permit the operator to access the DCAA web, modify the data uploaded or to apply for other services.
4. The Organization registration is only conducted once.
5. The Organization shall keep the registered information up to date.
6. The registration will be open until the Organization uploads and validate their required documentation and their profile is complete. However, if the account is open for more than 10 days without any update to the workflow on the next steps, it will be removed.
7. Process workflow:



STEP 2 CATEGORIES

UAS Operator Organization Authorization for Commercial Operation under Basic Category

1. This is the minimum required authorization for photography, filming and survey operations.
2. This category of operation is applicable for operations limited as referenced in DCAR-UAS UAS.CAT.110
3. The Basic Category UAS Operator will be require the following:
    i. UAS Organization registration number
    ii. Crew Pilot license valid for the commercial basic category.

iii. A UAS Operations Manual.
iv. A list of UAS authorized for the basic category operation.
v. Valid liability insurance.
vi. DCAA approved equipment to share UAS and UAS pilot location.
vii. DCAA accepted equipment to communicate with the USSP, when applicable in U-Space.

4. Once the UAS Operator is registered, he shall apply for an Operation Authorization for each intended operation/mission.

UAS Operator Organization Authorization for Commercial Operation Under Advanced Category

1. This authorization is required for advanced levels of photography, filming and survey work.
2. This category of operation is applicable for operations as referenced in DCAR-UAS UAS.CAT.120.
3. The Advanced Category UAS Operator will be require the following:
    i. UAS Organization registration number
    ii. Crew Pilot license valid for the commercial advanced category.
    iii. Personnel responsible for the UAS, the operations, maintenance and safety
    iv. Personnel records, qualification and experience.
    v. A UAS Operations Manual (that may include the Organizational SMS)
    vi. Safety Management System (SMS), including the following items:
        a. Safety Policy
        b. Risk Management Process
        c. Safety Promotion
        d. Safety Training
        e. Safety Communication
        f. Notification and internal investigations
        g. Compliance monitoring
        h. Change Management
    vii. Emergency Response Plan (ERP).

viii. Security Management System (SeMS)

ix. Pilot and crew training plan

x. Maintenance Organization used by the Organization.

xi. Third party services agreements and compliance demonstration (USSP)

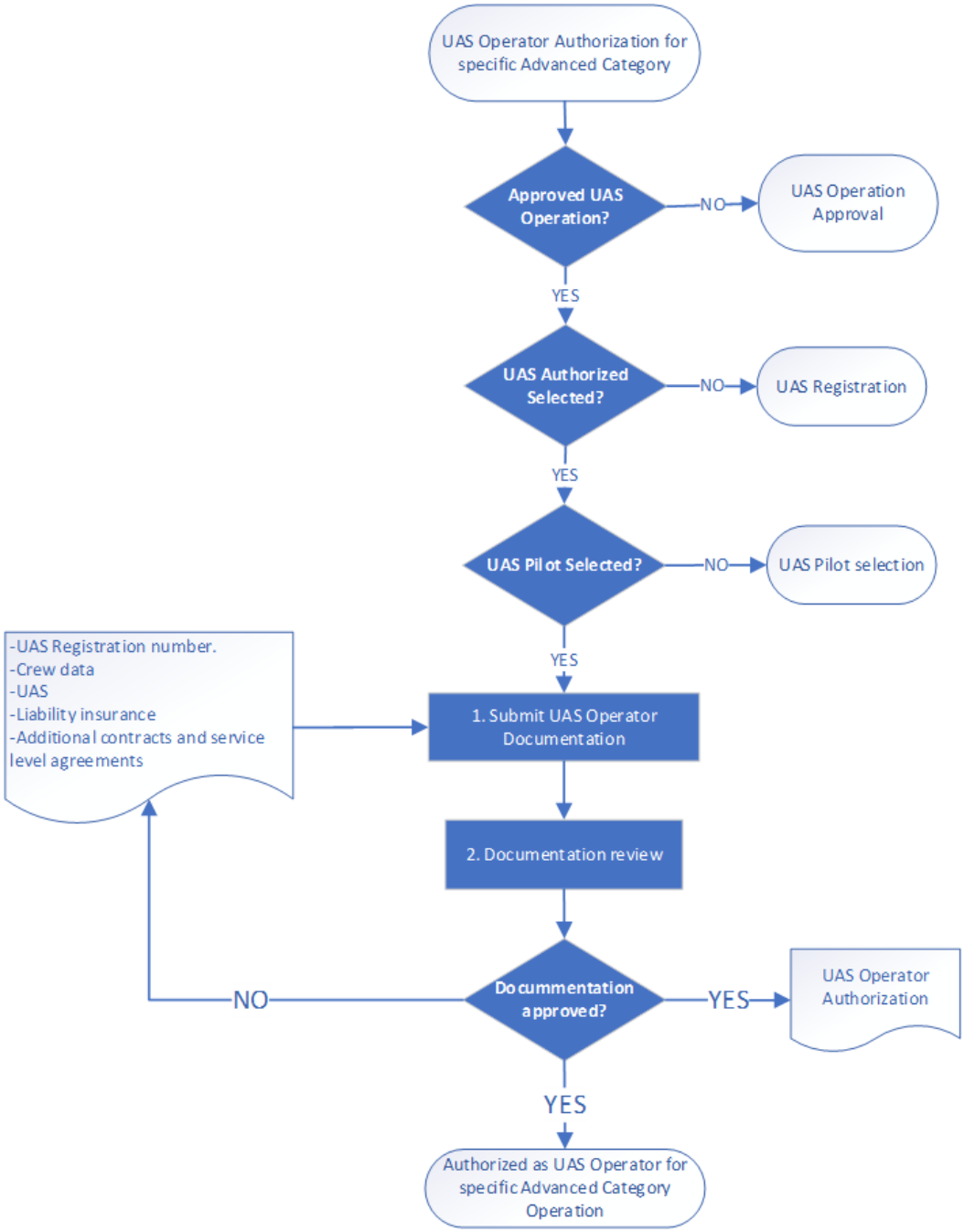
xii. A list of UAS authorized for the advanced category operation.

xiii. Valid liability insurance.

xiv. DCAA approved equipment to share UAS and UAS pilot location.

xv. DCAA accepted equipment to communicate with the USSP, when applicable in U-Space.

Process flowchart:



Advanced operations are defined by the operational concept (CONOPS) and is approved through a dedicated safety assessment process (TECHNICAL STANDARDS-DUOSAM). Each operation may come with a set of operational procedures and processes specific to that specific operation. These operational procedures and processes could be standard or non-standard and shall be approved by the DCAA.

STEP 3 – ADDITIONAL CERTIFICATION REQUIREMENTS

UAS Operator Organization Authorization for BVLOS Operation

1. This section defines the process to obtain authorization for BVLOS operations under the Advanced Category of operations.
2. The process to approve BVLOS operation requires:
    i. An Advanced category authorization for the UAS Organization and the UAS
    ii. The Concept of Operation (CONOPS), developed by the Operator for the BVLOS operation
    iii. Safety assessment (Appendix 4 - DUOSAM)
    iv. Any additional studies supporting the application
    v. Any evidence supporting the safety of the proposed operation.
3. The documentation submitted by the Operator will be evaluated by the DCAA.
4. A validation test campaign (VTC) shall be performed in a DCAA approved Validation Test Area to demonstrate full compliance with operational and safety requirements.
5. Additional flight tests may be requested to validate that the operational procedures are in compliance with the operational elements and supports the proposed CONOPS.
6. In addition to the UAS Organization, other stakeholders may be involved or impacted in this process, including:
    i. UA Pilot or Flight manager.
    ii. UAS manufacturer.
    iii. UAS maintenance organization.
    iv. Service providers that support the operation (USSP etc.).
    v. Dubai Police.
    vi. Ministry of Defence.
7. BVLOS flight/mission operational Authorization shall require DCAA approval for every flight/mission in accordance with the DCAA approved Concept of Operation.

UAS Operator Organization Authorization for Delivery Operations

1. Delivery operations fall in the advanced category of operations, and the UAS Organization shall be authorized for the advanced category of operations.
2. The UAS Organization shall be authorized for BVLOS operations.

3. In addition to the documentation required in the Advanced category, the Operator shall submit:
    i. A detailed description of the proposed operation,
    ii. A detailed plan of the proposed flight routes.
    iii. A signed contract for delivery services with at least one local vendor or interested entity.
    iv. If the UAS Operator is not based in the UAE, a formal letter from the potential buyer or interested entity taking full responsibility for the UAS operator
    v. If the UAS Operator is not based in the UAE, the UAS Organization shall submit a copy of their country of registration trade license, or equivalent, instead of DET or Dubai Free Zone registration.

UAS Operator Organization Authorization for Demonstration Operations

1. Demonstration operations can fall in either the basic or advanced category of operations, and the UAS Operator shall be authorized for the applicable category of operations based on the flight parameters.
2. In addition to the documentation required in each of the Basic or Advanced categories, the Operator shall submit:
    i. A detailed description of the proposed operation,
    ii. A formal invitation or request for demonstration flight from a local potential buyer or interested entity.
    iii. If the UAS Operator is not based in the UAE, a formal letter from the potential buyer or interested entity taking full responsibility for the UAS operator
    iv. If the UAS Operator is not based in the UAE, the UAS Organization shall submit a copy of their country of registration trade license, or equivalent, instead of DET or Dubai Free Zone registration.

UAS Operator Organization Authorization for Event Operation

1. Event operations can fall in either the basic or advanced category of operations, and the UAS Operator shall be authorized for the applicable category of operations based on the

flight parameters.

2. Indoor events shall comply with the requirements of "UAS Operator Organization Responsibilities for Indoor Operations"
3. In addition to the documentation required in each of the Basic or Advanced categories, the Operator shall submit:
    i. A detailed description of the proposed operation,
    ii. A formal contract for the event flight from a local customer
    iii. If the UAS Operator is not based in the UAE, a formal letter from the event organizer/ local customer taking full responsibility for the UAS operator
    iv. If the UAS Operator is not based in the UAE, the UAS Organization shall submit a copy of their country of registration trade license, or equivalent, instead of DET or Dubai Free Zone registration.

UAS Operator Organization Authorization for Experimentation Operation

1. Experimental operations can fall in either the basic or advanced category of operations, and the UAS Operator shall be authorized for the applicable category of operations based on the flight parameters.
2. In addition to the documentation required in each of the Basic or Advanced categories, the Operator shall submit:
    i. A detailed description letter for the purpose of experimentation and the operation
    ii. A formal contract for the experimental flight from a local customer
    iii. If the UAS Operator is not based in the UAE, a formal letter from the local customer taking full responsibility for the UAS operator
    iv. If the UAS Operator is not based in the UAE, the UAS Organization shall submit a copy of their country of registration trade license, or equivalent, instead of DET or Dubai Free Zone registration.

UAS Operator Organization Authorization for Civil Defense Operations

1. Civil Defence operations can fall in either the basic or advanced category of operations, and the UAS Operator shall be authorized for the applicable category of operations based on the

flight parameters.

2. Civil Defence operations include:
    i. Firefighting
    ii. Traffic management or monitoring
    iii. Accident site management
3. In addition to either the basic or advanced category authorization, the UAS Organization shall obtain an Authorization for Non-Standard Operation for any civil defence operations.

UAS Operator Organization Authorization for Building cleaning Operations

1. Building cleaning operations can fall in either the basic or advanced category of operations, and the UAS Operator shall be authorized for the applicable category of operations based on the flight parameters.
2. In addition to the documentation required in each of the Basic or Advanced categories, the Operator shall submit:
    i. A detailed description of the proposed operation,
    ii. A formal contract for the building cleaning operation from a local customer
    iii. If the UAS Operator is not based in the UAE, a formal letter from the local customer taking full responsibility for the UAS operator
    iv. If the UAS Operator is not based in the UAE, the UAS Organization shall submit a copy of their country of registration trade license, or equivalent, instead of DET or Dubai Free Zone registration.

UAS Operator Organization Responsibilities for Indoor Operations

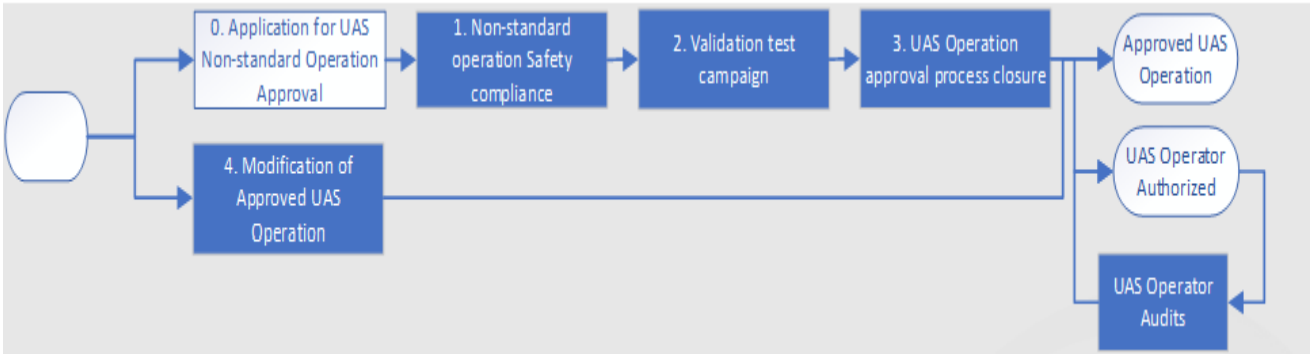
1. In addition to the documentation required in each of the Basic or Advanced categories, the UAS Operator Organization, or the indoor event organizer shall submit:
    i. A letter describing the purpose of the indoor operation.
    ii. A Concept of Operations (CONOPS) document describing the operational details.
    iii. A formal declaration stating full compliance with DCAR-UAS.
    iv. For UAE based operators, a formal letter from the UAS Operator Organization, or the indoor event organizer taking full responsibility for the UAS operations, and the safety

of all incumbents of the building, and have sufficient insurance coverage for the event.

v. If the UAS Operator is not based in the UAE, a formal letter from the event organizer/ local UAS Operator Organization taking full responsibility for the UAS operator and have sufficient insurance coverage for the event.

UAS Operator Organization Authorization for other Non-Standard Operation

1. This section defines the process to obtain authorization for a new concept of operation (non-standard) under the Advanced Category of operations.
2. The process to approve a non-standard operation requires:
    i. An Advanced category authorization for the UAS Organization and the UAS
    ii. The Concept of Operation (CONOPS), developed by the Operator for the non-standard operation
    iii. Safety assessment (Appendix 4 -DUOSAM)
    iv. Any additional studies supporting the application
    v. Any evidence supporting the safety of the proposed operation.
3. The documentation submitted by the Operator will be evaluated by the DCAA.
4. A validation test campaign (VTC) shall be performed in a DCAA approved Validation Test Area to demonstrate full compliance with operational and safety requirements.
5. Additional flight tests may be requested to validate that the operational procedures are in compliance with the operational elements and supports the proposed CONOPS.
6. In addition to the UAS Organization, other stakeholders may be involved or impacted in this process, including:
    i. UA Pilot or Flight manager.
    ii. UAS manufacturer.
    iii. UAS maintenance organization.
    iv. Service providers that support the operation (USSP etc.).
    v. Dubai Police.
    vi. Ministry of Defence.
7. Non-standard flight/mission operational Authorization shall require DCAA approval for every flight/mission in accordance with the DCAA approved Concept of Operation.



STEP 4 FLIGHT AUTHORIZATION

UAS Authorization for Flight Operation/Mission

1. Any UAS operation in the Emirate of Dubai shall be approved via DCAA services application available on the DCAA website. Un-authorized operations without a valid DCAA NOC are in violation of Law No. (4) of 2020 Regulating Unmanned Aircraft in the Emirate of Dubai, and liable for prosecution.
2. The UAS Flight/Mission authorization is issued based on:
    i. UAS Organization level of Authorization (Basic or Advanced).
    ii. Location (Position or area) of operations.
    iii. Altitude requested for the operation
    iv. Date and time of operations
3. DCAA may require additional documentation based on the mission profile.
4. A copy of the DCAA NOC shall always be available with the UAS operator during the conduct of an operation/mission.

NOTE

1. Additional approvals for flight operations/missions may be required that could include:
    i. Ministry of defence (MOD) if filming/photography forms part of the mission
    ii. Dubai Air Navigation Services (dans) if operations are to be conducted in controlled airspace or at altitudes above 400ft above ground level.
2. Approval for any operation/mission shall be obtained from GCAA via the GCAA e-services available on the GCAA website.

14.2. APPENDIX 2 UA REGISTRATION

Dubai UA Registration

1. Any UA operated in the Emirate of Dubai shall be authorized and registered with the DCAA.
2. The UA authorization is issued based either by UA testing or by compliance evaluation conducted by the DCAA.
3. UAS Organizations wishing to register a UA with the DCAA shall submit:
    i. A formal letter stating the Aircraft requested category of operations (Basic or Advanced).
    ii. The name of the registered Manufacturer.
    iii. The serial number provided by the manufacturer, that shall be unique per UA.
    iv. UA model information
        a. UA Design description.
        b. UA User Manual.
        c. UA Maintenance Manual.
        d. Other relevant documentation (addons or payloads etc.).
    v. Declaration of Compliance with UA Basic or Advanced Category Requirements
        a. Declaration issued by the UA Manufacturer confirming the UA compliance with DCAA DCAR-UAS Requirements for the Basic or Advanced Category of operations.
        b. Laboratory or Flight Test Reports if requested by the DCAA
    vi. MTOM (Maximum Take-off Mass). MTOM calculation shall include batteries, add-ons, payloads, and ancillaries that will be mounted on the UA to perform the intended operation.
    vii. Wingspan or characteristic dimensions of the UA.
    viii. Typical cruise speed or main characteristic speed in case of hybrid configuration.
    ix. This is a description of the type of aircraft, such as multirotor, VTOL, helicopter, or fixed wing.
    x. Payloads, add-ons, ancillaries that will be mounted on the UA to perform the intended operation.
    xi. Main colour of the UA.

14.3. APPENDIX 3 UAS TRAINING ORGANIZATION

Dubai UAS Training Organization Requirements

1. This section is defined to provide a systematic approach for UAS Training Organizations to:
    i. Register as a UAS Training Organization.
    ii. Obtain a UAS Training Organizational Authorization for issuing UAS Pilot Licenses in the Basic and Advanced category of operations.
    iii. Obtain a UAS Training Organizational Authorization for issuing UAS Flight Instructor Licenses
    iv. Obtain a UAS Training Organizational Authorization for issuing UAS Flight Instructor Examiners endorsement.

UAS Training Organization User Registration – Web Services

1. The UAS Training Organization User Registration as a web-based service available on the DCAA website.
2. The UAS Training Organization shall be registered in the UAE.
3. The following information is required to complete the application:
    i. Organization details:
        a. Organization legal name.
        b. Organization Address.
        c. Organization Legal representative information (name, phone number and email).
        d. Organization designated post holders:
            I. Accountable Manager
            II. Quality Manager
            III. Safety Manager
            IV. Chief Training Manager
        e. Details of all the post holders shall include name, phone number, email, and Emirates-ID number or Passport number.
    ii. Organization DET or Dubai Free Zone license specifying the requested activity.
4. The output information and documentation of this process are:
    i. UAS Training Organization registration number.

ii. DCAA platform username/password. This username/password will permit the operator to access the DCAA web, modify the data uploaded or to apply for other services.

5. The UAS Training Organization registration is only conducted once.
6. The UAS Training Organization shall keep the registered information up to date.
7. The registration will be open until the UAS Training Organization uploads and validate their required documentation (see UAS Training Organization Authorization below) and their profile is complete. However, if the account is open for more than 10 days without any update to the workflow on the next steps, it will be removed.

UAS Training Organization Authorization

1. The following documents shall be submitted to the DCAA for acceptance:
    i. An Organizational Exposition that includes:
        a. scope of the training.
        b. Proposed training organization name and corporate body sponsor.
        c. Location/address of main base for the theoretical training and other facilities locations if applicable.
        d. Location of the practical training.
        e. Proposed nominated personnel/key personnel (Accountable Manager, Safety and Quality Manager, Training Manager, Chief Instructor/Chief Examiner/Chief Practical Assessor, etc.)
        f. List of UA to be operated for training, including manufacturer details: model, weight and serial number along with their insurance, if applicable.
        g. List of flight simulation training devices to be used, if applicable.
    ii. Training program including the syllabus and sample of theoretical examination and practical assessment; and
    iii. The training organization manual which includes internal policies, processes and procedures, roles, and responsibilities.
    iv. a service catalogue for the services delivered to members along with the fees
    v. any other documentation or information required by the DCAA
2. After accepting the formal application, a site visit will be carried out to assess compliance

with the requirements of DCAR-UAS, DCAA will communicate any discrepancy/deficiency to the organization for the necessary corrective actions.

14.4. APPENDIX 4 DUBAI UAS OPERATIONS SAFETY ASSESSMENT METHODOLOGY (DUOSAM)

Dubai UAS Operations Safety Assessment Methodology

1. Dubai UAS Operations Safety Assessment Methodology (DUOSAM) is defined to provide a systematic approach in safety validation of an intended operation, including the processes, procedures and technical aspects of the operations. Operators shall comply with DUOSAM for the approval of operations under the advanced category of operations.
2. DUOSAM as a risk assessment methodology and the main objective is identifying potential risks of an unmanned aircraft system under the control of an UAS Operator and UA Pilot, and assuring the safety mitigations applied to the operation and the UAS are proportional and able to mitigate the risks identified.
3. DUOSAM applies to advanced category operations and is designed to provide a tool and processes to be followed to ensure the UAS operation can be safely conducted.
4. The process and the methodology help in understanding the risk of the operations and how it complies with the regulatory framework related to the Advanced Category Operations.
5. The methodology is based on the JARUS SORA 2.0; however, it implements additional requirements and mandates that is intended to ease the implementation process of new UAS Operators and new Concepts of Operation.
6. The Safety Assessment process is split in two phases:
    i. The first phase is focused on the assessment of the documentation provided by the UAS Operator regarding the risk of the operation.
    ii. The second phase is focused on validating and demonstrating that the UAS Operation, UAS, UAS crew skills and UAS maintenance are as per the submitted documentation and they adhere to the CONOPS and the risk assessment.
7. Other activities could be added to the process regarding assessment of technical elements of the UAS, external systems impacting operation's safety, third party services or mitigations implemented.

8. Operators needing to apply DUOSAM shall be fully familiar with the JARUS SORA process.

UAS Operations and Related Documentation

1. Documentation plays a critical role in applying DUOSAM. Assessment of the documentation is the first critical step in approval of the operations.
2. In defining the full picture of the proposed operation of the UAS, three levels of documentation, shall be provided in compliancy with DCAA requirements:
    i. A comprehensive Concept of Operations (CONOPS) (Refer to the CONOPS template)
        a. This document is to provide a detailed description of the intended operation, operation area and the UAS to be used in the operation.
        b. The nature of the operation, i.e., type and aim of the operation, needs to be clarified.
        c. The operational environment and geographical area shall be described supported with maps and pictures.
        d. The operational volume should be clearly described and depicted with take-off and landing points, buffers, and other relevant geographical attributes.
        e. Operational limits shall be comprehensively provided together with the operation strategy.
        f. Safety, contingency and emergency measures, and plans are required to be presented.
        g. Operation crew, crew structure and their roles and responsibilities are needed to be identified. Assurance of crew competency and condition for the operation should be clearly described.
        h. The UA(s) that is to be used in the defined operation shall be clearly specified. Airframe technical details, performance characteristics and limitations, and control system shall be described in detail. Configuration shall be described and configuration components such as C2 link, autopilot, flight control system shall be described. Safety functions such as containment, DAA and FTS shall be clearly identified. Maintenance approach of UAS and supporting equipment and tools shall be provided.
    ii. Operations Manual (Refer to Operations Manual Template)

a. The Operations Manual is expected to provide specific details on how the UAS Operator manages the intended operations provided with the CONOPS
b. The Operator's organizational structure is to be defined with roles and responsibilities clearly identified in the scope of the operations. Key people for the operation and safety aspects shall be identified and contact details shall be provided.
c. Normal procedures of the UAS Operator for conducting operations shall be clearly defined for all pre-flight, flight and post-flight phases. Flight planning, assurance of readiness for flight activity, checklists, transportation, coordination, managing the flight activity and post-flight activities shall be clearly defined.
d. Maintenance plan and procedures shall clearly demonstrate how the UAS Operator is maintaining the UAS airworthiness.
e. Contingency procedures for major failure possibilities and Emergency response Plan shall be defined in detail.
f. Occurrence reporting is mandatory, and the reporting procedure shall be defined.
g. Data management, logs and record keeping shall be clearly defined.
h. Security management procedures for the operation, data, operation area, personnel and facilities shall be provided.

iii. Risk and Safety Assessment (Refer to Risk and Safety Assessment template)

a. This documents outlines the DUOSAM outcomes.
b. The document shall provide a complete picture of the UAS Operation, including safety risk assessments and mitigation measures that are taken in response to the identified risks within the document.
c. The document shall provide specifics of the intended operation with a simplified CONOPS
d. Ground risks and air risks shall be identified and mitigations against these risks shall be specified.
e. The Operator shall identify the Specific Assurance and Integrity Level (SAIL).
f. The Operator shall identify Operational Safety Objectives (OSOs) for the Operator, the UAS and define the safety outcomes.

Intrinsic Ground Risk

1. Determining of the Intrinsic Ground Risk Classes (GRC) is referenced to Table.1 below.
2. The Intrinsic UAS Ground Risk Class (GRC) shall be determined by the UAS Operator for:
    i. Any operation in an urban part of the Emirate of Dubai (Dubai City) that is considered a populated environment (refer to Figure 1 for the boundaries of Dubai City).
    ii. The areas that are outside of Dubai City (refer to Figure 1) would be considered as sparsely populated or populated depending on the operational area.
    iii. Any operation over gathering of people shall not be authorized in the Emirate of Dubai. The operational volume and ground buffer shall avoid areas where gatherings of people are likely to occur.
3. The Authority shall share a Detailed 2D map that indicates populated/non-populated areas with Operators at the time of application.

Table 1. Determination of Intrinsic Ground Risk Classes (GRC)

Intrinsic Index Ground Risk Class of the UAS				
Maximum UAS dimensions	1 m / approx. 3 ft	3m / approx. 10 ft	8m / approx. 25 ft	>8m / approx. 25 ft
Typical kinetic energy expected	<700 J (approx. 529 ft lb.)	<34KJ (approx. 2500 ft lb.)	<1084KJ (approx. 800000 ft lb.)	>1084KJ (approx. 800000 ft lb.)
Operational scenarios				
VLOS/BVLOS over controlled ground area	1	2	3	4
VLOS in sparsely populated environment	2	3	4	5
BVLOS in sparsely populated environment	3	4	5	6
VLOS in populated environment	4	5	6	8
BVLOS in populated environment	5	6	8	10
VLOS over gathering of people	7			
BVLOS over gathering of people	8			

Figure1. Boundaries of Dubai City

Ground Risk Mitigations

1. For determination of ground risk mitigation correction factors, refer to Mitigations for Final GRC determination table 2 below.
2. The following considerations shall be considered by the Operator in determination of the intrinsic ground risk:
    i. For M1 Strategic mitigations for ground risk:
        a. These mitigations would be mainly operational measures such as using ground observers or planning the flight route over places with expected lower population or structural, such as rivers, sea or infrastructures built to mitigate that risk (such as safety nets).
        b. Strategic ground mitigations shall be clearly defined in the Operation Manual as part of the pre-flight and flight phases. Medium level of robustness mitigations shall justify reduction of 10 times the uninvolved people at risk via operational procedures.
        c. High level of robustness mitigations shall demonstrate reduction of 100 times

the uninvolved people at risk and apart from operational procedures would need the implementation of physical barriers, such as fences, nets, and other types of infrastructures.

d. Strategic mitigation shall be demonstrated and validated through a Validation Flight Campaign providing medium or high level of robustness.

ii. For M2 Effects of ground impact are reduced:

a. Any UA that is intended to operate in the Emirate of Dubai shall be equipped with a DCAA approved Parachute Recovery System to ensure a reduction of impact kinetic energy to lower than 80J within the operational area for Advanced Category A of operations (refer to DCAR-UAS).

b. For medium level of robustness, the parachute and its installation in the UA shall be in compliance with ASTM F3322-18 and the rest of the parachute recovery system shall be in compliance with SC LUAS MoC 2512.

c. For medium level of robustness design assessment and Validation Flight Campaigns are required to be performed as requested by ASTM F3322-18 and SC LUAS MoC 2512.

d. Design and technical assessment shall only be evaluated by DCAA.

e. For an UA with impact kinetic energy higher than 34kJ medium or high robustness are not applicable.

f. Ground impact reduction shall be demonstrated and validated through a Validation Test Campaign.

iii. For M3 Emergency Response Plan (ERP):

a. UAS Operators that intend to operate in the Emirate of Dubai shall have an Emergency Response Plan for Advanced Category A of operations (refer to DCAR-UAS).

b. For medium level of robustness, an ERP shall be developed in coordination and agreement with DCAA and the relevant local authorities.

c. For high level of robustness, an ERP shall have signed and valid agreements with the relevant authorities and/or first responders.

d. Successful execution of the ERP shall be demonstrated and validated through a Validation Test Campaign.

e. The ERP will not be considered as a mitigation for ground risks.

Table 2; Mitigations for Final GRC Determination

Mitigation sequence	Mitigations for ground risk	Robustness		
		Low/None	Medium	High
1	M1-Strategic mitigations for ground risk	0: None -1: Low	-2	-4
2	M2- Effects of ground impact is reduced	0	-1	-2
3	M3 - An Emergency Response Plan (ERP) is in place, operator validated and effective	0	0	0

Final Ground Risk

1. For the determination of the Final GRC, the below formula shall be used:
    i. Ground Risk Correction Factor (GRC Correction Factor)
        a. Sum of Robustness Factor
    ii. Final Ground Risk (Final GRC)
        i. Intrinsic Ground Risk Class (GRC) - GRC Correction Factors = Final GRC

Initial Air Risk Class

1. Determination of Initial Air Risk Class (Initial ARC) shall be done as per the process provided in Figure 2. ARC Determination Process.
2. Determination of the Initial Air Risk Class (ARC) shall consider:
    i. Operations are limited to a maximum of 120 meters (393 ft) height above the take-off point or above the ground surface.
    ii. Operations in controlled airspace is not authorized.

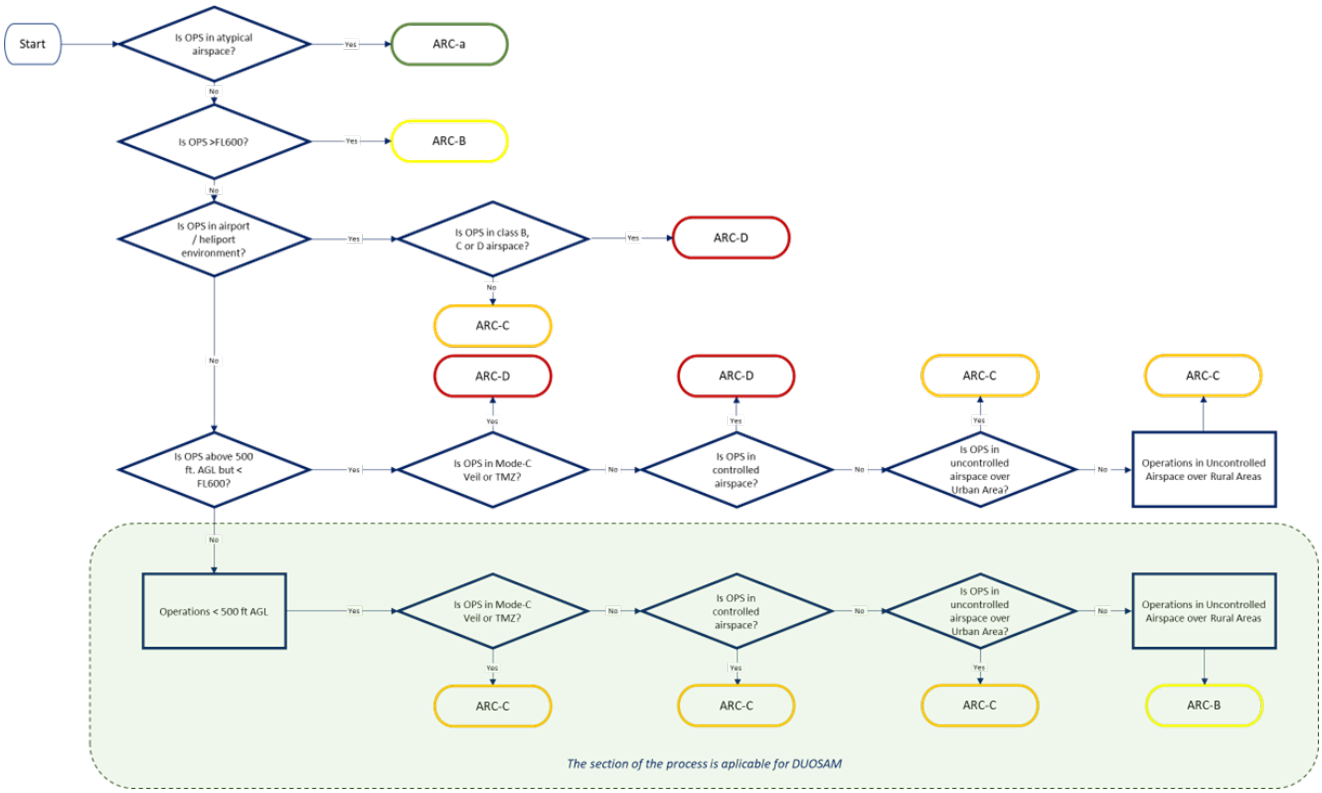
Strategic Air Risk Mitigations

1. The following shall be taken into consideration by the Operator:
    i. Mitigation for operational restrictions shall be clearly defined in Operators Operation Manual, CONOPS and Risk and Safety Assessment documentation.

ii. Mitigation for Common Flight Rules shall be clearly defined in Operators Operation Manual, CONOPS and Risk and Safety Assessment documentation.

iii. Any strategic mitigation shall be validated through the DUOSAM process by DCAA.

iv. Final Air Risk Class after strategic air risk mitigation is applied shall be either ARC-a or ARC-b.



Note: the sections that are not highlighted will be applicable after Advanced Category B and Certified Categories are defined within DCAR-UAS

Tactical Mitigation Performance Requirement (TMPR)

1. For the determination of Tactical Mitigation Performance Requirement (TMPR) and Robustness Levels, the below shall be considered:
   i. VLOS operations in the Emirate of Dubai are limited to a maximum range of 500 meters from the operator of the UA.
   ii. Any UA that is operated in the Advanced or higher Category of operations shall be

equipped with DCAA approved Detect and Avoid System (DAA):

a. Where operations are integrated with UTM airspace, and
b. DAA provides avoidance against collisions with manned and unmanned traffic, collaborative or not, and able to be triggered automatically.

iii. Visual observers in VLOS conditions could be used as part of the UAS crew to monitor airspace.
iv. Medium TMPR level shall be considered for any operation within Dubai City, unless strategic mitigations are not clearly identified.
v. For rural areas, DCAA may agree to apply low or medium level of TMPR depending on the operation area and the operator submission.
vi. Tactical mitigations shall be demonstrated and validated through a Validation Test Campaign.

Safety Assurance and integrity Level

1. The UAS Operator shall refer to JARUS SORA 2.0 Step #7 SAIL determination, when determining the Final Specific Assurance and Integrity Level (Final SAIL).
2. Advanced Category A operations are to be assessed as per SAIL II.
3. DCAA may evaluate and accept SAIL III operations on a case-by- case basis.

Table 3. Final SAIL Determination

SAIL DETERMINATION				
	RESIDUAL ARC			
Final GRC	a	b	c	d
≤2	I	II	IV	VI
3	II	II	IV	VI
4	III	III	IV	VI
5	IV	IV	IV	VI
6	V	V	V	VI
7	VI	VI	VI	VI
>7	Category C Operation			

Safety Portfolio

1. During the Identification of Operational Safety Objectives (OSO), the Operator shall consider DUOSAM robustness requirements as indicated in the next chapters.
2. It is the Operator´s responsibility to ensure all OSOs are validated as required within subsequent sections.
3. Determination of Operational Safety Objectives consider the following:
    i. DCAA shall perform all assessment and validations of the Level of Integrity and Level of Assurance.

ii. Medium and High Robustness requiring OSOs shall be demonstrated and validated through a Validation Test Campaign.
iii. DCAA may require medium level of Assurance (i.e., demonstration and validation through a Validation Test Campaign) for OSOs that require Low Level of Robustness depending on the Operators documentation.
iv. Robustness levels are adjusted to comply with DCAR-UAS requirements.

UAS Operator Requirements

1. The table below provides the OSO requirements applicable for UAS Operator for SAIL I and SAIL II operations.

Table 4. UAS Operator Requirements

OSO #	UAS Operator Requirements	Final SAIL
		II
OSO#1	Ensure the operator is competent and/or proven.	L
OSO#6	C3 link characteristics are appropriate for the operation.	L
OSO#7	Inspection of the UAS to ensure consistency to the CONOPS	L
OSO#8	Operational procedures are defined, validated, and adhered to (to address technical issues with the UAS).	M
OSO#9	Remote crew trained and current and able to control the abnormal situation.	M
OSO#10	Safe recovery from technical issue.	M
OSO#11	Procedures are in-place to handle the deterioration of external systems supporting UAS operation.	M
OSO#13	External services supporting UAS operations are adequate to the operation.	L
OSO#14	Operational procedures are defined, validated, and adhered to (to address Human Errors).	M
OSO#15	Remote crew trained and current and able to control the abnormal situation.	M
OSO#16	Multi crew coordination.	L
OSO#17	Remote crew is fit to operate.	M
OSO#19	Safe recovery from Human Error.	L
OSO#20	A Human Factors evaluation has been performed and the HMI found appropriate for the mission	L
OSO#21	Operational procedures are defined, validated, and adhered to (to address Adverse Operating Conditions).	M
OSO#22	The remote crew is trained to identify critical environmental conditions and to avoid them	M
OSO#23	Environmental conditions for safe operations defined, measurable and adhered to.	L
OSO#D1	Containment / Enhanced containment	M
M3	Emergency Response Plan	M

a. For OSO#1, although the Robustness Level is Low, DCAA may require Medium Level of Assurance.

b. For OSO#6, the use of unlicensed frequency bands is not acceptable for any condition.

c. For OSO#7, although Robustness Level is Low, the UAS Operator shall provide Medium Level of Assurance.
d. For OSO#11, external systems supporting the UAS operation shall be clearly identified with their deterioration modes. Means to detect these deterioration modes of the external systems/facilities and procedure(s) used when deterioration is detected shall be clearly described.
e. For OSO#9, #15 and #22, although Robustness Level is Low, the UAS Operator shall provide Medium Level of Assurance.
f. For OSO#13, although Robustness Level is Low, DCAA may request the UAS Operator to provide Medium Level of Assurance.
g. For OSO#16 Criterion#2, the Level of Assurance shall be Medium. The UAS Operator shall provide training syllabus for multi crew coordination and ensure that competency-based theoretical and practical training is provided to its crew.
h. For OSO#23 Criterion#3, although Robustness Level is Low, the UAS Operator shall provide Medium Level of Assurance.
i. OSO#D1 has been defined by DCAA to ensure containment functions of the UAS in all cases. Enhanced containment functions shall be demonstrated and validated through Design Appraisal and a Validation Test Campaign as per SC LUAS MoC2511.
j. M3 as strategic ground risk mitigation shall demonstrate Emergency Response Plan complying with medium or high level shall be assessed and demonstrated during the Validation Test Campaign through tabletop simulations, and service level agreement with first responders.

UAS Maintenance Organization Requirements

1. The table below provides OSO requirements for UAS Maintenance Organization for SAIL I and SAIL II operations.
2. It is Operators responsibility to ensure that the Maintenance Organization is in compliancy with the OSO requirements.

Table 5. UAS Maintenance Organization Requirements

OSO #	UAS Maintenance Organization Requirements	Final SAIL
		II
OSO#3	UAS maintained by competent and/or proven entity.	L

UAS Manufacturer Requirements

1. The table below provides OSO requirements for UAS Manufacturer for SAIL I and SAIL II operations.
2. It is Operators responsibility to ensure that UAS is acquired from a manufacturer that is in compliancy with the OSO requirements.

Table 6. UAS Manufacturer Requirements

OSO #	UAS Manufacturer Requirements	Final SAIL
		II
OSO#2	UAS manufactured by competent and/or proven entity	L
OSO#4	UAS developed to authority recognized design standards.	O

UAS Design

1. The table below provides OSO requirements for UAS Design for SAIL I and SAIL II operations.
2. Additional technical objectives to be considered are:
    i. M2 – Kinetic energy reduction by technical means in the case that low or medium level of robustness are declared.
    ii. OSO#D1 has been defined by DCAA to ensure enhanced containment functions of the UAS. For SAIL II, enhanced containment functions shall be demonstrated and validated through Design Appraisal and a Validation Test Campaign as per SC LUAS MoC2511.
3. It is Operators responsibility to ensure that UAS is compliant with the required OSOs.

4. For OSO#10 and 12, the applicant shall demonstrate system independence in case M2 medium level of robustness is not applied.
5. For OSO#10 and 12, the system shall demonstrate that loss of control must happen from failure conditions from two different and independent systems.

Table 7. UAS Design Requirements

OSO #	UAS Operator Requirements	Final SAIL
		II
OSO#4	UAS developed to authority recognized design standards.	O
OSO#5	UAS is designed considering system safety and reliability.	L
OSO#6	C3 link characteristics are appropriate for the operation.	L
OSO#10	Safe recovery from technical issue.	M
OSO#12	The UAS is designed to manage the deterioration of external systems supporting UAS operation.	L
OSO#13	External services supporting UAS operations are adequate to the operation.	L
OSO#18	Automatic protection of the flight envelope from Human Error.	L
OSO#19	Safe recovery from Human Error.	L
OSO#20	A Human Factors evaluation has been performed and the HMI found appropriate for the mission	L
OSO#24	UAS designed and qualified for adverse environmental conditions.	M
OSO#D1	Containment / Enhanced containment	M

14.5. APPENDIX 5 UAS IMPORTING, EXPORTING AND TRADE

14.5.1. UAS Importing

1. Any organization that is intending to import UAS or UAS parts for resale or distribution purposes shall:

i. Submit a statement of compliance with DCAR-UAS and applicable legislation in the Emirate of Dubai affecting by its activities,
ii. Submit an on-line application to DCAA to obtain UAS Import Authorization,
iii. Have a valid trade license, relevant to the activity, from DET or Dubai Free Zones.

2. Any person or organization that is intending to import UAS or UAS parts without selling or distribution purposes (For own use) shall:
   i. Be a registered UA Pilot for recreational purposes, or
   ii. a registered UAS Organization in accordance with Appendix 1 UAS Organizational Requirements.
   iii. Submit an on-line application to DCAA to obtain UAS Import Authorization.
3. Any organization that is intending to import UAS or UAS parts shall:
   i. Register all the Products through the DCAA services application before importing the items.
   ii. Registration is thorough https://dcaa.gov.ae/
   iii. The Importing Organization is required to comply with Dubai Customs guidelines for importing Products.
   iv. For Dubai Customs refer to: https://www.dubaicustoms.gov.ae/en/Pages/default.aspx
      a. Labelling shall be done as per Dubai Customs regulations
      b. Labelling shall include but not limited to airway bill number and relevant NOC for importing the Product.
   v. Ensure that all the Products are in compliance with the safety requirements of all the relevant authorities,
   vi. Ensure that the products are properly packed to prevent any risks to people.
   vii. Ensure that all required documentation and permits are completed for importing,
   viii. Ensure that clear information is provided in handling and transportation of the Products,
   ix. Ensure that the labelling and shipping is done in compliance with the requirements of the relevant authorities.
4. The Importing organization shall ensure any imported Product has a unique serial number from the manufacturer.

5. The importing organization shall ensure that the Harmonized System Code (HS Code) of the product matches the number on the Dubai Customs documentation.
    i. For a detailed list of HS Codes refer to: https://www.dubaicustoms.gov.ae/en/Pages/default.aspx
6. The Importing organization shall provide its name, trade name or trademark, website and its postal address on the Product, or Product's package or accompanying documentation.
7. The Importing organization should provide all required information with the Product to place the product in the market.
    i. The Importing organization shall provide the manufacturer's procedures, manuals and instructions including but not limited to operation, maintenance and troubleshooting.
    ii. Documentation shall clearly identify the UAS category, operational limitations and all risks associated to the operation or use of the Product.
8. The Importing organization shall ensure performance conformity of the Product.
9. The Importing organization shall ensure proper storage, handling, and transportation of the Product in accordance with its specifications.
10. Corrective measures and appropriate actions shall be taken immediately if the Importing Organization considers a Product is not in conformance with the DCAR and other applicable regulations and notify DCAA.
11. The Importing organization shall register all the UAS sub-systems including but not limited to UA and UA controller, UAS parts, components, and add-on products with the DCAA.
12. The Importing organization shall deregister any Product when the ownership of the Product is transferred to another entity.
13. The Importing organization shall retain all records of its importing activities related to Products for at least 60 months.
14. The Importing organization shall provide all records, logs, and any relevant documentation to DCAA upon request.
15. The Importing organization shall allow DCAA to perform announced or unannounced audits to ensure the validity of the Importing Organization's compliance with DCAR-UAS.
16. The following details shall be provided by the Importing Organization for the registration of an UA:
    i. DET registration number,

ii. Model and serial number of UA,
iii. Main color of UA,
iv. Weight of the UA without payload, ancillaries or add-ons,
v. Manufacturer´s maintenance, operations and user manuals as applicable

17. The following details shall be provided by the Importing Organization for the registration of a ground controller:
    i. DET registration number,
    ii. Model and serial number of ground controller
    iii. Manufacturer´s maintenance, operations and user manuals as applicable.
18. All imported detachable ancillary equipment that are intended to be used in an operation shall be registered, providing their DET registration number and model and serial numbers, including but not limited to:
    i. cameras,
    ii. Imaging sensors,
    iii. any other sensors and/or probes such as gas detectors,
    iv. mechanical attachments,
    v. carriage attachments,
    vi. dropping equipment,
    vii. recovery systems such as parachutes.
19. All components that are intended to be used in an operation shall be registered, providing their DET registration number and model and serial numbers, including but not limited to:
    i. Batteries, battery packs,
    ii. Blades and similar,
    iii. Electric motors, electric motor drivers,
    iv. Flight control systems,
    v. Navigation equipment and systems,
    vi. Radio communication systems,
    vii. and other relevant components and systems
20. For deregistration, the importing organization shall provide the reason for deregistration of the products, and where applicable, provide the details of the new owner of the products to DCAA.

14.5.2. UAS Exporting and Trade

1. Any organization that is intending distribute UAS or UAS parts for resale or export purposes shall:
    i. Submit a statement of compliance with DCAR-UAS and applicable legislation in the Emirate of Dubai affecting by its activities,
    ii. Submit an on-line application to DCAA to obtain UAS resale or export Authorization,
    iii. Have a valid trade license, relevant to the activity, from DET or Dubai Free Zones.
2. Organization that intends to distribute, sell, or export Products shall:
    i. ensure that all the Products are in compliance with the general safety requirements of all relevant authorities,
    ii. take preventive and corrective measures in case the product becomes unsafe,
    iii. not provide any Product that is not in conformance with the declared UAS Category and Products specifications,
    iv. inform the manufacturer and the importer, and immediately notify DCAA if it notices that the Product presents safety or security risk.
    v. ensure proper packaging is done, protecting the environment and preventing any risk to the health of consumers before distributing, selling, or exporting the Product,
    vi. ensure proper storage and transportation to ensure compliance with the specifications of the Product
    vii. ensure that all required documentation and permits are obtained prior to distributing, selling or exporting the product,
    viii. ensure that the manufacturer's procedures, manuals and instructions are included in the product package,
    ix. ensure that the Product have been registered with DCAA before distributing or selling,
3. The Organization shall ensure that a Dual-Use product shall not be distributed, exported, or sold prior to obtaining approvals and authorizations from all relevant security authorities.
4. Organization shall retain all records of its distribution, selling or exporting activities related to Products for at least 60 months.
5. Organizations shall provide all records, logs, and any relevant documentation to DCAA, and allow DCAA to perform announced or unannounced audits to ensure the validity of the

Organization's compliance with DCAR-UAS.

14.6. APPENDIX 6 UAS MANUFACTURING AND MAINTENANCE

14.6.1. UAS Manufacturing Organization

1. A Commercial UAS Manufacturer shall be considered as:
    i. Any legal entity with a valid trade license to manufacture, import and distribute a UAS model under its brand, or modify an existing UAS from the local market.
    ii. Any UAS Organization that uses its own trademark on the original UAS.
    iii. Any Commercial Organization that modifies the UAS model for its own use or to be provided to third parties
    iv. A privately built UAS assembled or manufactured for the owners own commercial use, excluding UAS assembled from sets of components placed on the market in the form of a single ready-to-assemble kit.
2. The builder of a privately built UAS, intended for private non-commercial use, shall not be considered as a "Commercial UAS Manufacturer".
3. UAS Manufacturers aimed at law enforcement or defense applications are exempt from complying with the current DCAR-UAS
4. Products included as part of the activities of the commercial UAS manufacturer include, apart from the UA:
    i. The ground control equipment utilized for the control or mission management of the operation
    ii. Other add-ons that are flight critical, or traffic control related, needed for communication with ANSP's or USSP's.
    iii. Remote Server hosted software services needed to plan, execute and gather flight critical data during the UAS Operation.
    iv. Any imaging sensors or sensors and payloads manufactured for other commercial purposes
5. Any organization that is intending to manufacture commercial UAS or UAS parts in the Emirate of Dubai shall:
    i. be registered as UAS Manufacturer with DCAA,

ii. Submit a declaration of conformance to the UAS Category (As defined in DCAR-UAS) intended for its product,
iii. Ensure product conformance to the intended UAS Category prior to commercialization of any intended UAS model,
iv. ensure all measures necessary are implemented to control the configuration and traceability of the products manufactured, and ensure compliance with the UAS model design that are imported, modified, or distributed,
v. name a legal or authorized representative responsible for the fulfillment of the previous requirements,
vi. keep a register with the manufactured UAS models, configuration, and technical characteristics

6. Any organization that is intending to manufacture UAS or UAS parts shall apply for certification as a manufacturer through the DCAA services, that includes:
   i. A valid trade license, relevant to the activity, from DET or Dubai Free Zones.
   ii. The Registration details of the UAS Manufacturer organization,
   iii. The Contact information for the legal representative,
   iv. A statement of compliance with DCAR-UAS and applicable legislation in the Emirate of Dubai affecting its activities.

14.6.2. UAS Maintenance Organizations

1. A UAS Maintenance Organization shall be considered as:
   i. Any commercial organization in charge of the continuous airworthiness and serviceability of the UAS intended for non-commercial, commercial, events, demonstration flights and experimental purposes, under basic and advanced category UAS Operations.
2. Any organization that is intending to conduct UAS maintenance in the Emirate of Dubai shall:
   i. be registered as UAS Maintenance Organization with DCAA,
   ii. ensure all measures necessary are implemented to control the conduct and traceability of the maintenance process and ensure compliance with the UAS model manufacturers maintenance manual.

iii. name a legal or authorized representative responsible for the fulfillment of the previous requirements,

iv. keep a register with the UAS models that were maintained/serviced, including records of parts used and technical documentation.

3. Any organization that is intending to maintain UAS or UAS parts shall apply for certification as a maintenance Organization through the DCAA services, that includes:

i. A valid trade license, relevant to the activity, from DET or Dubai Free Zones.

ii. The Registration details of the UAS Maintenance organization,

iii. The Contact information for the legal representative,

iv. A statement of compliance with DCAR-UAS and applicable legislation in the Emirate of Dubai affecting its activities,

Responsibilities of the UAS Maintenance Organization in Basic Category

1. Any organization conducting maintenance activities of UAS in the basic category of operations shall follow the UAS Manufacturer instruction for the maintenance activities required.

Responsibilities of the UAS Maintenance Organization in Advanced Category

1. Maintenance activities performed for UAS in the advanced category of operations shall be performed by trained and qualified personnel competent with the specific UAS maintenance manuals and plans. For that reason, the organization shall:

i. follow a maintenance plan based on the requirements of the UAS maintenance manuals included in the Operations Manual of the UAS Organization.

ii. Develop and maintain a training plan and competencies for the personnel in charge of the UAS maintenance activities.

iii. Maintain a register with all the maintenance personnel qualifications and training.

iv. Maintain an updated list of the qualified personnel in the organization that are authorized to perform the maintenance activities.

v. Maintain a maintenance logbook with all the maintenance activities performed on each UAS.

vi. The maintenance logbook shall contain at least:

a. UAS designation model and serial number,
b. A record of the maintenance activity performed with reference to the UAS maintenance manual.
c. Identification of the personnel in charge of the execution of the maintenance activities.
d. date and time when the activity was performed,
e. any issues encountered during the execution of the maintenance activities.
f. clear designation of the parts replaced or maintained as per UAS technical documentation.