EASA
European Union Aviation Safety Agency

Reduced Required Landing Distance Operations – Regulatory Update

13 November 2019

Giovanni CIMA

Senior Expert – Air Operations

Your safety is our mission.

An Agency of the European Union

Overview

Issue

What

To land within 80 % of the LDA

Why

To increase operational flexibility (payload, destinations…)

To harmonise with other regulatory systems (FAA Part 135/91K)

How

By defining the conditions to attain a level of safety equivalent to that of traditional landing factors (60%/70%)

Regulatory Process: Input

Input to EASA rulemaking

- **FAA rules on EOD operations**
  - FAR 135.385(f), FAR 91.1037(c) allowing the use of 80% of LDA under specified conditions and an approval scheme
- **NLR study (NLR-CR-2014-206)**
  - Considering typical business-operated aircraft categories
  - Identifying the main risks of operating with 80% of LDA
  - Proposing mitigating measures

Inclusion of the issue in **RMT.0296** (Review of the OPS rules on aeroplane performance)

Regulatory Process: RMT.0296 initial scope

Implement the ICAO Global Reporting Format

- Reporting of runway surface conditions
- Airworthiness standards for aeroplane performance (performance data)
- In-flight check of landing distance at time of arrival
- Flight Crew reports after landing if braking action is different than expected

Allow flexibility for certain CAT operations

- Use of 80 % of LDA for Performance Class A aeroplanes (in business aviation) and Performance Class B aeroplanes (at public interest sites)

Harmonisation with ICAO and FAA

Other minor issues (clarifications, consistency, etc.)

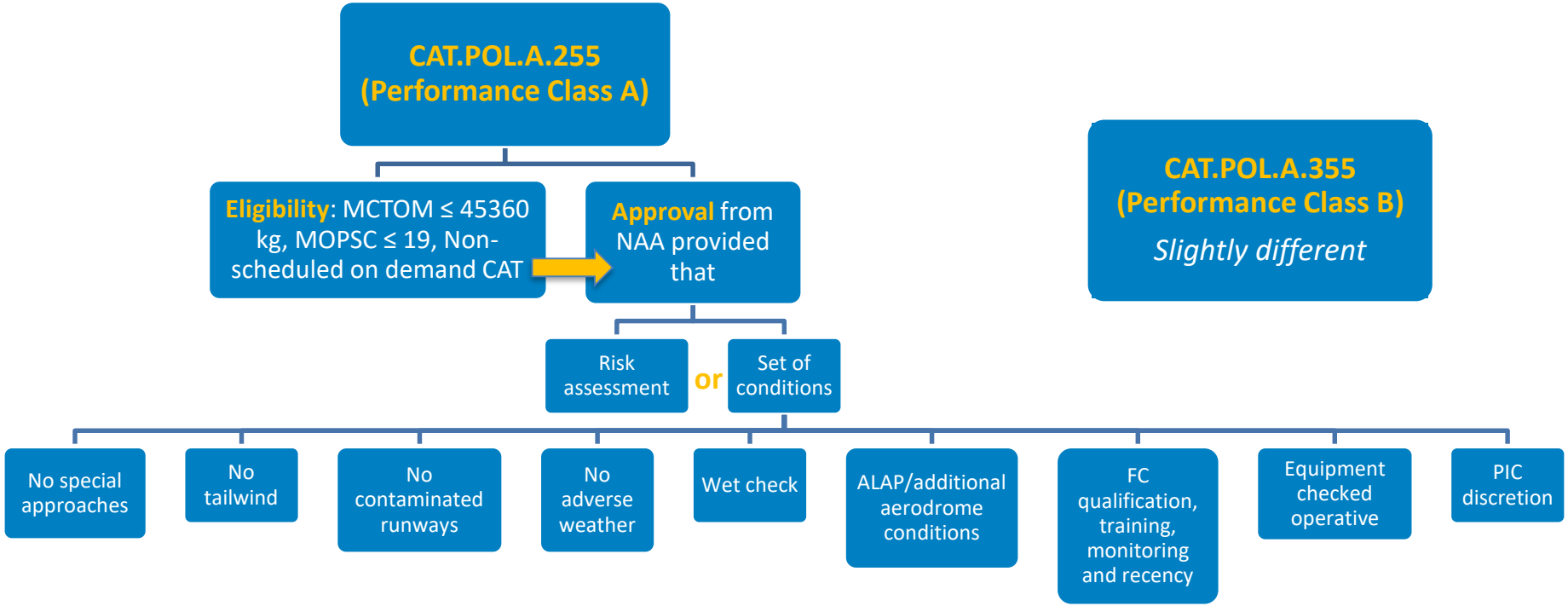
Regulatory Process: RMT.0296 Steps

RM Group established including NAAs, OEMs, Operators

- Augmented after NPA consultation

Coordination with parallel RMT.0704 on Aerodromes

Regulatory Process: NPA proposal



Regulatory Process: Comments

Comments of mixed nature (supporting, opposing, proposing)

Summarised in CRD 2016-11 attached to Opinion 02-2019

Mostly on:

- General concept
- Mass threshold
- a/c eligibility
- Use of FDM

Outcome

Proposal finalised in Opinion 02-2019

- AFM eligibility statement in lieu of mass threshold
- Wet check harmonised with the LDTA criteria (as per new CAT.OP.MPA.303)

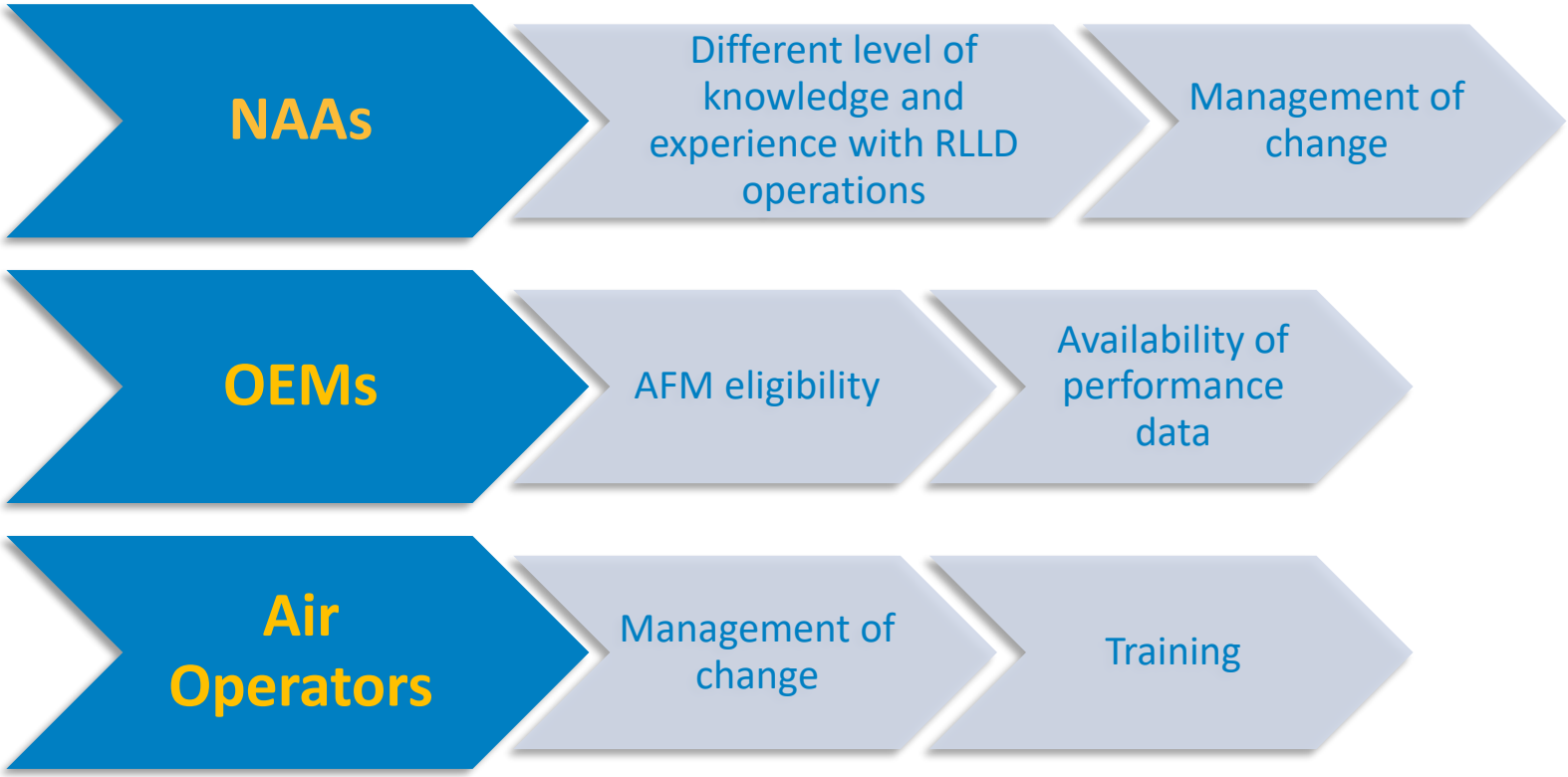
Final rule adopted by EC without significant changes

Extensive AMC/GM (being finalised)

Way forward


Regulation adopted in
AUG 2019
(applicability by NOV 2020)
Development of AMC/GM
(end of 2019)
Implementation
(2020)

Way forward: Implementation Challenges



Way forward: Implementation Monitoring

EASA
European Union Aviation Safety Agency

Thank you for your attention!

easa.europa.eu/connect

Your safety is our mission.

An Agency of the European Union

INTRODUCTION

EU ELIGIBLE ON DEMAND OPERATION (EOD)

Robvaneekeren@safe-runway.com

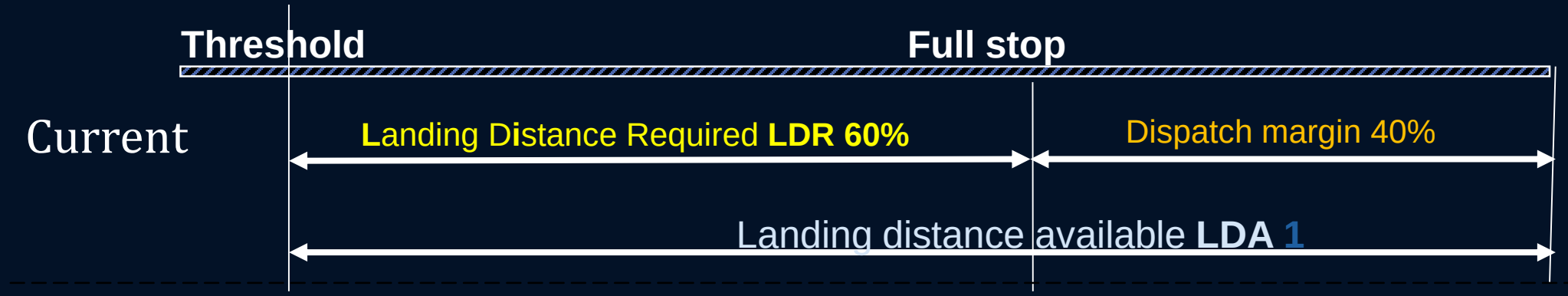
EU EOD 80% LANDING FACTOR

1. INCREASED SAFETY
2. MORE DESTINATIONS
3. HIGHER PAYLOAD
4. APPLICATION & GUIDANCE

Landing factor Dispatch requirement DRY

LDR ≤ 60% * LDA /// LDA ≥ 1.67 * LDR

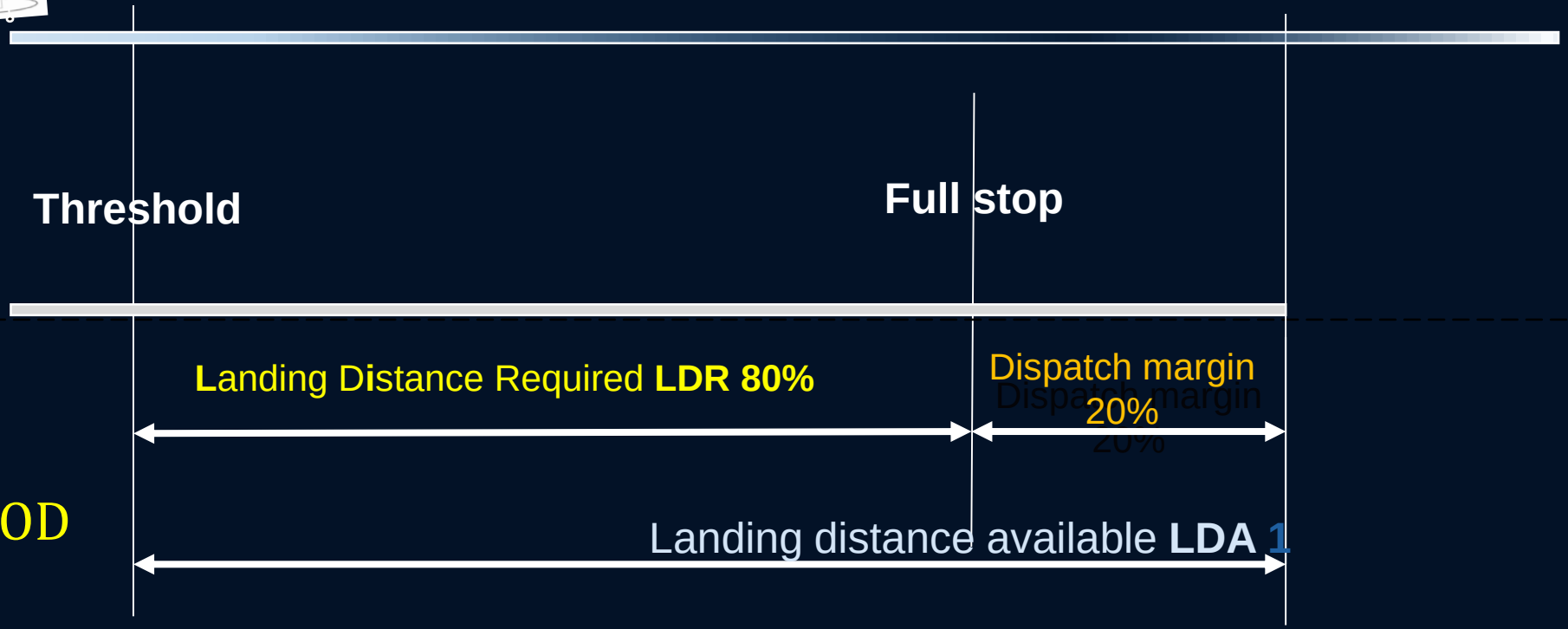
CAT.POL.A.230: Max Landing Mass allows full stop within 60% / 70% of LDA (dry).



Landing factor Dispatch requirement NEW dry

LDR ≤ 80% * LDA /// LDA ≥ 1.25 * LDR

CAT.POL.A.230: Max Landing Mass allows full stop within 80% of LDA (dry).

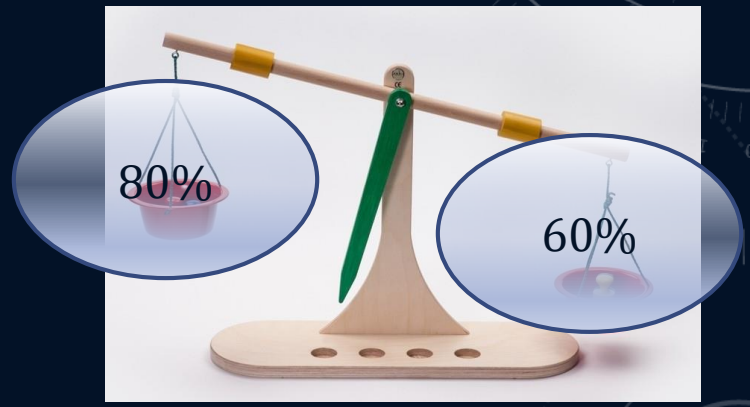


LEVEL OF SAFETY : 80% = // > 60% OPERATION

Dispatch margin changed from 40% to 20% → compensation required

- Extensive Safety Assessment
- Extensive EASA Working Group input
- Extensive EASA review

Restrictions and requirements



Compliant AOC holders MAY request approval by the applicable NAA

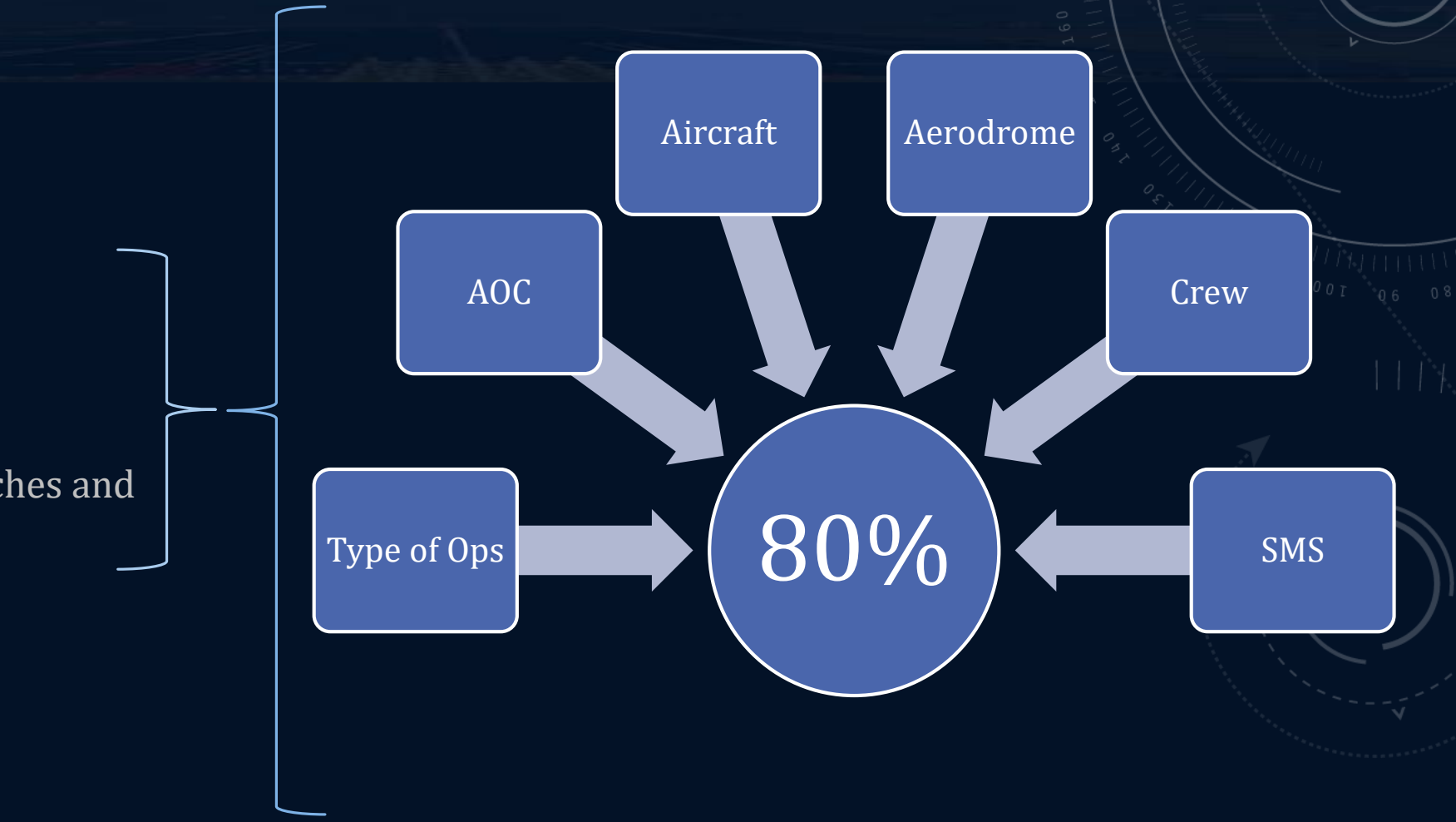
INITIAL FINDINGS OF SAFETY ASSESSMENT

1. No Tailwind
2. No contaminated runways
3. 100% reverse thrust
4. Reduced unstable approaches and limited floating

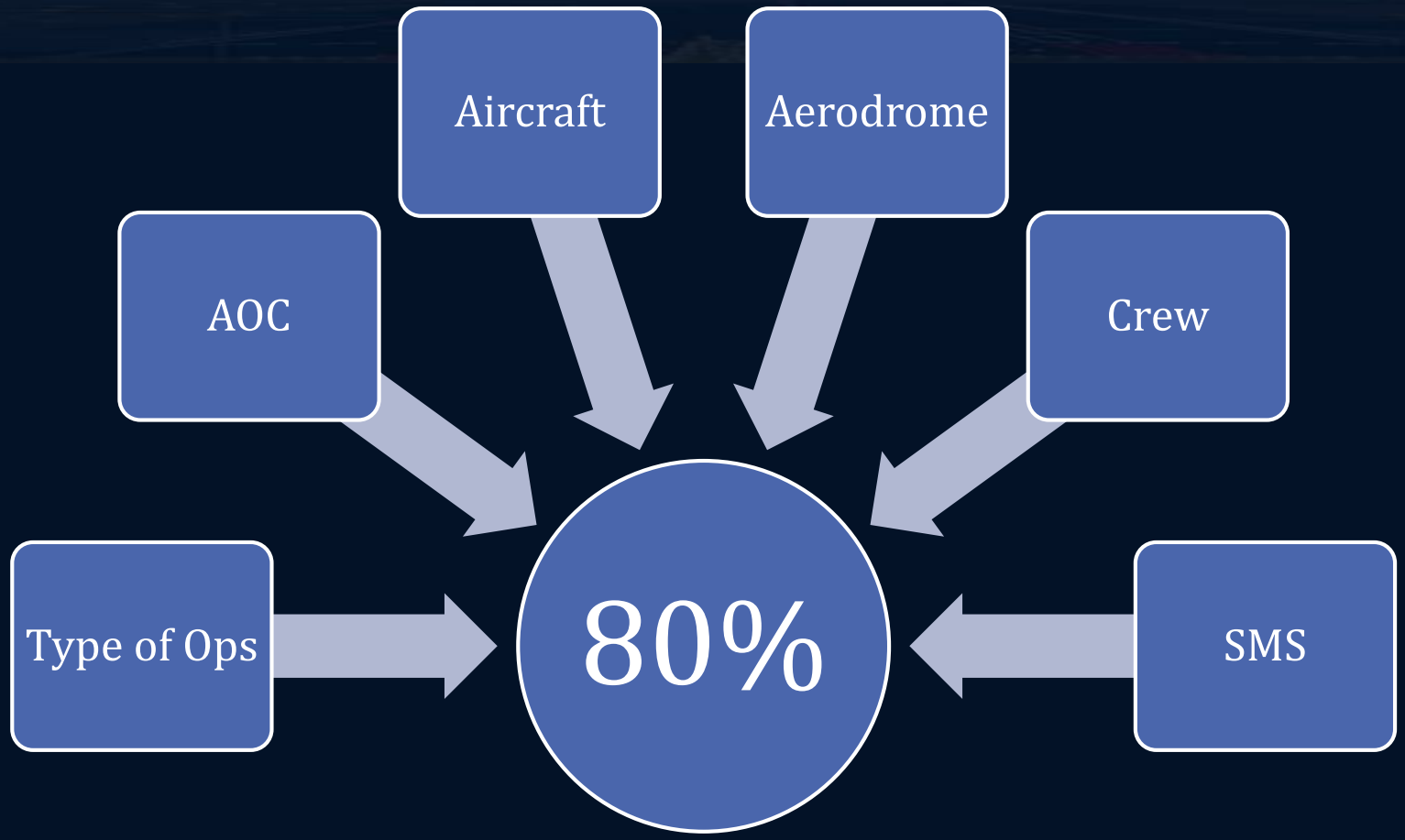
} Equivalent level of safety is achieved

AFTER RULE MAKING PROCESS:

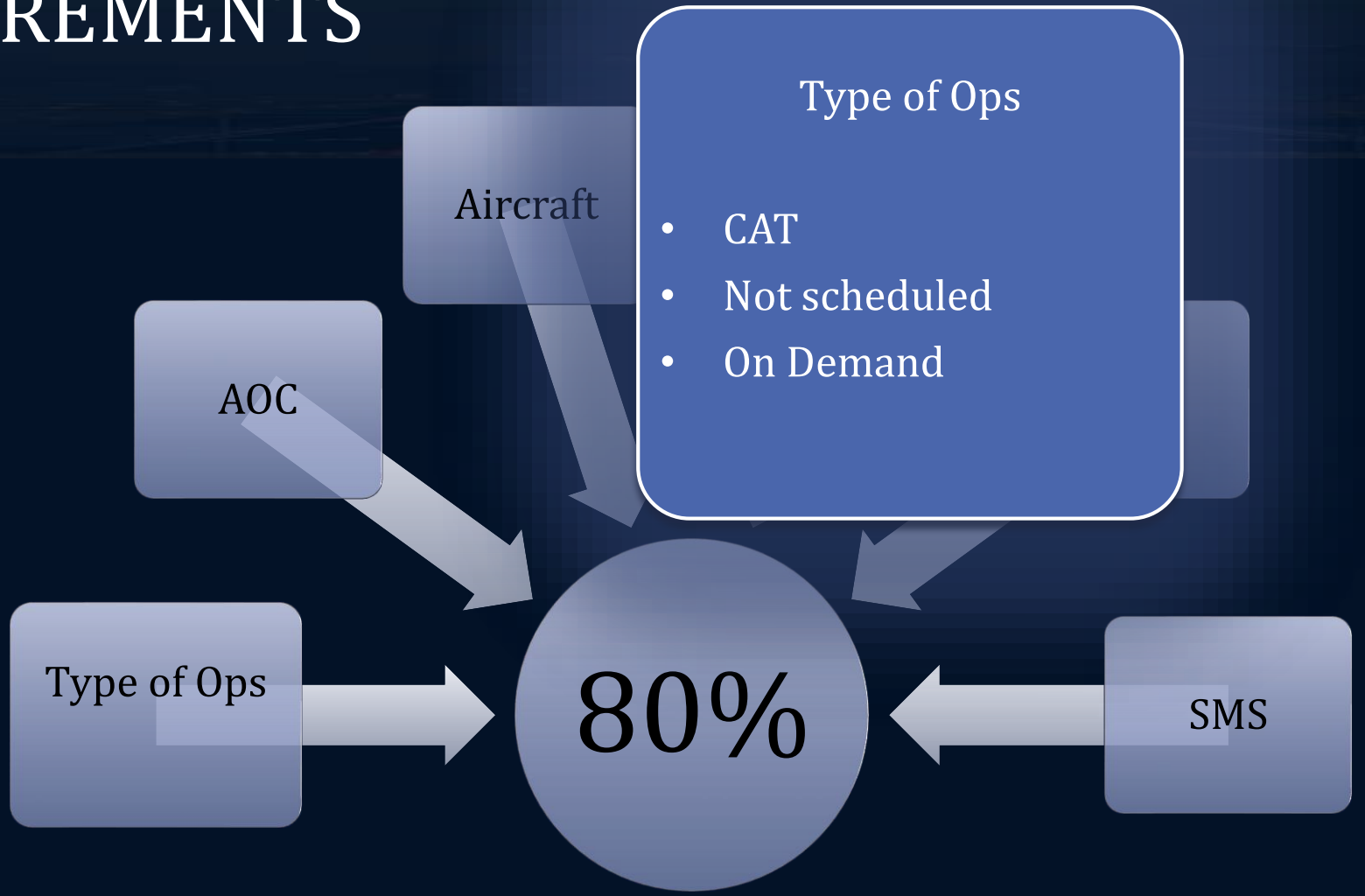
1. No Tailwind
2. No contaminated runways
3. 100% reverse thrust
4. Reduced unstable approaches and limited floating



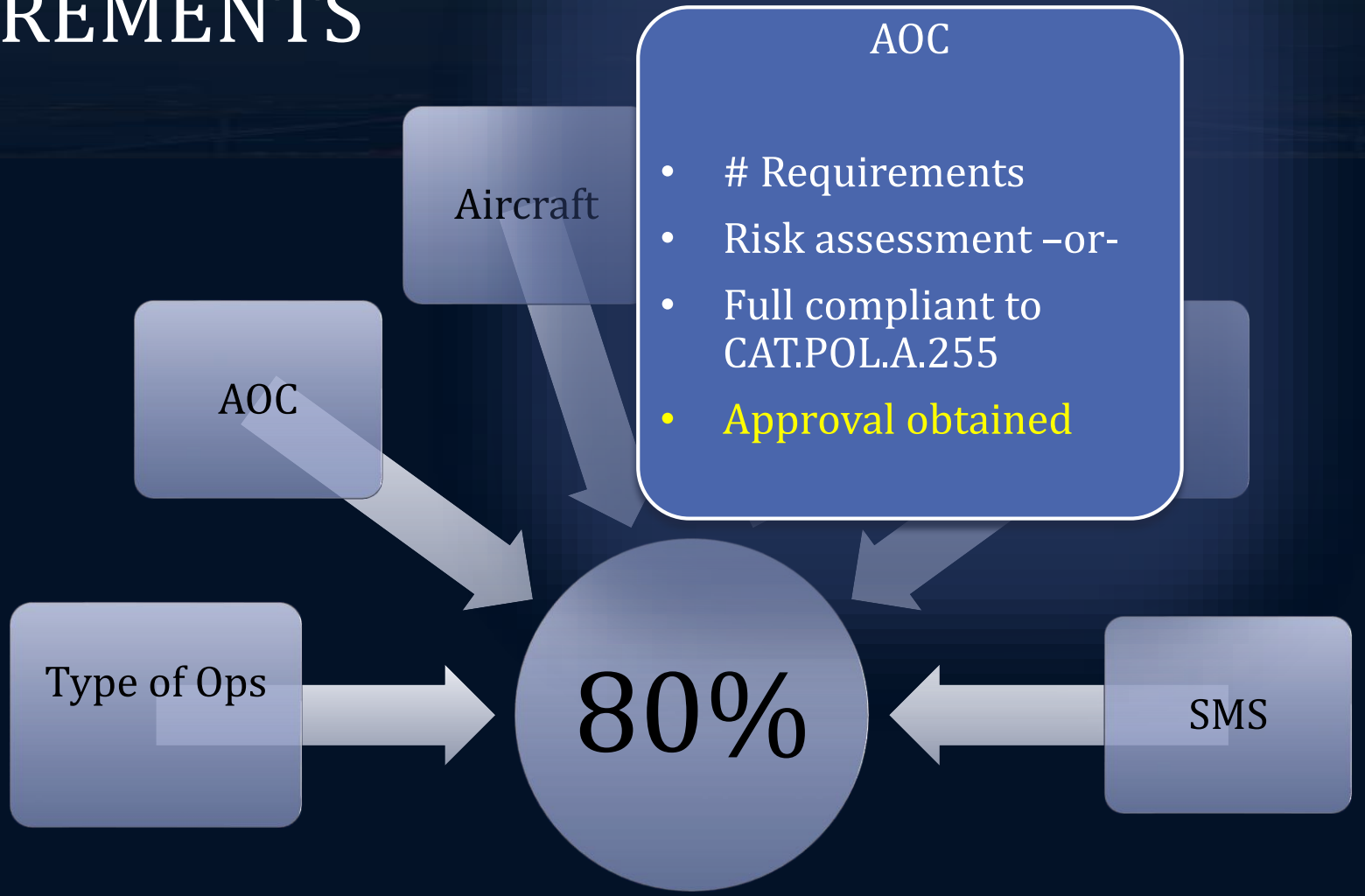
REQUIREMENTS



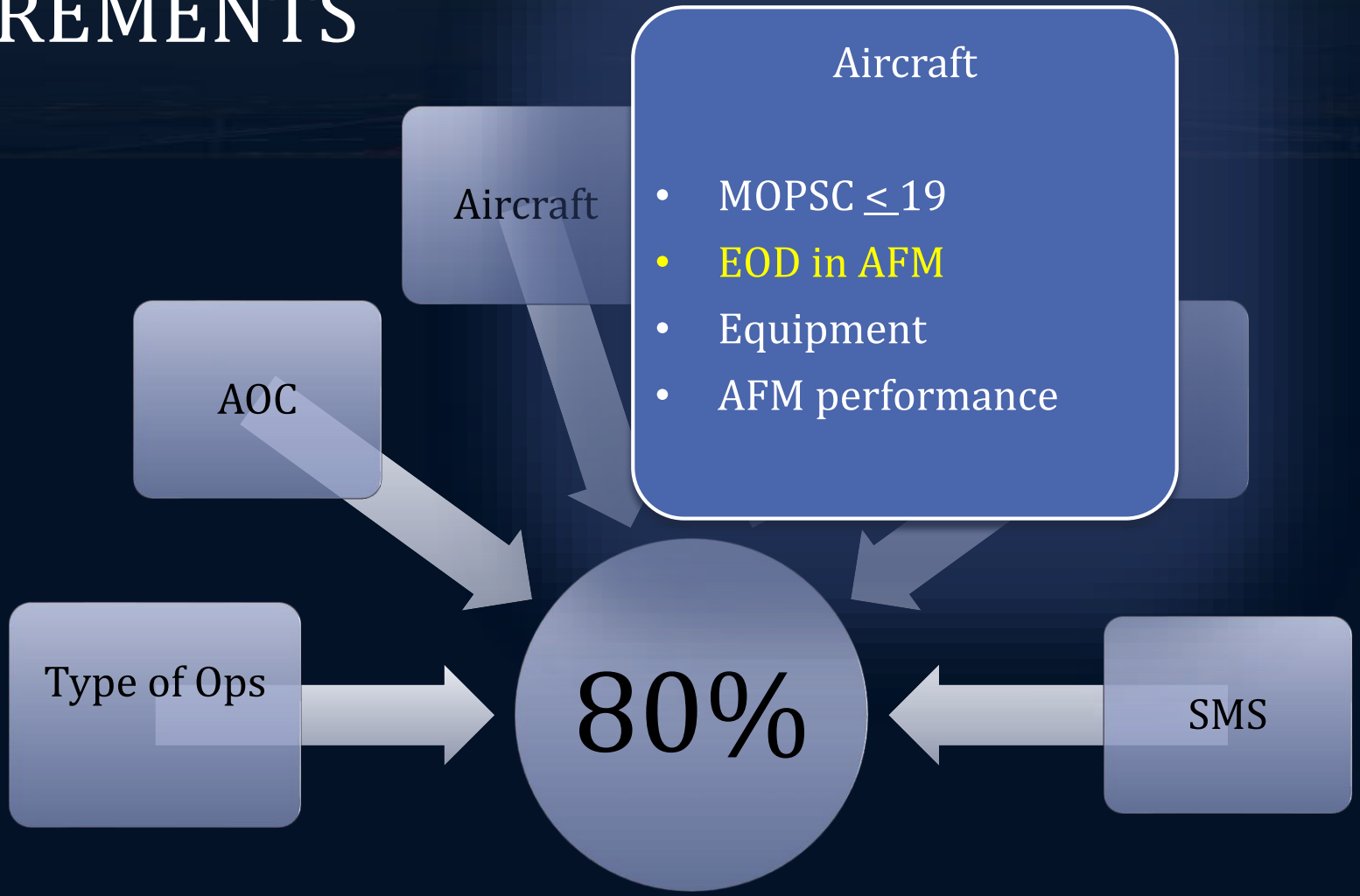
REQUIREMENTS



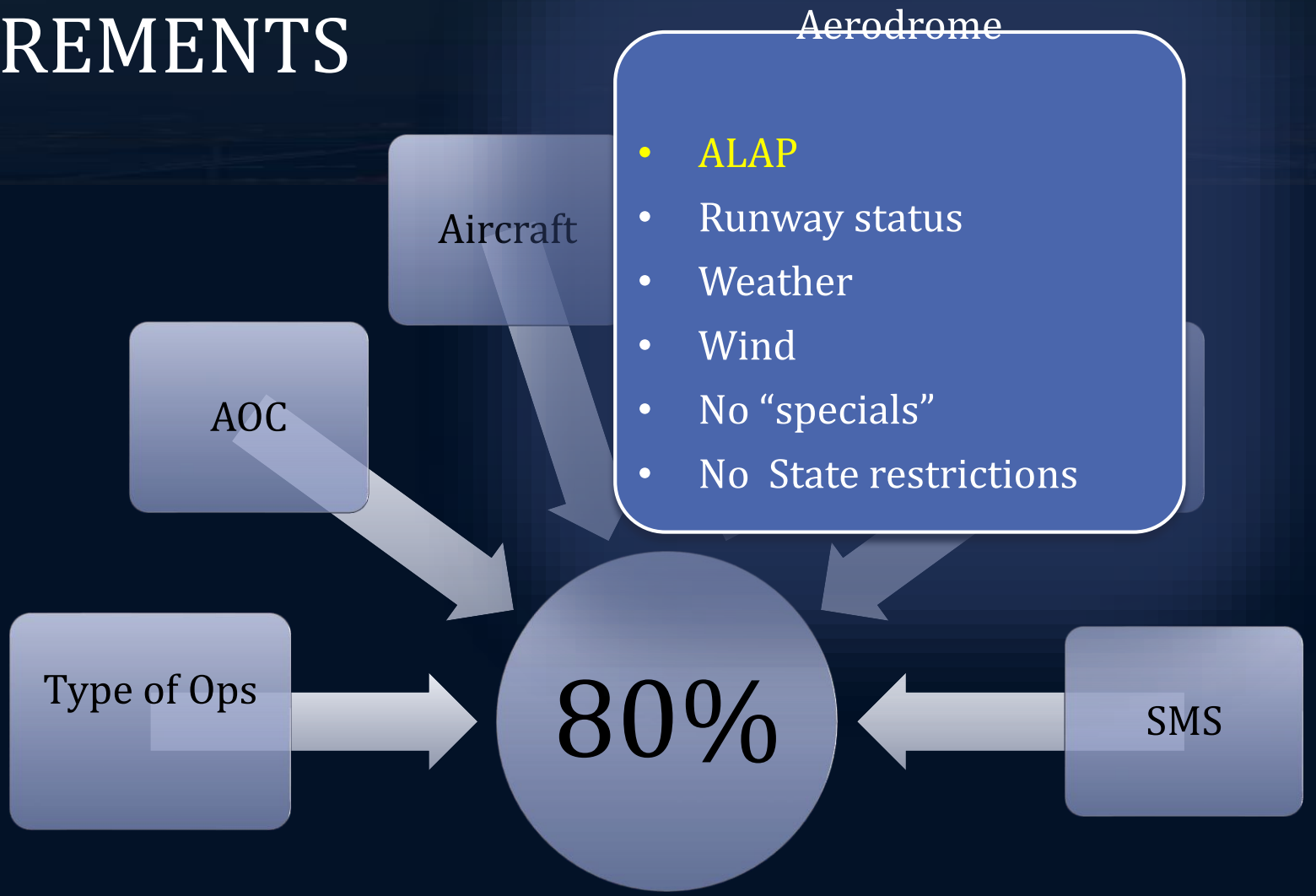
REQUIREMENTS



REQUIREMENTS

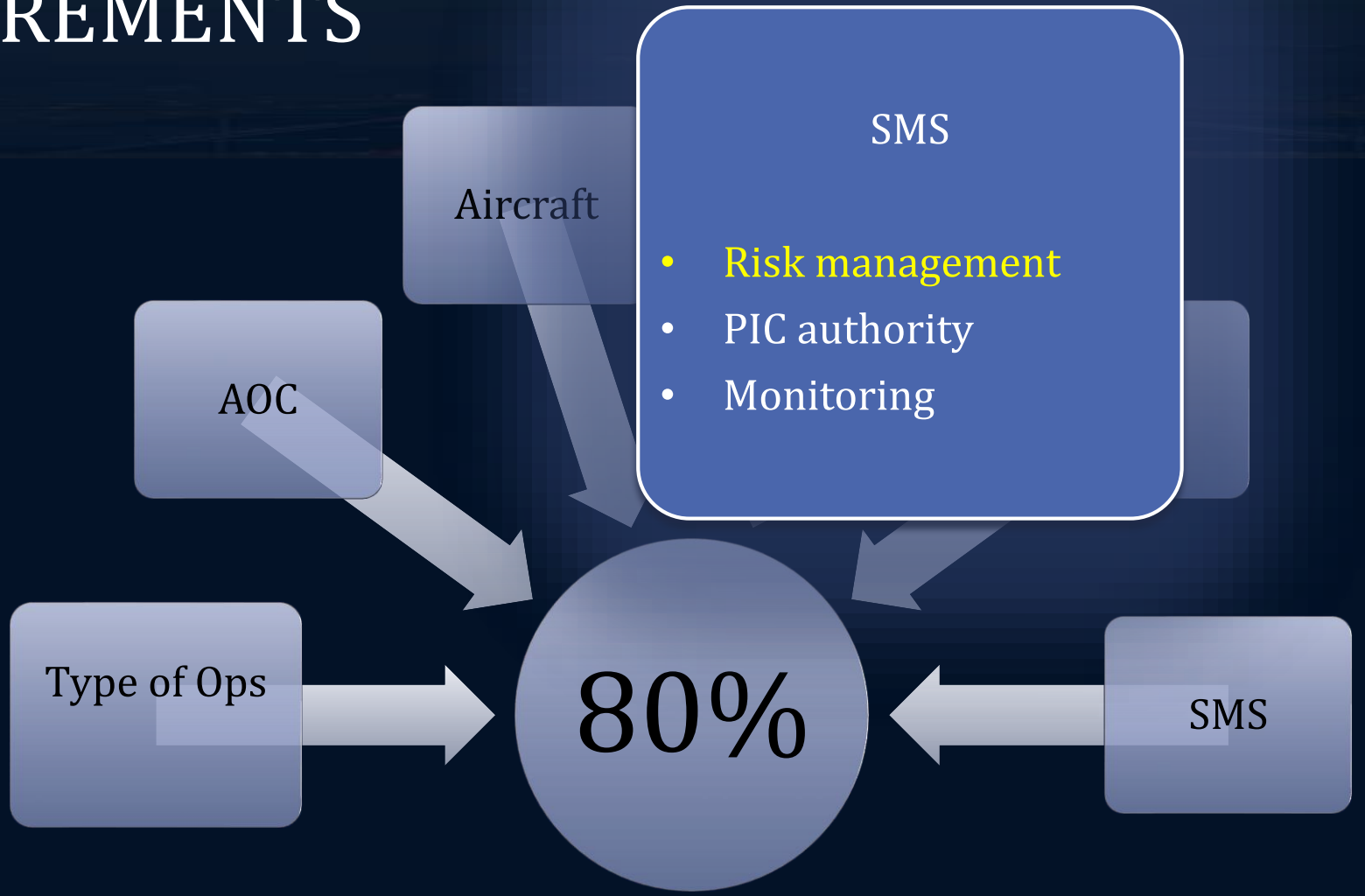


REQUIREMENTS

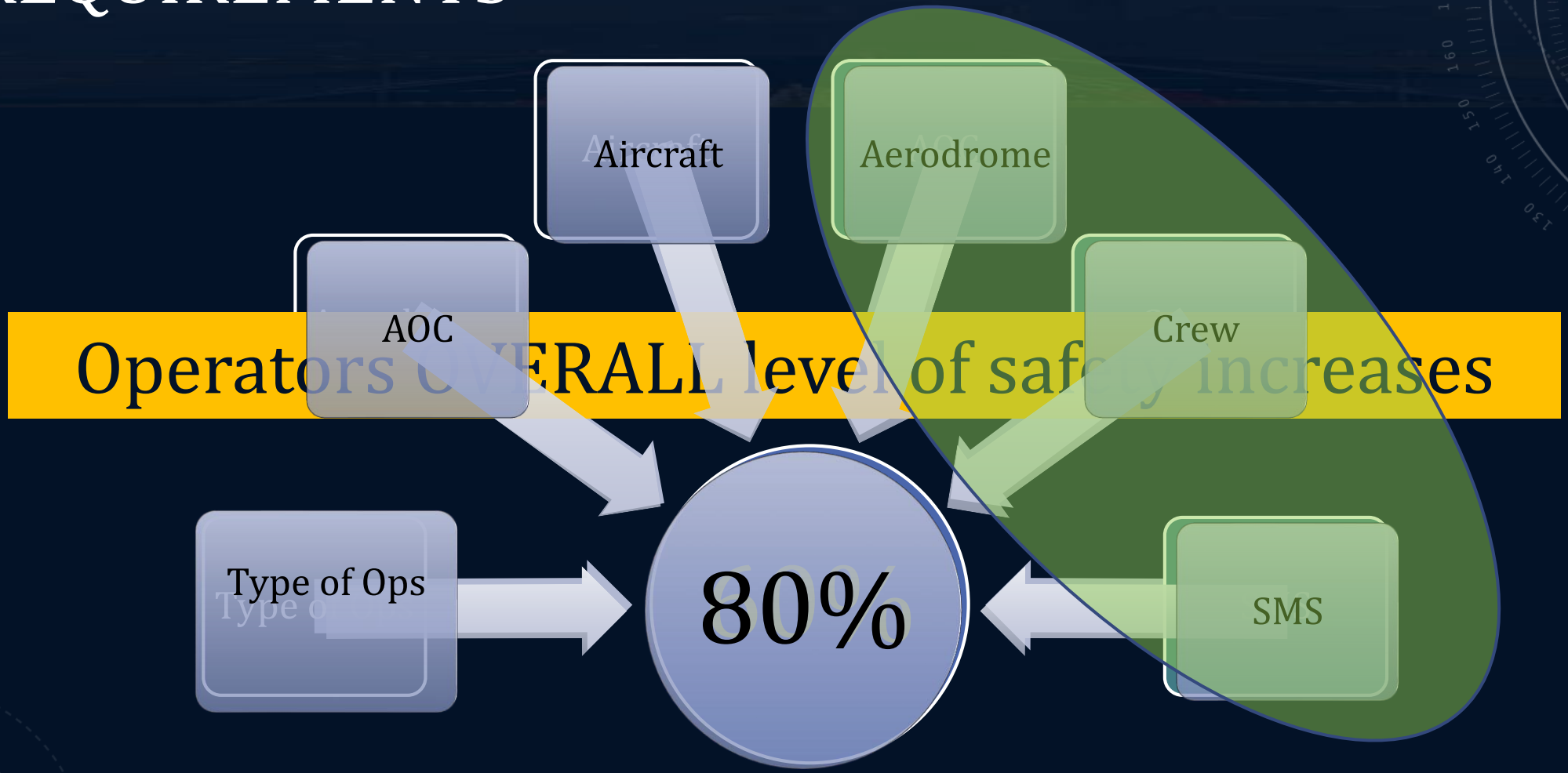


REQUIREMENTS

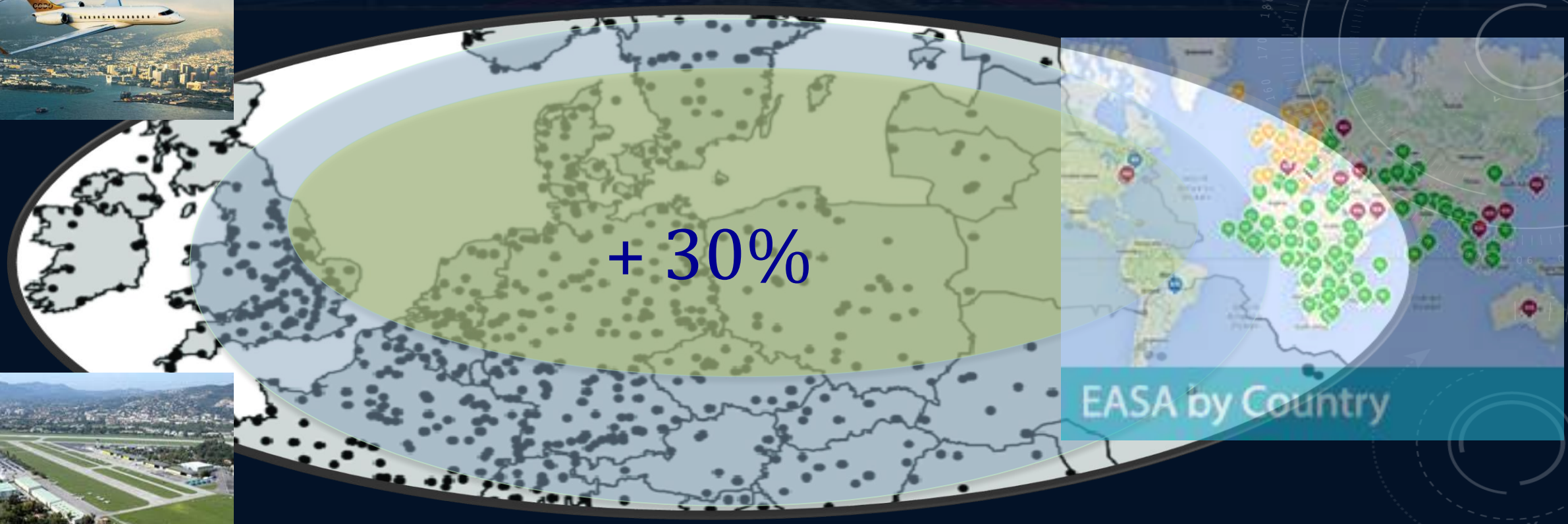
REQUIREMENTS



REQUIREMENTS



UP TO 30% MORE DESTINATIONS



HIGHER PAYLOAD

✗

✓

EOD 80% APPLICATION

Type of Ops

AOC

Aircraft

Crew

Aerodrome

SMS

Application

HOW TO GET 80%

CAT.POL.A.255 Approval of reduced required landing distance operations

An aeroplane operator may conduct landing operations within 80 % of the landing distance available (LDA) if it complies with the following conditions:

(1) the airplane has an MOPSC of 19 or less;

(2) the airplane has an eligibility statement for reduced required landing distance in the AFM;

(3) the airplane is used in non-scheduled on-demand commercial air transport (CAT) operations;

(4) the landing mass of the aeroplane allows a full-stop landing within that reduced landing distance;

(5) the operator has obtained a prior approval of the competent authority.

→ Request for approval needed.

1. No Tailwind
2. No contaminated runways
3. 100% reverse thrust
4. Reduced unstable approaches and limited floating

To obtain the approval, the operator shall provide evidence on:

1. Type of operation;
2. Adequate training, checking and monitoring;
3. Flight crew composition and recency;
4. Aircraft equipment affecting landing performance;
5. AFM and OM LLDR inclusions;
6. Wet runway performance;
7. Aerodrome landing analysis programme (ALAP);
8. No special-approach procedures;
9. No tailwind;
10. No special approaches or landings
11. Aerodrome conditions and restrictions;
12. No contaminated runway conditions;
13. No forecasted adverse weather;
14. Final decision PIC.

THE DEVIL IS IN THE DETAILS

CAT.POL.A.255 Approval of reduced required landing distance operations

(a) For aeroplanes having a maximum certified take-off mass (MCTOM) of 45 360 kg or less and a maximum operational passenger seating configuration (MOPSC) of 19 or less, used in non-scheduled on-demand commercial air transport (CAT) operations, landing operations with a landing mass of the aeroplane allowing a full stop landing within 80 % of the landing distance available (LDA) require prior approval by the competent authority.

(b) To obtain the approval, the operator shall provide evidence that:

(1) a risk assessment has been conducted by the operator to demonstrate that a level of safety equivalent to that intended by CAT.POL.A.230(a)(1) or CAT.POL.A.230(a)(2), as applicable, is achieved; or

(2) the following conditions are met:

(i) special-approach procedures, such as steep approaches, planned screen heights higher than 60 ft or lower than 35 ft, low-visibility operations, planned operations outside stabilised approach criteria, are prohibited;

(ii) short landing operations in accordance with CAT.POL.A.250 are prohibited;

(iii) an adequate training, checking and monitoring process for the flight crew is established;

(iv) an aerodrome landing analysis programme (ALAP) is established by the operator to ensure that the following conditions are met:

(A) no tailwind is forecasted at the expected time of arrival;

(B) if the runway is forecasted to be wet at the expected time of arrival, the landing distance at dispatch shall either be determined in accordance with CAT.OP.MPA.303(a) or be at least 115 % of the landing distance required by CAT.POL.A.230(a)(3), whichever is longer;

(C) no expected contaminated runway conditions exist at the expected time of arrival; and

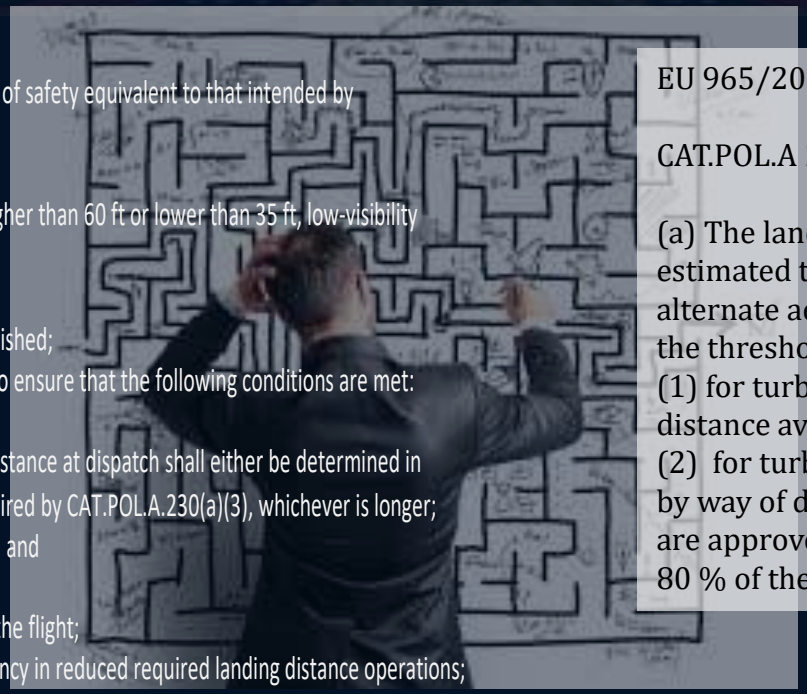
(D) no forecasted adverse weather conditions exist at the expected time of arrival;

(v) all the equipment affecting landing performance is operative before commencing the flight;

(vi) the flight crew is composed of at least two qualified and trained pilots having recency in reduced required landing distance operations;

(vii) the commander shall make the final decision to conduct reduced required landing distance operations and may decide not to do so when they consider this to be in the interest of safety; and

(viii) additional aerodrome conditions, if specified by the competent authority, taking into account aeroplane type characteristics, orographic characteristics in the approach area, available



EU 965/2012 SUBPART C CAT.POL.A.230

CAT.POL.A 230 Landing – dry runways

(a) The landing mass of the determined in accordance with for the estimated time of landing at the destination aerodrome and at any alternate aerodrome shall allow a full-stop landing from 50 ft above the threshold:

(1) for turbojet-powered aeroplanes, within 60 % of the landing distance available

(2) for turbopropeller-powered aeroplanes, within 70 % of the LDA by way of derogation from (a)(1) and (a)(2) above, for aeroplanes that are approved for reduced landing distance operations under , within 80 % of the LDA.

APPLICATION PROCESS FLOWCHARTS

CAT.POL.A.255 Approval of reduced required landing distance operations

(a) For aeroplanes having a maximum certified take-off mass (MCTOM) of 45 360 kg or less and a maximum operational passenger seating configuration (MOPSC) of 19 or less, used in non-scheduled on-demand commercial air transport (CAT) operations, landing operations with a landing mass of the aeroplane allowing a full stop landing within 80 % of the landing distance available (LDA) require prior approval by the competent authority.

(b) To obtain the approval, the operator shall provide evidence that:

(1) a risk assessment has been conducted by the operator to demonstrate that a level of safety equivalent to that intended by CAT.POL.A.230(a)(1) or CAT.POL.A.230(a)(2), as applicable, is achieved; or

(2) the following conditions are met:

(i) special-approach procedures, such as steep approaches, planned screen heights higher than 60 ft or lower than 35 ft, low-visibility operations, planned operations outside stabilised approach criteria, are prohibited;

(ii) short landing operations in accordance with CAT.POL.A.250 are prohibited;

(iii) an adequate training, checking and monitoring process for the flight crew is established;

(iv) an aerodrome landing analysis programme (ALAP) is established by the operator to ensure that the following conditions are met:

(A) no tailwind is forecasted at the expected time of arrival;

(B) if the runway is forecasted to be wet at the expected time of arrival, the landing distance at dispatch shall either be determined in accordance with CAT.OP.MPA.303(a) or be at least 115 % of the landing distance required by CAT.POL.A.230(a)(3), whichever is longer;

(C) no expected contaminated runway conditions exist at the expected time of arrival; and

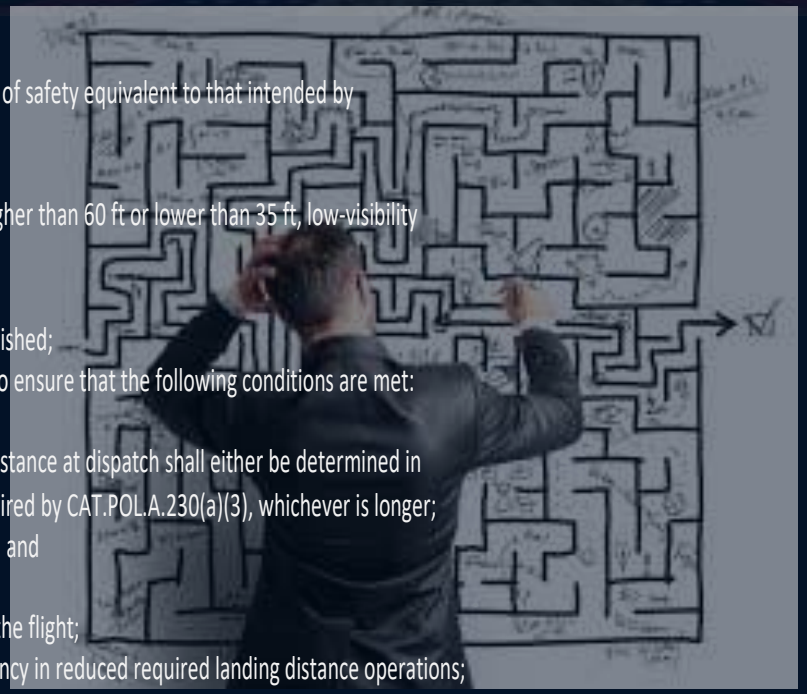
(D) no forecasted adverse weather conditions exist at the expected time of arrival;

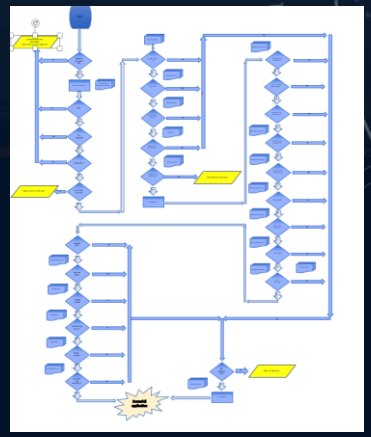
(v) all the equipment affecting landing performance is operative before commencing the flight;

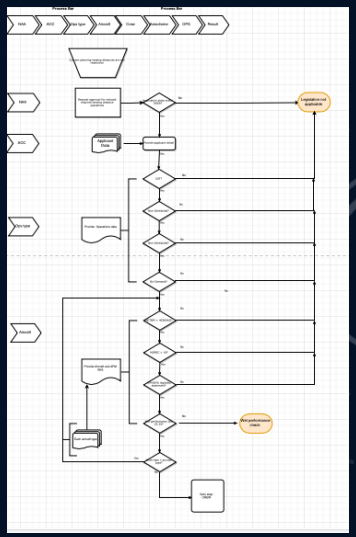
(vi) the flight crew is composed of at least two qualified and trained pilots having recency in reduced required landing distance operations;

(vii) the commander shall make the final decision to conduct reduced required landing distance operations and may decide not to do so when they consider this to be in the interest of safety; and

(viii) additional aerodrome conditions, if specified by the competent authority, taking into account aeroplane type characteristics, orographic characteristics in the approach area, available







EXAMPLE

Flight crew training:

- Previous experience RRLDO:
  - No
  - Yes on type
  - Yes on different type
  - Yes with same operator
  - Yes with another EU operator
- Required training
  - Full
    - Ground training
    - FSTD
    - Flight training
  - Abbreviated
  - Difference
  - ……………etc.

CAT.POL.A.255 Approval of reduced required landing distance operations

Regulation (EU) 2019/1387

(a) An aeroplane operator may conduct landing operations within 80 % of the landing distance available (LDA) if it complies with the following conditions:

(1) the airplane has an MOPSC of 19 or less;

(2) the airplane has an eligibility statement for reduced required landing distance in the AFM;

(3) the airplane is used in non-scheduled on-demand commercial air transport (CAT) operations;

(4) the landing mass of the aeroplane allows a full-stop landing within that reduced landing distance;

(5) the operator has obtained a prior approval of the competent authority.

(b) To obtain the approval referred to in point (a)(5), the operator shall provide evidence of either of the following:

(1) that … intended …

(2) that the following conditions are met:

(i) special-approach procedures, such as steep approaches, elevated screen heights higher than 60 ft or lower than 35 ft, low-visibility operations, approaches outside stabilised approach criteria approved under point CAT.OP.MPA.115(a), are prohibited;

(ii) short landing operations in accordance with point CAT.POL.A.250 are prohibited;

(iii) landing on contaminated runways is prohibited;

(iv) an adequate training, checking and monitoring process for the flight crew is established;

(v) an aerodrome landing analysis programme (ALAP) is established by the operator to ensure that the following conditions are met:

(A) no tailwind is forecast at the expected time of arrival;

(B) if the runway is forecast to be wet at the expected time of arrival, the landing distance at dispatch shall either be determined in accordance with point CAT.OP.MPA.303(a) or (b) as applicable, or shall be 115 % of the landing distance determined for dry runways, whichever is longer;

AMC1 CAT.POL.A.255(b)(2)(iv) Approval of reduced required landing distance operations

GENERAL

(a) The operator should ensure that flight crew training programmes for reduced required landing distance operations include ground training, flight simulation training device (FSTD), and/or flight training.

(b) Flight crew with no reduced required landing distance operations experience should have completed the full training programme of (a) above.

(c) Flight crew with previous increased reduced required landing distance operations experience of a similar type of operation with another EU operator, may undertake the following:

(1) an abbreviated ground training course if operating an aircraft of a type or class different from that of the aircraft on which the previous reduced required landing distance operations experience was gained;

(2) an abbreviated ground, FSTD and/or flight training course if operating the same type or class and variant of the same aircraft type or class on which the previous reduced required landing distance operations experience was gained; this course should include at least the provisions of the conversion training contained in this AMC; the operator may reduce the number of approaches/landings required by the conversion training if the type/class or the variant of the aircraft type or class has the same or similar operating procedures, handling characteristics and performance characteristics as the previously operated aircraft type or class.

(d) Flight crew with reduced required landing distance operations experience with the operator may undertake an abbreviated ground, FSTD and/or flight training course according to the following conditions: when changing aircraft type or class, the abbreviated course should include at least the content of the conversion training; when changing to a different variant of aircraft within the same type or class rating that has the same or similar operating procedures, handling characteristics and performance characteristics, as the previously operated aircraft type or class, a difference course or familiarization appropriate to the change of variant should fulfil the course's objectives; and when changing to a different variant of aircraft within the same type or class rating that has significantly different operating procedures, handling characteristics and performance characteristics, the abbreviated course should include the content of the conversion training.

iv) an adequate training, checking and monitoring process for the flight crew is established;

CONCLUSION

Aircraft

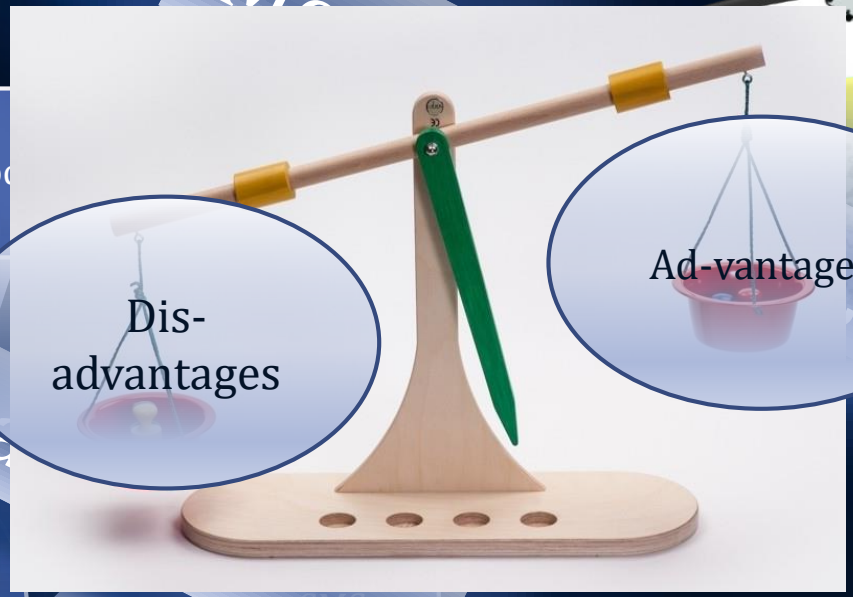
Aeroc

AOC

Approva

Type of Ops

80%



+ 30%

higher payload

APPLICATION PROCESS CHALLENGE SOLUTIONS

- Large number
- Detailed requirements
- Easy to miss one
- Complex restrictions
- Complex requirements
- Legal challenges
- NAA understanding

- **Do it your own requires**
  - Training
  - Legal
  - Time consuming

- **Outsource application process**
  - Partial
  - Full
  - → tip balance sooner

Let us help you

SPECIALIZED 80% EOD LLDR CHECKLISTS

AOC Holder	items	Reference
Approval for RRLD operations by competent authority	Generic or Specific (separate risk assessment)	RRLD operations authority Own separate risk assessment
AOC Holder flight crew requirements	Flight crew composition RRLD	RRLD training
	Flight crew RRLD training and checking established	RRLD training
	Flight crew RRLD recency compliant	Have a RRLD recency
	Flight crew RRLD qualified	RRLD qualification
	Commanders authority	Approval commander RRLD for this flight
AOC holder Operations requirements	RRLD flight is CAT, non-scheduled and & On-demand	CAT non-schedule on demand
	RRLD Trend analysis and monitoring	RRLD Trend analysis and monitoring
	Operations manual contains RRLD specifics	Performance Information for Landing Distance Assessment
AOC holder Aircraft requirements		
	AFM contains RRLD performances, limits and requirements	CS-25.1592 CAT.POL.A.235 AFM includes wet performance
	RRLD MEL items listed	Aircraft Equipment
	AFM contains eligibility statement	Eligibility
	AFM contains MOPSC	MOPSC
AOC holder Aerodrome requirements	Aerodrome information source	Aerodrome (ALAP)
	ALAP established	An ALAP is established
	Aerodrome Facilities, limitations and restrictions	Aerodrome restrictions and conditions are considered Aerodrome declared distances are considered

CAA

AOC Holder	items	Reference
Approval for RRLD operations by competent authority	Generic or Specific (separate risk assessment)	RRLD operations authority Own separate risk assessment
AOC Holder flight crew requirements	Flight crew composition RRLD	RRLD training
	Flight crew RRLD training and checking established	RRLD training
	Flight crew RRLD recency compliant	Have a RRLD recency
	Flight crew RRLD qualified	RRLD qualification
	Commanders authority	Approval commander RRLD for this flight
AOC holder Operations requirements	RRLD flight is CAT, non-scheduled and & On-demand	CAT non-schedule on demand
	RRLD Trend analysis and monitoring	RRLD Trend analysis and monitoring
	Operations manual contains RRLD specifics	Performance Information for Landing Distance Assessment
AOC holder Aircraft requirements		
	AFM contains RRLD performances, limits and requirements	CS-25.1592 CAT.POL.A.235 AFM includes wet performance
	RRLD MEL items listed	Aircraft Equipment
	AFM contains eligibility statement	Eligibility
	AFM contains MOPSC	MOPSC
AOC holder Aerodrome requirements	Aerodrome information source	Aerodrome (ALAP)
	ALAP established	An ALAP is established
	Aerodrome Facilities, limitations and restrictions	Aerodrome restrictions and conditions are considered Aerodrome declared distances are considered

Example

AOC HOLDER

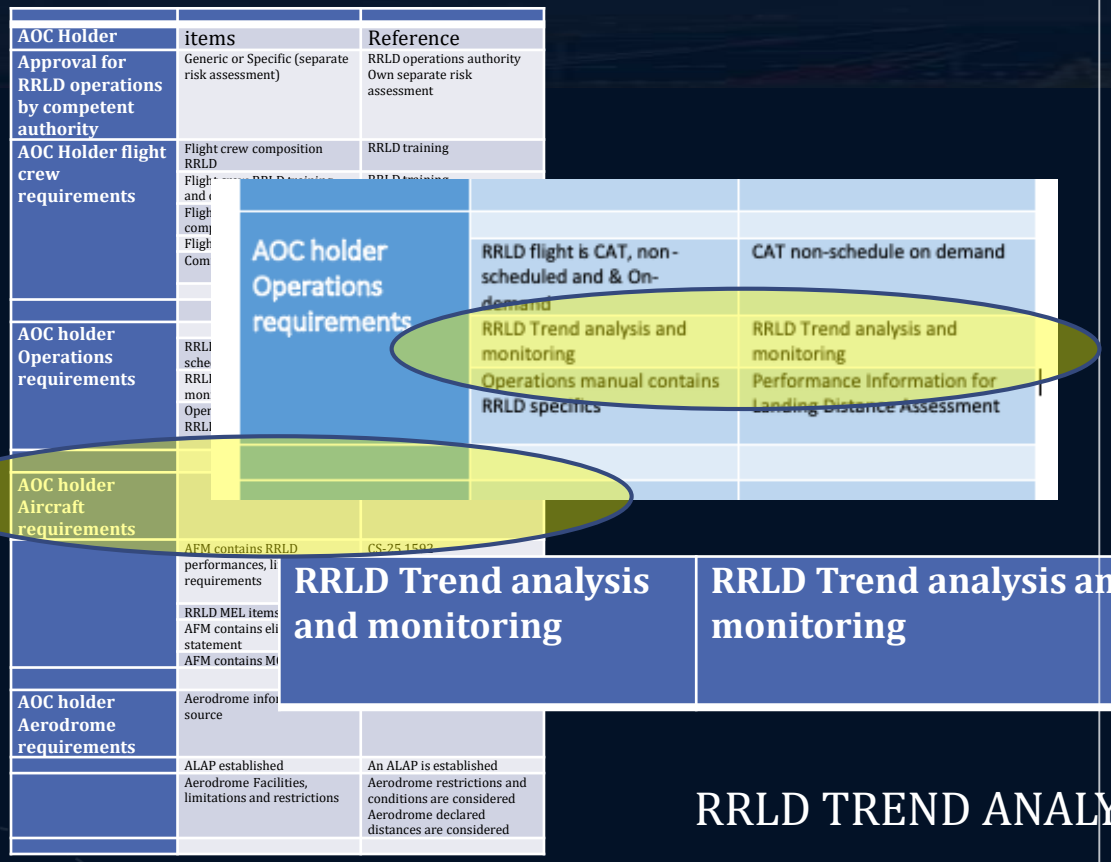
DISPATCH	items	Reference
Approval RRLD	Requirements in OM	Approval for RRLD operations by competent authority
	RRLD flight is CAT, non-scheduled and & On-demand	non-schedule on demand
	Commanders approval	Commander authority
Aerodrome	Aerodrome Landing Analysis	ALAP
	Aerodrome limitation	
	Aerodrome facilities	Friction improved runway f) Runway safety margins
	Aerodrome restrictions	(b) Topography Aerodrome specials
	Aerodrome weather	weather at time of arrival is expected≥50% of headwind is used.
	Runway status	
	Aerodrome information source	Runway is at ETA forecasted Contaminated Runway is at ETA forecasted Wet
	Wind	Wind
	LDA declared distances	Aerodrome declared distances are considered
	Approach procedures	Steep approach planned screen heights < 35 or > 60 fee Stabilized approach criteria operations
		low visibility operations Short landings
Aircraft		CS-25.1592 CAT.POL.A.235
		Aircraft Equipment
	ability statement	Eligibility
	MOPSC	MOPSC
	d limits	
	wet performance	AFM includes wet performance
	Destination runway	Favorable runway Runway planned
	Alternate(s)	
	LDA	
	Dry LDR	Runway is at ETA forecasted Dry
	Wet LDR	Runway is at ETA forecasted Wet
	Wind	50% of headwind is used. No tailwind is forecasted at ETA
	Landing mass	CAT.POL.A.105 General
	Dry LDR	CAT.POL.A Landing – dry runway

DISPATCHER

COMMANDER	items	Reference
APPROVAL RRLD	AOC	RRLD operations authority Own separate risk assessment
	DISPATCH	Approval RRLD
	AIRCRAFT	MOPSC
	TYPE OF OPERATIONS	non-schedule on demand
	COMMANDER	Approval commander RRLD for this flight
CREW	TRAINING and CHECKING	RRLD training
	COMPOSITION	
	QUALIFICATION	RRLD qualification
	RECENCY	Have a RRLD recency
AIRCRAFT	NO LLDR MEL,	Aircraft Equipment
	AFM ELIGIBLE,	Eligibility
	AFM PERFORMANCE	CS-25.1592 CAT.POL.A.235
	AFM WET PERFORMANCE	AFM includes wet performance
AERODROME	ALAP	ALAP
	RESTRICTIONS	
	FACILITIES	
	RUNWAY STATUS	
	LDR	Aerodrome declared distances are considered
	ALTERNATE(S)	
	RUNWAY PLANNED	Favorable runway Runway planned
OPERATION	APPROACH PROCEDURES	
	SPECIAL PROCEDURES	
	STEEP APROACHES	
	SHORT RUNWAYS	
	ADVERSE WEATHER	
	WIND	50% of headwind is used. No tailwind is forecasted at ETA
	DRY PERFORMANCE	
	WET PERFORMANCE	Runway is at ETA forecasted Wet
	LANDING MASS	CAT.POL.A.105 General

PIC

EXAMPLE CHECKLISTS



AOC Holder	items	Reference
Approval for RRLD operations by competent authority	Generic or Specific (separate risk assessment)	RRLD operations authority Own separate risk assessment
AOC Holder flight crew requirements	Flight crew composition RRLD	RRLD training
AOC holder Operations requirements		
AOC holder Aircraft requirements		
AOC holder Aerodrome requirements	Aerodrome infor source	
	ALAP established	An ALAP is established
	Aerodrome Facilities, limitations and restrictions	Aerodrome restrictions and conditions are considered Aerodrome declared distances are considered

AOC HOLDER

RRLD TREND ANALYSIS

AMC2 CAT.POL.A.255(b)(2)(iv) Monitoring

- (a) Reduced required landing distance operations should be continuously monitored by the operator to detect any undesirable trends before they become hazardous.
- (b) A flight data monitoring (FDM) programme, as required by ORO.AOC.130, is an acceptable method to monitor operational risks related to reduced required landing distance operations.

GM2 CAT.POL.A.255(b)(2)(iv) Monitoring

- Although ORO.AOC.130 requires FDM only for aeroplanes with a maximum certified take-off mass (MCTOM) of more than 27 000 kg, FDM may be used voluntarily on aeroplanes having smaller MCTOM. It is recommended for all operators conducting reduced required landing distance operations.

AMC & GM DETAIL

APPLICATION PROCESS

TRAINING

GUIDANCE MATERIAL

APPROVED

HELP

Example

EU EOD 80% LANDING FACTOR

1. OPERATORS FULLY COMPLIANT WITH 80% REQUIREMENTS ENJOY:
    1. An improved Level of safety for all their operations;
    2. Up to 30% more destinations;
    3. Higher payload to shorter runways.

2. HELP AVAILABLE FOR:
    1. Application process,
    2. Training and
    3. Specific guidance

QUESTIONS / REMARKS?

ROB VAN EEKEREN

ROBVANEEKEREN@SAFE-RUNWAY.COM

0031 6 125 90 997