AW DRONES

Project Overview

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Deputy Project Coordinator

This project has received funding from European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No°824292.

Outline

- What is AW-Drones?
- Objectives and scope
- Methodology
- Involvement of external experts
- Expected Outcomes
  - The Drone Standards Information Portal

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Why AW-Drones?

A list of recommended industry standards to allow operators to comply with regulatory requirements is not yet available

- Developing a comprehensive list of recommended standards requires:
  - **Collecting information** about on-going and planned activities of all Standard Making Bodies
  - Evaluating to what extent a standard is **covering** a given requirement
  - Ranking the available standards and **identify gaps**

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What is AW-Drones?

AW-Drones is a **3-years** Coordination and support action (CSA) funded under the EU H2020 program.

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deepblue

EUROUSC ITALIA

DLR

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FLIGHT SAFETY FOUNDATION MEDITERRANEAN "Never take safety for granted"

HELLENIC INSTITUTE OF TRANSPORT CERTH / HIT

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ortelio

dji

DELAIR AERIAL INTELLIGENCE

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Objectives

- **Collect information** on on-going and planned work with regards to technical and operational **standards** developed for drones worldwide
- Carry out a **critical assessment/benchmarking** of all collected data to identify best practices, gaps, bottlenecks and applicability
  … in other words a "metastandard"
- Propose and **validate** a well-reasoned set of standards for each category of drone operations
- **Engage** with key stakeholders and end-users, i.e. representatives of the whole drone value chain

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Methodology – Collecting and categorizing

Collection of drone standards

→ **airworthiness**, operations & procedures, ….

EUSCG RDP
ANSI Roadmap

Collection of drone-related and applicable general standards

EUROCAE, RTCA, ISO, ASTM, ASD-STAN, …

→ component, subcategories, industrial level

Assessment of standards - categorization & evaluation

→ maturity, safety, cost, suitability …

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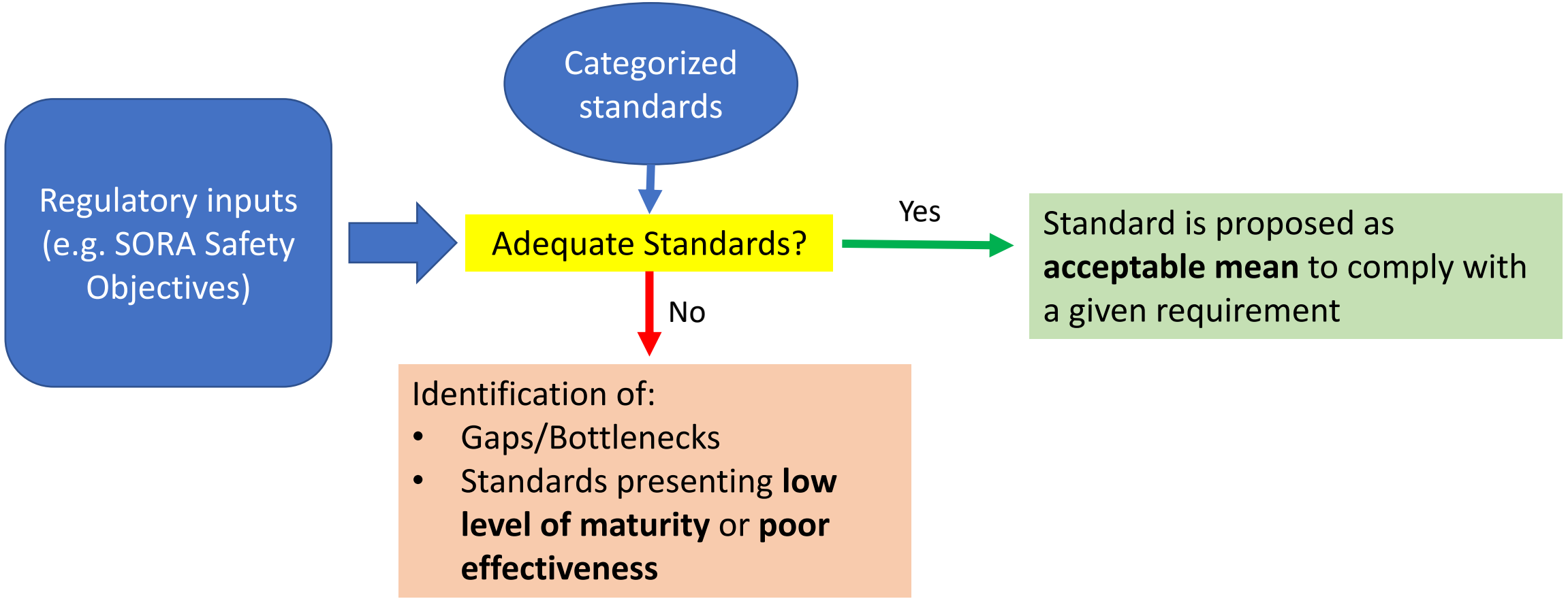
Methodology - Developing a “meta” standard



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Scope

- Year 1: Standards required to support effectively the Specific Operations Risk Assessment (**SORA**) methodology
- Year 2: Standards supporting the development of **U-Space** in Europe (+ 2nd iteration of SORA)
- Year 3: Standards needed to support the operation of **highly automated UAS** → e.g. standards to support CS-Light UAS

Iterative approach throughout the project duration

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Stakeholders

- European Commission (DG-MOVE, INEA)
- EASA
- CAA Representatives
- Standard Making Bodies Representatives
  - EUROCAE, RTCA, ISO, ASTM, ASD-STAN, …
- UAS Manufacturers
- UAS Operators
- UTM Service Providers
- Research and Academia
- … do not feel left out!

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Stakeholders' involvement

- **EASA** and **DG Move** give feedback and steer the work in dedicated workshops
- **The Advisory Board** (made of regulators, manufacturers, operators, standard making bodies)
  - supports the methodological work of the project
  - provides review, recommendations and feedback on project activities and findings
  - brings an external view

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Additional Stakeholders' involvement

- Online surveys
- Public Workshops
  - **Workshop 1 (September 2019)**: Review of the collected set of standards to support effectively the Specific Operations Risk Assessment (SORA) methodology
  - **Workshop 2 (today)**: Review of the collected set of standards to support U-Space implementation
  - **Workshop 3 (June-July 2021)**: Review of the collected set of standards/principles for Autonomous UAS certification
- Strong relationship with **Standard Making Bodies** (EUROCAE, ISO, ASTM, ANSI, ...) and with **working groups** (EUSCG, JARUS, …) to avoid duplications and maximize the impact of the action

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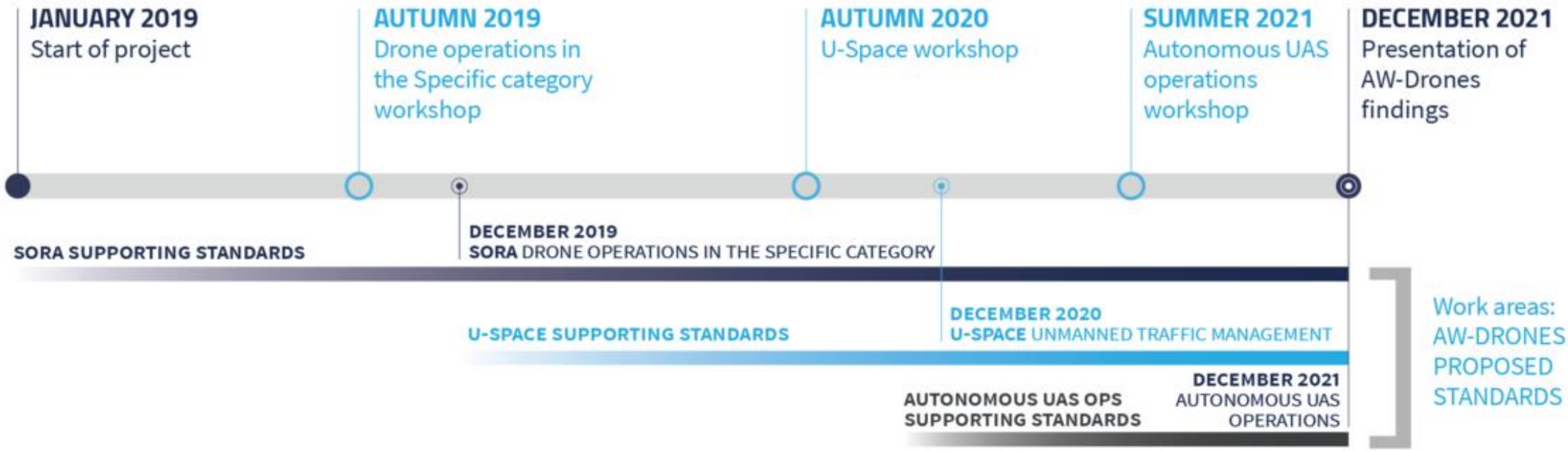
Project timeline



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What we produce

- A **yearly report** about “State-of-the-Art” of standards for UAS
- A yearly report containing a **“well-reasoned” set of standards:**
  - Applicability
  - Maturity
  - KPA Effectiveness
- An **open repository** containing structured information about technical rules, procedures and standards for drones worldwide, including applicability to different UAS OPS categories and different SAIL = **metastandard**

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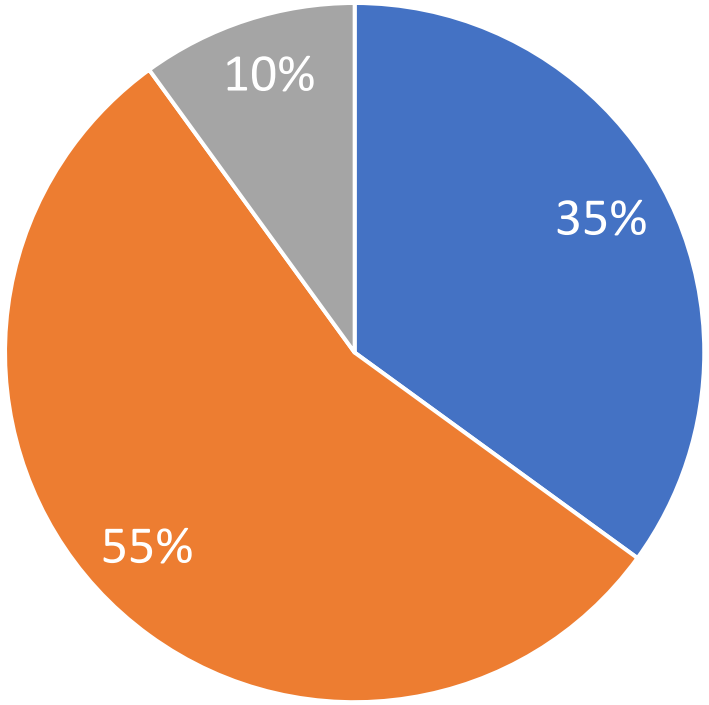
Standards coverage of SORA



- **600** standards collected
- **300** standards assessed from:

and more…

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“Drone Standards Info Portal”

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How to find “my” standard in the jungle?

- Industry standard-making bodies are developing …
  several hundreds of standards for drones
- Not immediate and easy to establish relationship between these standards and
  - Applicable EU/EASA rules
  - Categories of UAS operation (open; specific; certified)
    - **Inside specific category, with SORA robustness levels**
- Information difficult to trace, “digest” and consult
- Difficult to assess whether a standard is applicable to “my” case

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Drone standards info portal

https://standards.aw-drones.eu/

WARNING!

- Data upload and validation still ongoing
- For the complete text of standards and their use, refer to official SDO websites
- The mapping btw standards and regulatory requirements represents AW-Drones view → no endorsment by EASA

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- Continuing Airworthiness 12
- UAS Operations 55
- Aerodromes 2
- U-Space/ATM 22
- Environment 2
- Personnel 20
- Oversight 6

Drone Standards Info Portal

Search standards

Keywords

Systems & Equipment (151) | Electrical System (87) | Software Development Assurance (59) | Design & Construction (33)

Detect and Avoid (30) | Navigation (28) | Systems safety assessment (25) | Standard Scenarios (22) | Lights (20)

All keywords

Standards (654 results)

‹ 1 2 ... 4 5 6 7 8 9 10 ... 40 41 ›

Standard Specification for Batteries for Use in Small Unmanned Aircraft Systems (sUAS)

Organization: ASTM F38 Unmanned Aircraft Systems
Document Nº: ASTM F3005-14a
Status: published

READ MORE

JAUS Mission Spooling Service Set

Organization: SAE AS-4JAUS Joint Architecture for Unmanned Systems Committee
Document Nº: AS6062
Status: published

READ MORE

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Filtering by Requirements

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Clear all

OSO 19
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OSO 21
OSO 22
OSO 23
OSO 24
M1 S
M1 T
M2
M3
VLOS
BVLOS

Drone Standards Info Portal

Search standards

Keywords

Systems & Equipment (1) UAS Maintenance personnel competence (1) UAS-ATM (IFR above VLL and below FL 600) (1) Emergency capabilities & Health monitoring (1)

All keywords

Standards (3 results)

Standard Specification for Small Unmanned Aircraft System (sUAS) Parachutes

Organization: ASTM F38 Unmanned Aircraft Systems
Document Nº: F3322-18
Status: Published

READ MORE

UAS Maintenance Technician Qualification

Organization: ASTM F38 Unmanned Aircraft Systems
Document Nº: ASTM WK60659
Status: ongoing

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Filtering by domain

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- [ ] Environment 2
- [x] Personnel 20
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STANDARDS 20

Search standards

Keywords

Remote Pilot competence (14) UAS Maintenance personnel competence (1) Instructors (1)

All keywords

Standards (20 results)

1 2

Pilot Training Recommendations for Unmanned Aircraft Systems (UAS) Civil Operations

Organization: SAE G-30 UAS Operator Qualifications Committee & G-10U Unmanned Aerospace Vehicle Committee

Document Nº: ARP5707

Status: published

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Common operator qualifications

Organization: SAE G-30 UAS Operator Qualifications Committee

Document Nº: ARP####

Status: planned

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Keyword selection

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Drone Standards Info Portal

Search standards

Keywords

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Navigation (28) Systems safety assessment (25) Standard Scenarios (22) Lights (20) Emergency capabilities & Health monitoring (19)
Remote Pilot competence (18) Cyber-security (16) Definitions (15) Electromagnetic Compatibility and Lightning Protection (12)
Command and Control (C2) Link (12) Remote Pilot Station (10) Flight Control System (10) UAS-ATM (IFR above VLL and below FL 600) (10)
Classification of UAS operations (10) Manuals (9) Structures (9) Propulsion (9) Organization (9) Instruments (9)
Level of Automation/Autonomy (7) UAS Operator (7) Tracking (7) E-Identification (6) Classification of drones (5) Flight performance (5)
Airborne Electronic Hardware (AEH) Development Assurance (5) Notified bodies and Qualified Entities (5) Instructions for continued airworthiness (4)
Geo-awareness (4) Marking and Registration (3) Fuel (3) Maintenance & Inspection (3) Physical Security (3) U-Space Service Providers (3)
Accident/Incident investigation (1) UAS Maintenance personnel competence (1) Privacy and data protection (1) Risk Assessment (Operations) (1)
Take-off/Landing zones (urban vertiports) (1) Ground Handling Service (1) Aircraft Noise Emission (1) Aircraft gaseous emissions (1)
Instructors (1) Training organizations (1) Traffic surveillance (tracking) (1) Environmental qualification of Equipment (Ground and Airborne) (1)

All keywords

Standards (654 results)

‹ 1 2 3 4 5 6 7 8 ... 40 41 ›

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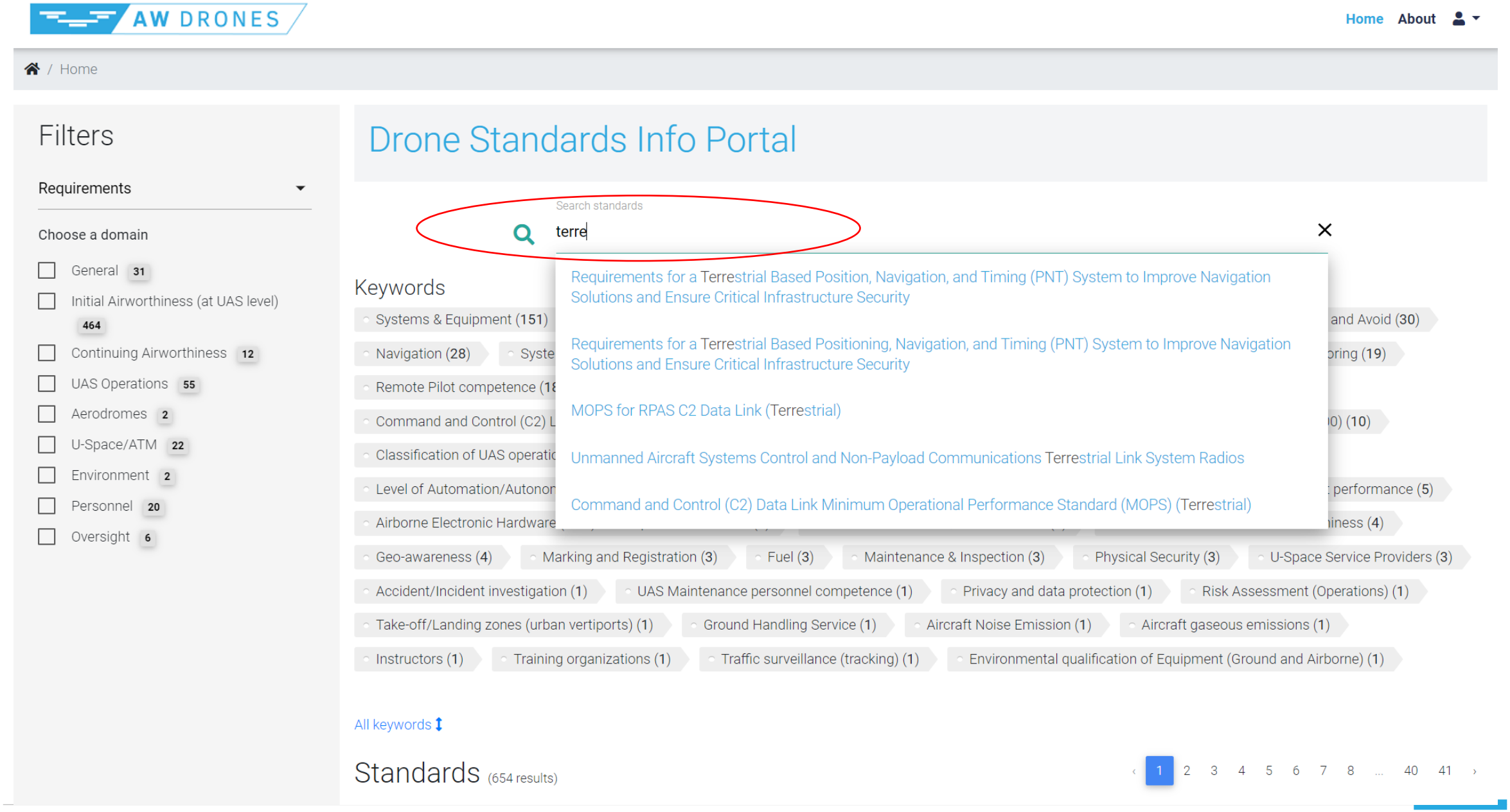
Search with autocomplete



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View a standard

New Practice for General Operations Manual for Professional Operator of Light Unmanned Aircraft Systems (UAS)

Details

Type:	Standard	**Domain:**	General
Document N°:	ASTM WK62744	**Keywords:**	Manuals
Status:	ongoing		
Organization:	ASTM F38 Unmanned Aircraft Systems		

Description

This standard defines the requirements for General Operations Manual for Professional Operator of Light Unmanned Aircraft Systems (UAS). The standard addresses the requirements and/or best practices for documentation and organization of a professional operator (i.e., for compensation and hire). The intent is for this standard to support professional entities that will receive operator certification by a CAA, and provide standards of practice for self- or third-party audit of operators of UAS Not all CAAs have operator certificates. This would provide a standard for operators and identify gaps that are not currently addressed as it relates to: (1)Individuals, who are currently remote pilots (i.e. FAA under Part 107) in jurisdictions that do not separately certify Operators, who want to voluntarily comply with a higher standard, and (2)Operators, who are seeking certification from a CAA for Light Unmanned Aircraft Systems, who want to voluntarily comply with an industry standard (3)Public agencies interested in developing unmanned aircraft systems programs.

SORA

Requirement: OSO 01 (Ensure the operator is competent and/or proven)

Criteria: Criterion 1

Robustness:

Low	Medium	High
Full	Partial	Partial

The coverage is set as partial since the standard does not provide guidance on what to include in the different sections of the Manual to comply with different levels of robustness.

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AW-Drones

www.aw-drones.eu

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Questions?

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Thank you for the attention

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