

## JARUS WG 7

### Categoryzation Document – Annex C

#### Boundaries between Category B (Specific) and Category C (Certified)

The categorization principle adopted by JARUS for the UAS operations is that their categories are qualitatively determined by the level of unmitigated risks that the operation poses to other aircraft and people and structures on the ground, as described in the following Figure 1. In some cases (e.g. crashproof containers) the UAS operation may not require certification if the risks are sufficiently mitigated and this is allowed by the applicable regulation.

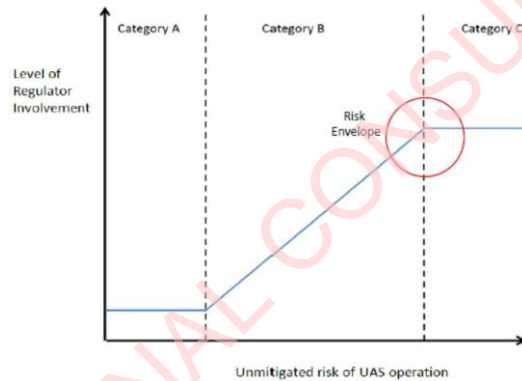


Figure 1 – Cat A, B and C boundaries

The aim of this Annex is to define criteria to establish the boundaries between the UAS operations Category B (“Specific”) and Category C (“Certified”). In this context defining a boundary between operations is achieved by providing means and procedure to assess or evaluate the unmitigated risks posed by an UAS operation, in order to state whether it may be considered in Cat. B or in Cat. C.

This is achieved through the following assumptions:

- (i) National / regional UAS Regulation may specify a number of types of operation, or specific characteristics of an operation, such that regardless the risks the operation must be certified (Cat. C) by the competent aviation authority; e.g.: flight over gathering of people, international cross-border operations, transportation of dangerous goods that poses and hazard to third parties, etc. There may be other cases, explicitly foreseen by the applicable National/regional regulation, where the operation must be certified.

These type of operation are recognized to be high risk operation by law and therefore they fall automatically into Cat. C

- (ii) High risk operations, whatever assessed and recognized to be so, are in Cat. C, by definition. This implies that a holistic total hazard and risk assessment methodology or tool is available and recognized by the Authority, to be

used to assess the unmitigated risk of an operation. This does not exclude possible delegation of some certification or oversight tasks to independent, accredited and competent third parties.

- (iii) Cat. A boundaries are defined. This is typically achieved by the regulation (e.g. the EU regulation) by defining precise parameters for the UA design and for the operations, to be respected by the operator.
- (iv) In the B category the risk increases from a level comparable to Cat. A to a level almost equivalent to Cat. C. Therefore the mechanisms for verification of compliance in Cat. B may vary, including but not limited to verification by an independent, accredited, and competent third party.
- (v) The Authority can always assess and judge if the unmitigated risks of an operation, as obtained from a risk assessment, are high enough to make the operation a Cat. C operation, or if the operation may be considered Cat. B.

The procedure to assess whether an operation falls into Cat. B or Cat. C, based on the above assumptions, is shown in the following flowchart and described below (Figure 2).

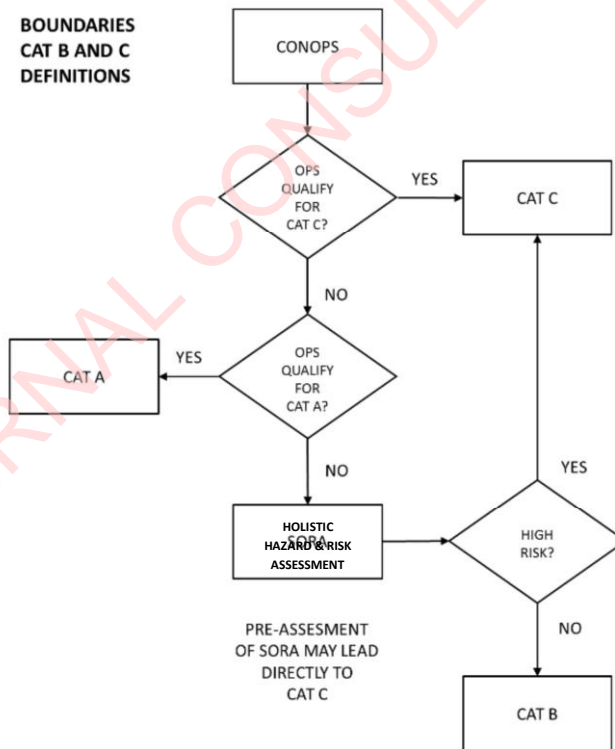


Figure 2 – Boundaries between Cat. B and Cat. C flowchart

**Step 1**

Analyse the ConOps to understand the type of the operation, its scope(s), its main characteristics and the hazards it poses to third parties on ground, in the air and on critical infrastructure (as defined by the Authority)

**Step 2**

Answer the question: "*Does the operation qualify for Cat. C?*". Check the applicable National, regional or international regulation to verify if the type of operation or some of its characteristics are such that the operation must be certified by law. E.g. international cross-border operations, flight over gathering of people, etc. If this is the case the operation is in Cat. C, otherwise go to Step 3.

**Step 3**

Answer the question: "*Does the operation qualify for Cat. A?*". Check applicable National or regulation to verify if the characteristics of the UA and of the operation may be encompassed within a Subcategory of the Cat. A. E.g. in EU: A1, A2, A3, A4. If this is the case the operation is in Cat. A, otherwise go to Step 4.

**Step 4**

Run an holistic total hazard and risk assessment on the operation based on the ConOps, by using criteria, methodologies and tool recognized by the Authority. Go to Step 5.

**Step 5**

Answer the question: "*Is the unmitigated risk of operation is high?*". Evaluate the outcome of the risk assessment coming from Step 4. If the outcome of risk assessment is not "*high risk*", and the Authority concurs, then the operation is in Cat. B. Otherwise, if the outcome of the risk assessment is "*high risk*", and the Authority concurs, then the operation is in Cat. C.

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