AW DRONES

Collecting and structuring drone-related global standards

EASN Conference (Remote)

04 September 2020

Joost Vreeken, Sebastian Cain

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

Objectives of a Methodological Framework

1. Development of a methodology for structuring of collected standards (using Safety Objectives)

2. Development of a methodology for the assessment of the structured standards (using a Multi-Criteria Analysis)

This enable the identification (in other work packages) of the technical standards with the highest ranking as well as the identification of gaps and bottlenecks.

Includes flexibility to tailor methodology to specific areas of interest (SORA, U-space, Autonomous and passenger carrying drones).

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Methodology for structuring of collected standards

- The methodology to structure the standards uses the SORA structure: collected standards have been mapped onto SORA Safety Objectives.
  - 24 Operational Safety Objectives
  - 3 Ground Risk mitigations
  - Strategic and Tactical Air Risk mitigations, and
  - Adjacent area/airspace considerations
- The methodology has been extended to include a mapping of standards onto U-Space Safety Objectives (Opinion 01/2020 High-level regulatory framework for the U-space).
  - Network Identification, Geo-awareness, Flight authorisation, Traffic information, Tracking, Weather, Conformance monitoring, Common Information Service, Occurrence Reporting and Contingency & Emergency Management
- The methodology can be tailored to accommodate Autonomous and passenger carrying drone criteria Safety Objectives (building on the Special Condition Light UAS)

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Methodology for the assessment of structured standards

In the assessment of each standard, three different cases will be considered:

CASE 1: a standard that is potentially suitable to comply with a certain requirement has been identified (e.g. OSO #6);

CASE 2: a standard that is potentially suitable to comply with a certain requirement (e.g. OSO #18) has not been identified;

CASE 3: a standard that does not map on any requirement has been identified (“orphan” standard).

Note: during the first two iterations CASE 3 is not considered.

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Methodology for the assessment of structured standards

The assessment methodology is based on the so called Multi-Criteria Analysis.

The structured standards will be assessed in WP 3 of the AW-Drones project using an initial set of criteria:

- Maturity of standard
- Type of standard

Note: for case 2 these criteria are not applicable due to the lack of a standard.

Then the structured standards will be assessed in WP 4 of the AW-Drones project using a full set of criteria.

- Effectiveness to fulfil Key Performance Area (KPA) requirement
- Cost of compliance
- Environmental impact
- Impact on EU Industry competitiveness

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Methodology for the assessment of structured standards

- The methodology was discussed with EASA and during the first project workshop in 2019.
- Feedback has been received from an Experts Review meeting on 27-29 January 2020 at EASA in Cologne
- It has been applied in the first iteration round (SORA) on over 600 standards

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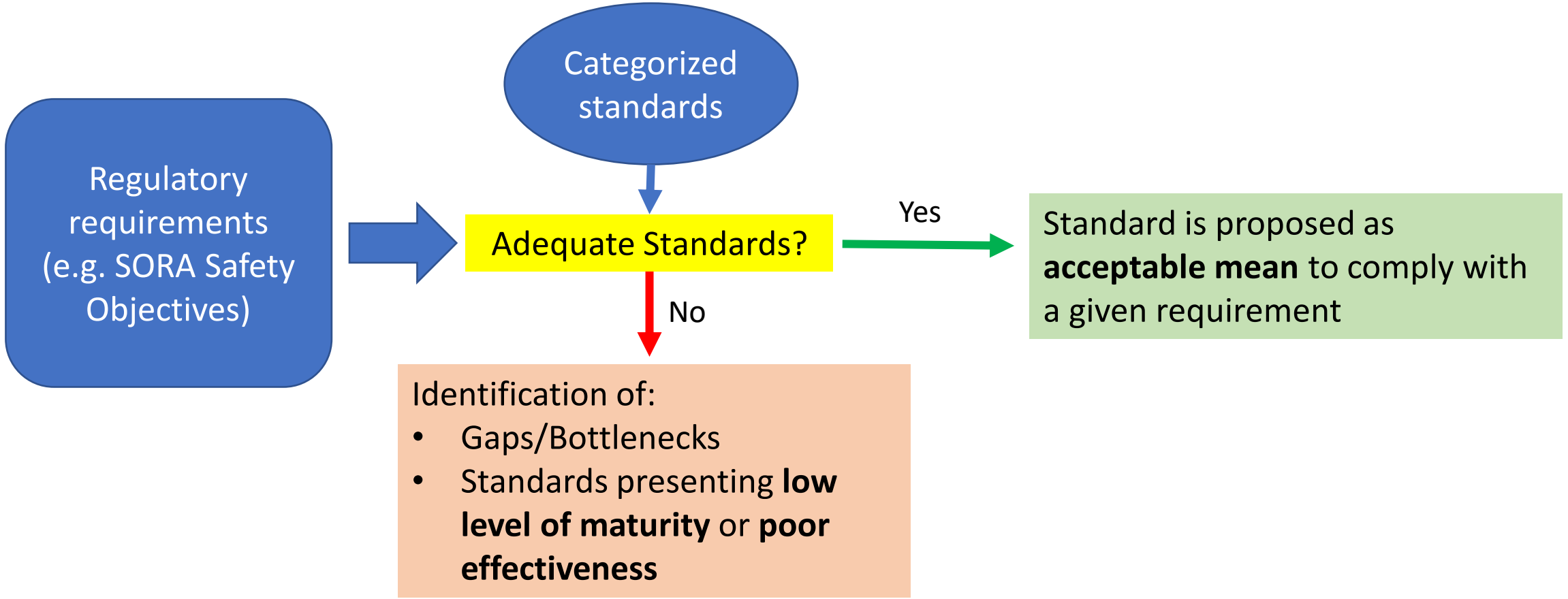
Methodology



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Data collection, Structuring & Mapping

Data collection of drone (-related) standards

General Data

Domain
Topic | Keywords

Document Data
Type | N° | Title |
Organization | Status | Description

Editorial
Comments / Rationale |
Access | Responsibility

Actual Data

- EUSCG Rolling development plan
- ANSI Standardization Roadmap for Unmanned Aircraft Sytems
- ASTM UAS Roadmap
- Collection of other applicable standards (ASTM, ISO, DIN, RTCA, SAE, …)

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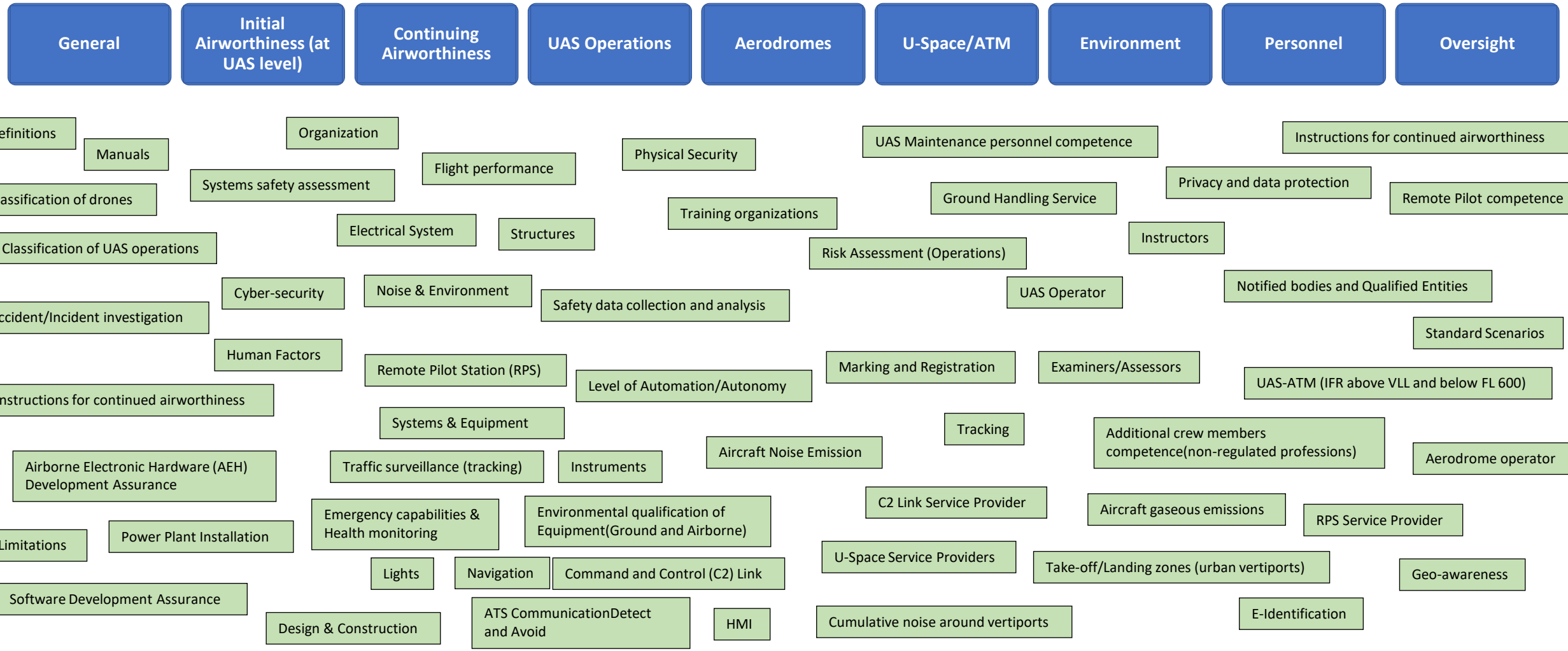

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SORA Requirements

U-Space Requirements

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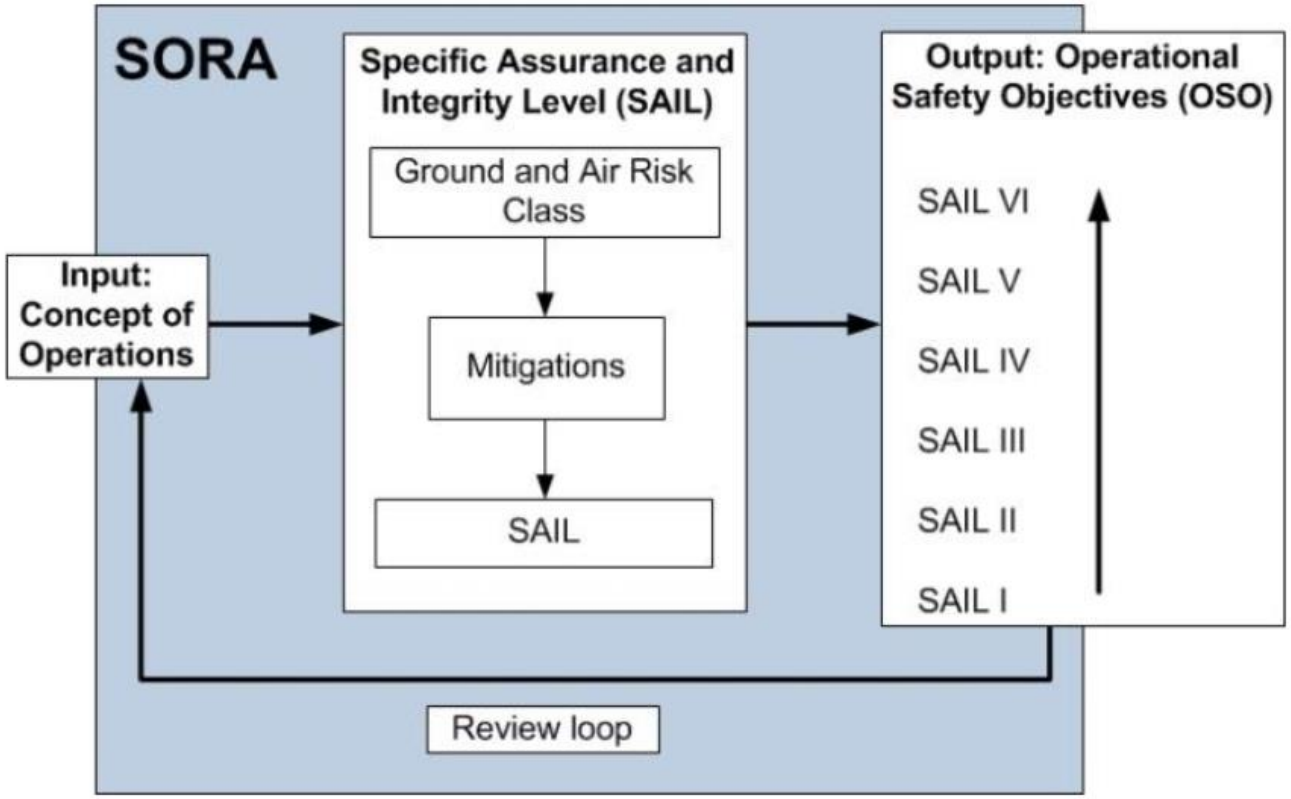
The SORA Process

- Intrinsic Risk for Air & Ground from UAS characteristics and desired operation
- Reduction of Risk by **Mitigations**
- Result is a SAIL that requires specific **OSO**
- Throughout the SORA process **containmer** is an additional requirement not reflected by the others



Source: F.Nikodem,J. S.Dittrich, A.Bierig -The New Specific Operations Risk Assessment Approach For Uas Regulation Compared To Common Civil Aviation Risk Assessment

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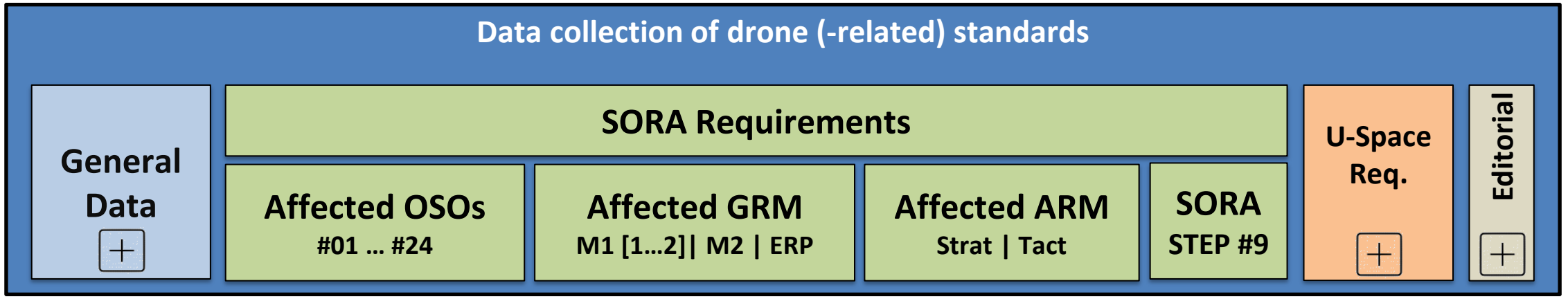

- 24 OSOs, 3 GRM, 11 ARM and Step 9 as requirements identified
- First correlation between standards and requirements by ‘Mapping’

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U-Space Requirements

2nd Iteration with focus on U-Space

Identify **HLR** and consider **U-Space services** (with explanatory points) for the excel

Released 04/2020:

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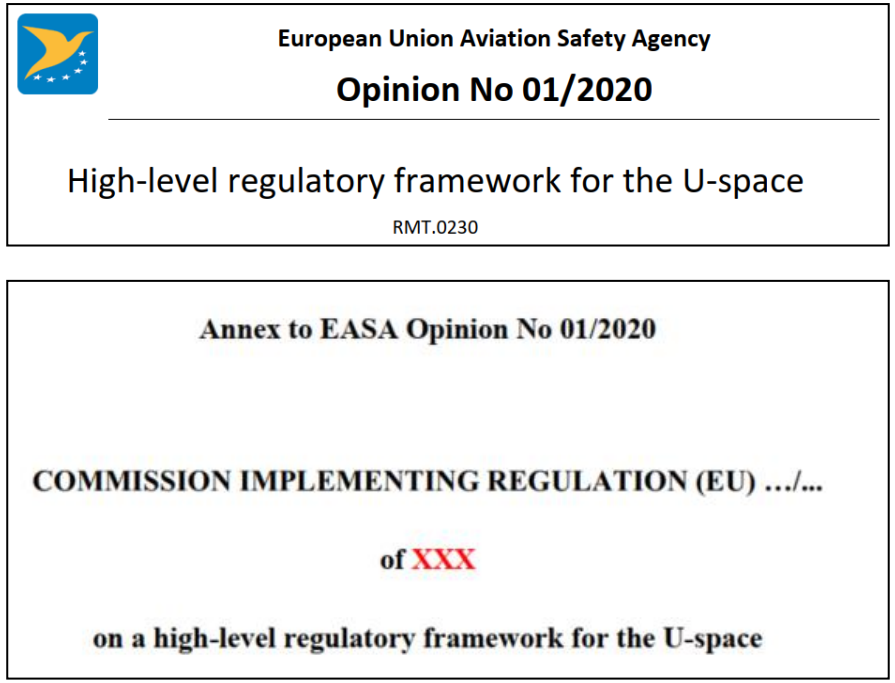

European Union Aviation Safety Agency

Opinion No 01/2020

High-level regulatory framework for the U-space

RMT.0230

Annex to EASA Opinion No 01/2020

COMMISSION IMPLEMENTING REGULATION (EU) …/...

of XXX

on a high-level regulatory framework for the U-space

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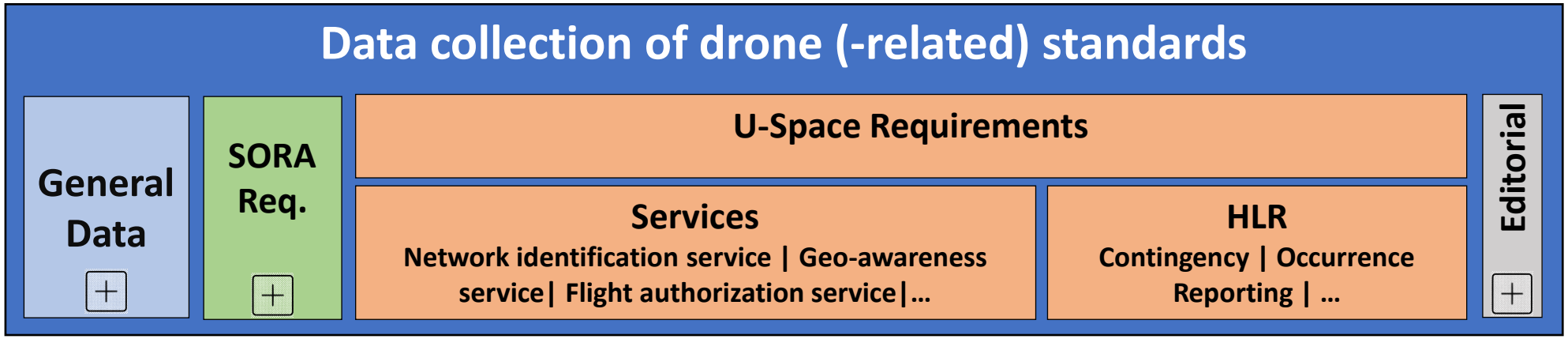
U-Space Requirements



- Identified requirements:
  - 8 Services
  - 3 High Level Requirements
- Mapping similar to SORA requirements

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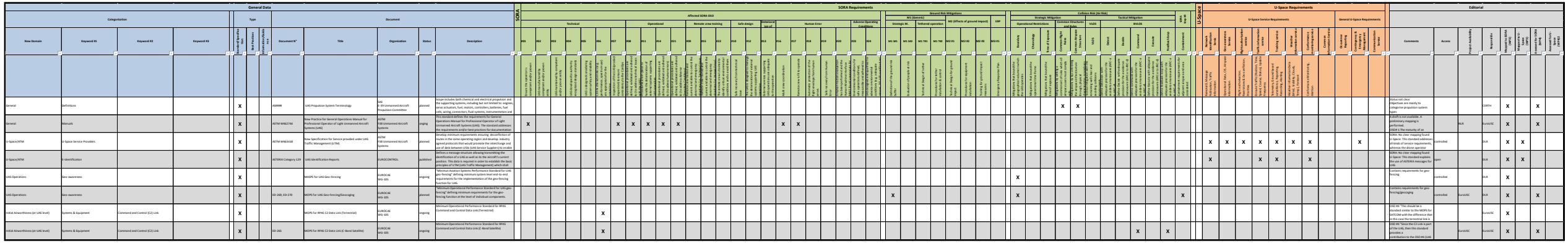
Current Status



- **653 standards** in the list, updated in 04/2020
- Mapping to SORA for most (>80%) and to U-Space for all standards complete
- Iterated & updated with finer assessment data

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Thanks for your attention !

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