

# New Safety approaches

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# Overview

- Safety Continuum based on operation
- Safety objectives across products
  - Small Rotorcraft
  - eVTOL
  - Drones
- New Safety Assessment methods and focussed approaches
  - Human Factor Consideration in Safety Assessment
  - Net Safety Benefit approach

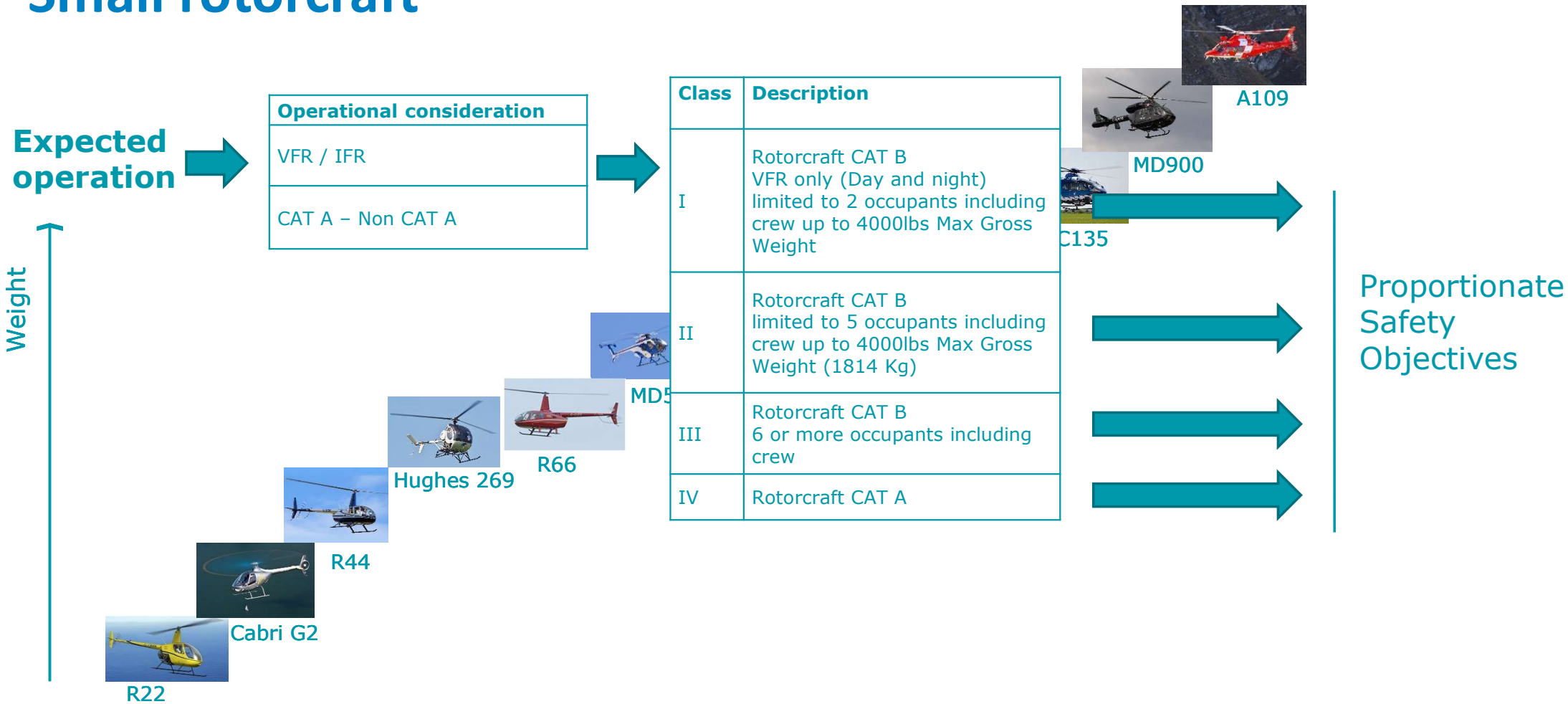


# Safety Continuum based on operation and across product

- The expected level of safety established by regulation, guidance and level of oversight is linked to the risk and societal expectations of safety,
- The societal expectations for safety is dependant of the type of operation,
- The safety continuum defines proportionate level of safety objectives from small UAS in the open category up to large aeroplanes used in commercial air transport,
- The continuum balances the needs for societal expectations of the flying public, Applicants and Operators while facilitating both the advancement of safety and the encouragement of technological innovation.



# Small rotorcraft



# eVTOLs - electric vertical take-off and landing aircraft

Expected operation



Operational consideration
Enhanced
Basic



Number of passengers



Safety Objectives



	Maximum Passenger Seating Configuration
Category Enhanced	-
Category Basic	7 to 9 passengers
	2 to 6 passengers
	0 to 1 passenger

	Maximum Passenger Seating Configuration	Failure Condition Classifications			
		Minor	Major	Hazardous	Catastrophic
Category Enhanced	-	$\leq 10^{-3}$ FDAL D	$\leq 10^{-5}$ FDAL C	$\leq 10^{-7}$ FDAL B	$\leq 10^{-9}$ FDAL A
Category Basic	7 to 9 passengers	$\leq 10^{-3}$ FDAL D	$\leq 10^{-5}$ FDAL C	$\leq 10^{-7}$ FDAL B	$\leq 10^{-9}$ FDAL A
	2 to 6 passengers (see note A)	$\leq 10^{-3}$ FDAL D	$\leq 10^{-5}$ FDAL C	$\leq 10^{-7}$ FDAL C	$\leq 10^{-8}$ FDAL B
	0 to 1 passenger (see note A)	$\leq 10^{-3}$ FDAL D	$\leq 10^{-5}$ FDAL C	$\leq 10^{-6}$ FDAL C	$\leq 10^{-7}$ FDAL C

[Quantitative safety objectives are expressed per flight hour]



# Drones

Expected operation

**SORA:** Methodology for the classification of the risk posed by a drone flight in the specific category of operations and for the identification of mitigations and of the safety objectives.

Operational consideration	
Open	

Operational consideration	
Low risk	SAIL I
	SAIL II
Medium risk	SAIL III
	SAIL IV
High risk	SAIL V
	SAIL VI

Operational consideration	
Certified	

Safety Objectives



## Continuum applied to Oversight:

- a declaration, for SAIL I and II or;
- applying to EASA for a design verification report (DVR), for SAIL III and IV;
- applying to EASA for a type certificate for SAIL V and VI.

# New safety assessment standards

- EASA will recognise the ED79B/ARP4754B and ED135/ARP4761A as soon as published:
  - Applicable to all products,
  - Recent focus has been of Model Based Safety Assessment (MBSA),
  - Next will be Intrinsic Hazard and Zonal Safety Assessments (IHA and ZSA),
  - Looking at complementing current approaches with STPA/STAMP, Safety-II and Resilience Engineering.
- What is coming next ?



# Policy Highlights

## Net Safety Benefits:

- Facilitate the introduction in the fleet of system and equipment having safety benefits,
- Credit the positive operational safety benefit,



EASA CM-SA-001

## Human Factor considerations:

- Strengthen the emphasis on the confirmation of the expected flight crew behaviours,
- Link with the Safety assessment process.



EASA CM-SA-002





**Thank you  
for your attention!**

**Your safety is our mission.**



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