



Harmonising drone standards to support the ongoing EU regulatory process

Marco Ducci – R&D Manager



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- EU is leading the rulemaking process for drones at a global level
- Big progress towards a common European regulation for drones in the last years:
 - EASA basic regulation 2018/1139 extended the mandate of EASA to drones of **whatever mass**
 - **EU Regulations 2019/947** and **2019/945** set the framework for the safe operation of drones in European skies (EU and EASA Member States)
 - Related **Guidance Material** and **Adequate Means of Compliance**
 - **U-space** regulation sets the ground for further development of the drone sector

- Today EASA and FAA often refer to “**voluntary**” **industry standards** in their regulatory material
 - E.g. in “Book 2” of Certification Specifications
 - In a huge number of FAA Technical Standard Order (TSO) or EASA European TSO (ETSO) for equipment
 - **...and in drone regulations!**
- All these standards are not binding, but, if used, constitute a **presumption of compliance with the rules** = **Acceptable Means of Compliance (AMC)**
- Several are published by **ASTM, EUROCAE, ISO, RTCA or SAE** = **Standard Development Organisations (SDOs)**

Safety rules for civil UAS operations in EU (2019/947) comprise 3 categories of operations:

- a) “open” in Visual Line-of-Sight (VLOS) for which no safety assessment is prescribed, but for which the regulations establish strict limitations
- b) “specific”, which includes Beyond VLOS and for which a risk assessment is always required**
- c) “certified” which covers high risk operations by long range or large drones or passenger carrying and for which a safety assessment is also required



- **Lack of harmonised** standards is **holding back** the development of drone-related business, both at a global level and in Europe
- Several studies and surveys identify **a reliable regulatory and standardisation framework** as one of the main potential **boosters** for the drone business
- To foster the growth of safe drone usage, there is a need to implement **coherent and interoperable** global standards for drones in the EU

- Industry standard-making bodies are developing **several hundreds of standards for drones**

How to find “my” standard in the jungle?

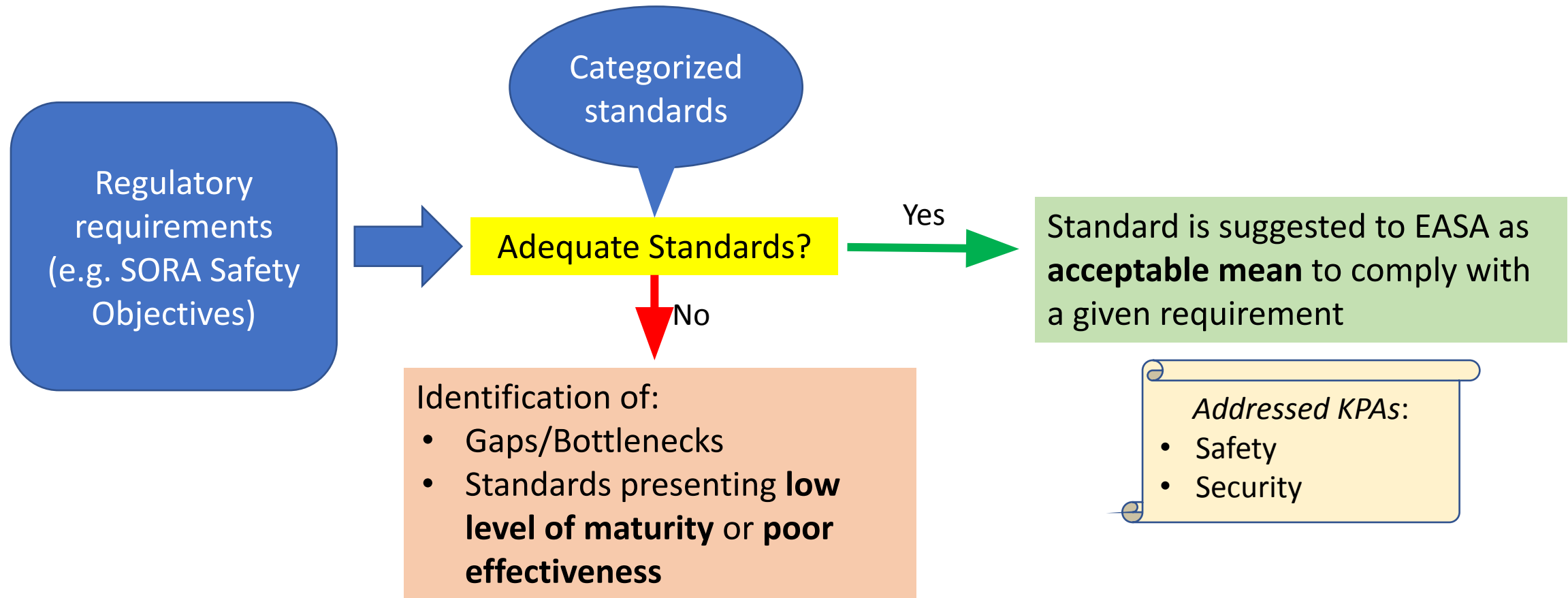
- Not immediate and easy to establish relationship between these standards and
 - Applicable EU/EASA rules
 - Categories of UAS operation (open; specific; certified)
 - **Inside specific category, e.g. with SORA integrity levels**
- Information difficult to trace, “digest” and consult

- **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

- Year 1 (2019): Standards required to support effectively the Specific Operations Risk Assessment (**SORA**) methodology
600+ standards collected and assessed, 47 gaps identified!
- Year 2 (2020): Standards supporting the development of **U-Space** in Europe (+ 2nd iteration of SORA)
Around 30 additional standards collected and assessed
- Year 3 (2021): Standards needed to support the design verification process in compliance to **SC-Light UAS**



Iterative approach
throughout the project
duration



- A **yearly report** about “State-of-the-Art” of standards for UAS
- A yearly report containing a “**well-reasoned**” **set of standards**:
 - Applicability
 - Maturity
 - Effectiveness
- A **drone standards information portal** containing structured information about technical rules, procedures and standards for drones worldwide, including applicability to different UAS OPS categories and different SAILs (Specific Assurance and Integrity Levels)

- Open access repository that provides single point of access to relevant information about:
 - rules, procedures and technical standards developed for mass-market drones worldwide;
 - best practices, gaps and bottlenecks;
 - technical standard for each category of drone operations

URL: <https://standards.aw-drones.eu>

Homepage

The screenshot shows the homepage of the AW Drones repository. The browser address bar displays "drones.ortelio.co.uk". The page features a navigation bar with "Home" and "About" links. A sidebar on the left contains a "Filters" section with a "Requirements" dropdown and a "Choose a domain" section with checkboxes for various categories: General (31), Initial Airworthiness (at UAS level) (464), Continuing Airworthiness (12), UAS Operations (55), Aerodromes (2), U-Space/ATM (22), Environment (2), Personnel (20), and Oversight (6). The main content area has a "Welcome to AW-Drones repository" message and a search bar labeled "Search standards". Below the search bar is a "Keywords" section with tags for 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), and Emergency capabilities & Health monitoring (19). A "Standards (654 results)" link is circled in red. Below this, there are four standard cards, each with a title, organization, document number, status, and a "READ MORE" button. The first card is "UAS Propulsion System Terminology" by SAE E-39, with document number AS#### and status "planned". The second is "New Standard Terminology for Unmanned Aircraft Systems" by ASTM F38, with document number ASTM WK62416 and status "ongoing". The third is "Requirements for the categorization and classification of civil UAS" by ISO TC20 / SC16 / WG1, with document number ISO 21895 and status "published". The fourth is "General requirements for UAS for civil and commercial applications, UAS terminology and classification" by ISO TC20 / SC16 / WG1, with document number ISO 21384-1 and status "deleted".

AW DRONES

Home About

Home / Home

Filters

Requirements

Choose a domain

General 31

Initial Airworthiness (at UAS level) 464

Continuing Airworthiness 12

UAS Operations 55

Aerodromes 2

U-Space/ATM 22

Environment 2

Personnel 20

Oversight 6

Welcome to AW-Drones repository

This is the AW-Drones open repository of technical standards and "best practices".

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) Emergency capabilities & Health monitoring (19)

Remote Pilot Competence (18) Cybersecurity (16) Drones (15) Electromagnetic Compatibility and Interference Protection (12)

All keywords ↓

Standards (654 results)

1 2 3 4 5 6 7 8 ... 40 41

UAS Propulsion System Terminology

Organization: SAE E-39 Unmanned Aircraft Propulsion Committee

Document N°: AS####

Status: planned

READ MORE

New Standard Terminology for Unmanned Aircraft Systems

Organization: ASTM F38 Unmanned Aircraft Systems

Document N°: ASTM WK62416

Status: ongoing

READ MORE

Requirements for the categorization and classification of civil UAS

Organization: ISO TC20 / SC16 / WG1

Document N°: ISO 21895

Status: published

READ MORE

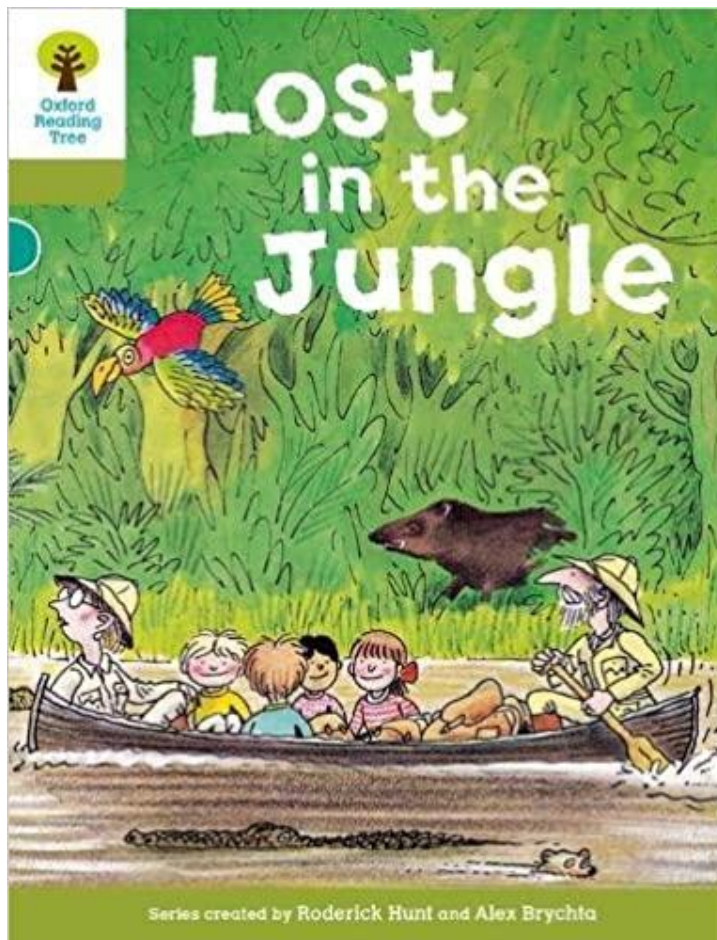
General requirements for UAS for civil and commercial applications, UAS terminology and classification

Organization: ISO TC20 / SC16 / WG1

Document N°: ISO 21384-1

Status: deleted

Conclusions: how to find my way in the jungle?



Project AW-DRONES – a single metastandard linked to EU rules

Project AW-DRONES – facilitates identification of applicable industry standards

Compliance with recognised standards increases safety





<http://www.aw-drones.eu/>
(sign in to the newsletter)



Thank you for your
attention!

marco.ducci@dblue.it



Questions?

