Update on Cross Domain AWO Regulatory Initiative in EU
AOC-seminar
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All - Weather Operations
EASA RMT.0379 – AWO project

Rationale for Regulatory initiative

- Lack of harmonisation with ICAO provisions
- Current rules are not keeping pace with technological advancements
- Weaknesses of the existing domain-centric rules
- Need for cross domain hazard assessments
- Implementation of the results from cooperation with non-EU countries

Timelines

- Project started in Nov 2015 with a stake holder survey. Project needs to be accomplished in less than 2 years
- New coordination/cooperation methods between EASA, Member States, European Commission and Industry stakeholders
- Accelerated rulemaking procedure with focussed consultations (**now**) for Implementing Rules, **Opinion Q1 2017** to the European Commission
- ~~Normal NPA procedure for AMC/GM/CS in **Q2 2017 – Decision Q4 2017**~~

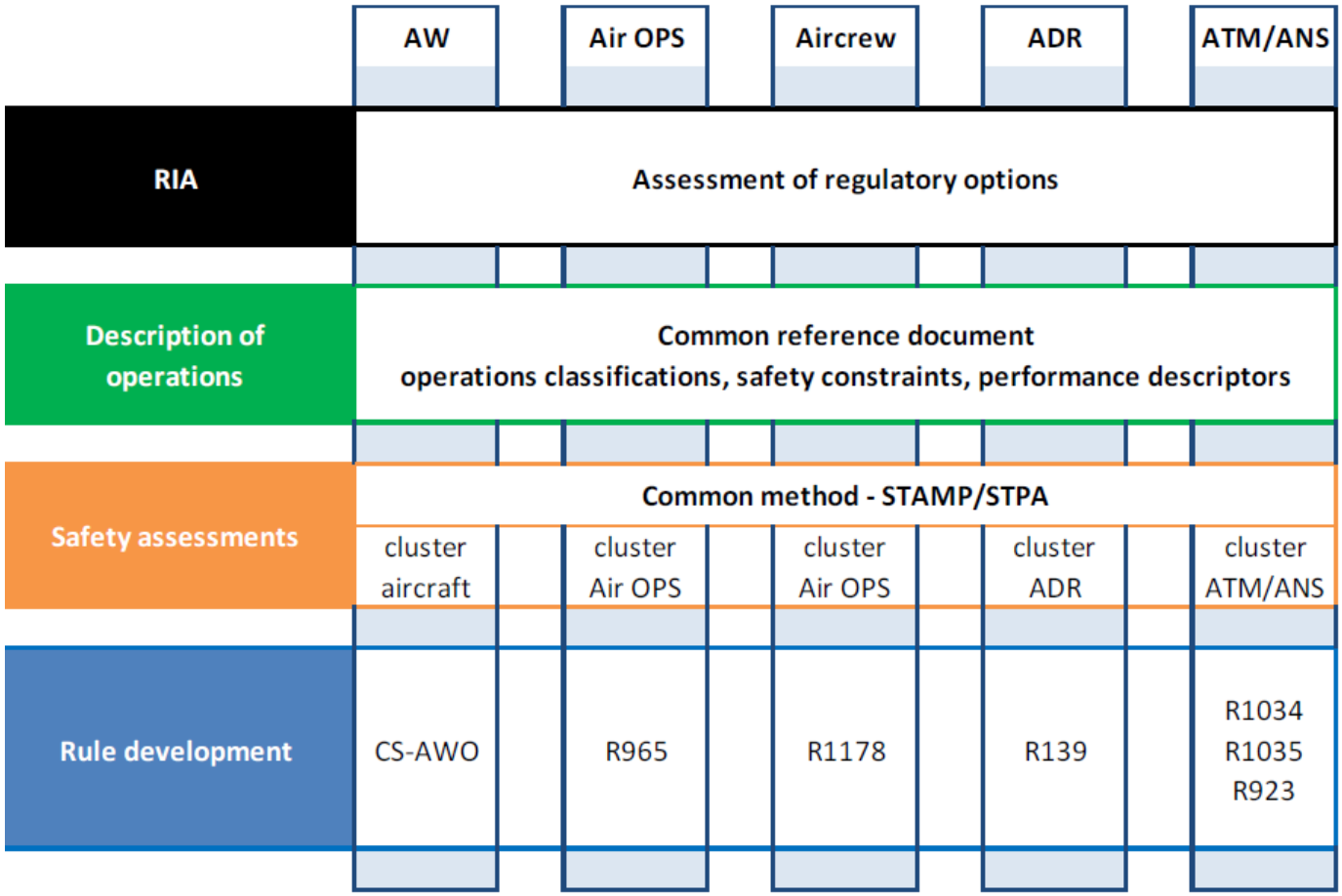
Deliverables and actions

- Make rules more performance based to cater for technology advancements
- Classification of standard operations in terms of “lowest aerodrome operating minima” (ICAO approach classification). Consequential alignment of existing rule text with amended classification
- Add operations with operational credit to provide flexibility beyond the limits of standard operations
- Better account for interdependencies between air operations, aircraft certification, flight crew competencies, aerodrome facilities and procedures, ATM/ANS
- Clarify rule text with interpretation concerns

Cont. Deliverables and actions

- Better align initial and recurrent training rules and credits
- Introduction of new approach category SA CAT I (AMC/GM/DoOs)
  - SA CAT I is an approach category between CAT I and CAT II. It is already introduced in US/FAA and AUS/CASA regulatory systems. SA CAT I will allow approach operations with a lowest DH of 150 ft and an RVR of 400 m to aerodromes suitably equipped for CAT I operations. FAA order 8400.13D
  - Introduce SVS/SVGS on board vision system/flight guidance technology enables extension of instrument segment of an instrument approach
- Introduce EVS to touch down (AMC/GM/DoOs)
  - c.f.FAA NPRM - Revisions to Operational Requirements for the Use of Enhance Flight Vision Systems (EFVS) and to Pilot Compartment View Requirements for Vision Systems

Cross-Domain rulemaking



Overview of affected provisions in Reg (EU) 965/2102

- Annex 1 – DEF
  - 17 new terms defined. Several terms deleted and amended.
- Annex II – ARO
  - New OPS-SPEC template – ”Operational Credit” introduced
- Annex IV – CAT
  - CAT.OP.MPA.107 - Adequate aerodrome
  - CAT.OP.MPA.110 - Aerodrome Operating Minima
  - CAT.OP.MPA. 115 - Approach Flight Technique – aeroplanes
  - CAT.OP.MPA.185 – Planning minima for IFR flights - aeroplanes
  - CAT.OP.MPA.186 - Planning minima for IFR flights - helicopters
  - CAT.OP.MPA.265 – Take off conditions
  - CAT.OP.MPA.300 – Approach and landing conditions
  - CAT.OP.MPA.305 – Commencement and continuation of an approach operation
  - CAT.OP.MPA.310 – Operating procedures – threshold crossing height -aeroplanes

Cont. Overview of affected provisions in Reg (EU) 965/2102

- Annex V – SPA
  - SPA.GEN.100 – Competent authority

  - SPA.LVO.100 – Low-visibility operations and operations with operational credit
  - SPA.LVO.105 – Specific approval criteria
  - SPA.LVO.110 - ATM/ANS
  - SPA.LVO.120 – Flight Crew Competens

- *Annex VI – NCC*
- *(Annex VII – NCO and Annex VIII – SPO)*

ICAO Approach Classification

New Approach Classification

Domain	Document	Aspect					
Approach Operations	Annex 6	Classification	Type A	Type B			
			(>= 250')	CAT I (>= 200')	CAT II (>= 100')	CAT III (<100')	
		Method	2D	3D			
		Minima	MDA/H	DA/H*			
Approach Runways	Annex 14	M(DA/H) >= VMC	Non Instrument RWY				
		M(DA/H) >= 250' Visibility=1 000m	Non Precision Approach RWY				
		DA/H >= 200' Visibility>=800m or RVR >= 550m	Precision Approach RWY, Category I				
		DA/H >= 100' RVR >= 300m	Precision Approach RWY, Category II				
		DA/H >= 0' RVR >= 0m	Precision Approach RWY, Category III (A, B & C)				
System Performance Procedures	Annex 10 PANS-OPS Vol. II	NPA	NDB, Lctr, LOC, VOR, Azimuth, GNSS				
		APV		GNSS/Baro/SBAS			
		PA		ILS, MLS, SBAS, GBAS			

* For guidance on applying a continuous descent final approach (CDFA) flight technique on a non-precision approach procedures refer to PANS-OPS (Doc. 8168) Vol. I Section 1.7

Annex I - new definitions

- **Many new definitions due to ICAO Annex 6 alignment – Including New approach classification**
- Aerodrome operating minima
- Circling approach operation
- Decision altitude (DA) or decision height (DH)
- Final approach segment
- Go-around
- Instrument approach operations
- Instrument approach procedures
- Low-visibility operations (LVO)
- Minimum descent altitude (MDA) or minimum descent height (MDH)
- Obstacle clearance altitude (OCA) or obstacle clearance height (OCH)
- Operation with an operational credit
- Type A instrument approach operation
- Type B instrument approach operation

“instrument approach operations” means an approach and landing using instruments for navigation guidance based on an instrument approach procedure. There are two methods for conducting instrument approach operations:

(a) 2D instrument approach operation, using lateral navigation guidance only; and

(b) 3D instrument approach operation, using both lateral and vertical navigation guidance;

“Type A instrument approach operation” means an operation with a minimum MDA/H or DA/H at or above 250 ft;

“Type B instrument approach operation” means an operation with a minimum DA/H below 250 ft. Type B instrument approach operations are categorised as:

(a) Category I (CAT I): a DA/H not lower than 200 ft and with either a visibility not less than 800 m or an RVR not less than 550 m;

(b) Category II (CAT II): a DH lower than 200 ft but not lower than 100 ft, and an RVR not less than 300 m;

(c) Category III (CAT III): a DH lower than 100 ft or no DH, and an RVR less than 300 m or no RVR limitation;

- No sub-categories for CAT III.

Cont. Annex I – new definitions

- **“operation with an operational credit”** means an operation using specific aircraft or ground equipment, or a combination of aircraft and ground equipment, such that lower than standard aerodrome operating minima can be applied for a particular classification of operation;

- **“low-visibility operations (LVOs)”** means taxiing, approach or take-off operations with an RVR lower than 550 m;

- **“low-visibility take-off (LVTO)”** means a take-off with a runway visual range (RVR) lower than 550 m. It is subcategorised into “LVTO I” which means a take-off with an RVR less than 550 m but not lower than 400 m, and “LVTO II” which means a take-off with an RVR less than 400 m;

Annex II – Part ARO

- A new line for operational credits in EASA Form 139 - OPS-SPEC template - has been added.
- It is foreseen that a new AMC/GM to *ARO.OPS.200 Specific approval procedure will be added, which will provide additional provisions for the specific approval of operations with operational credits and for the establishment and monitoring of performance indicators.*

Annex IV – Part CAT

- Alignment with new terms and definitions
- Text in several pararaphs moved to AMC-level to provide more flexibility e.g. planning minima table for alternate aerodromes
- Text on safety objective added to CAT.OP.MPA.110 - Aerodrome operating minima.
  - *Mitigate risks of insufficient separation of the aircraft from terrain or obstacles, and loss of control during the visual flight segment.*
- Most of the current AMC/GM to CAT.OP.MPA.110 will be maintained but with streamlined content. In total 12 AMC:s to this IR.

New Subpart E in Annex V – Part SPA

- RMT.0379 main focus on Part-SPA – Subpart E
- SPA.LVO.100 specifies which operations require a specific approval instead of listing specific types of operations with operational credits:
  - standard take-off operations with visibility conditions less than 400 m RVR;
  - standard approach operations with visibility conditions less than 550 m RVR; and
  - operations with operational credits.
    - The proposed new requirement generally enables operations with operational credits.This change ensures that future technological advancements may not require a change to the IRs. **Major objective of RMT.0379.**
- AMC and GM will provide further provisions on how standard low-visibility operations and operations with operational credits can be approved.

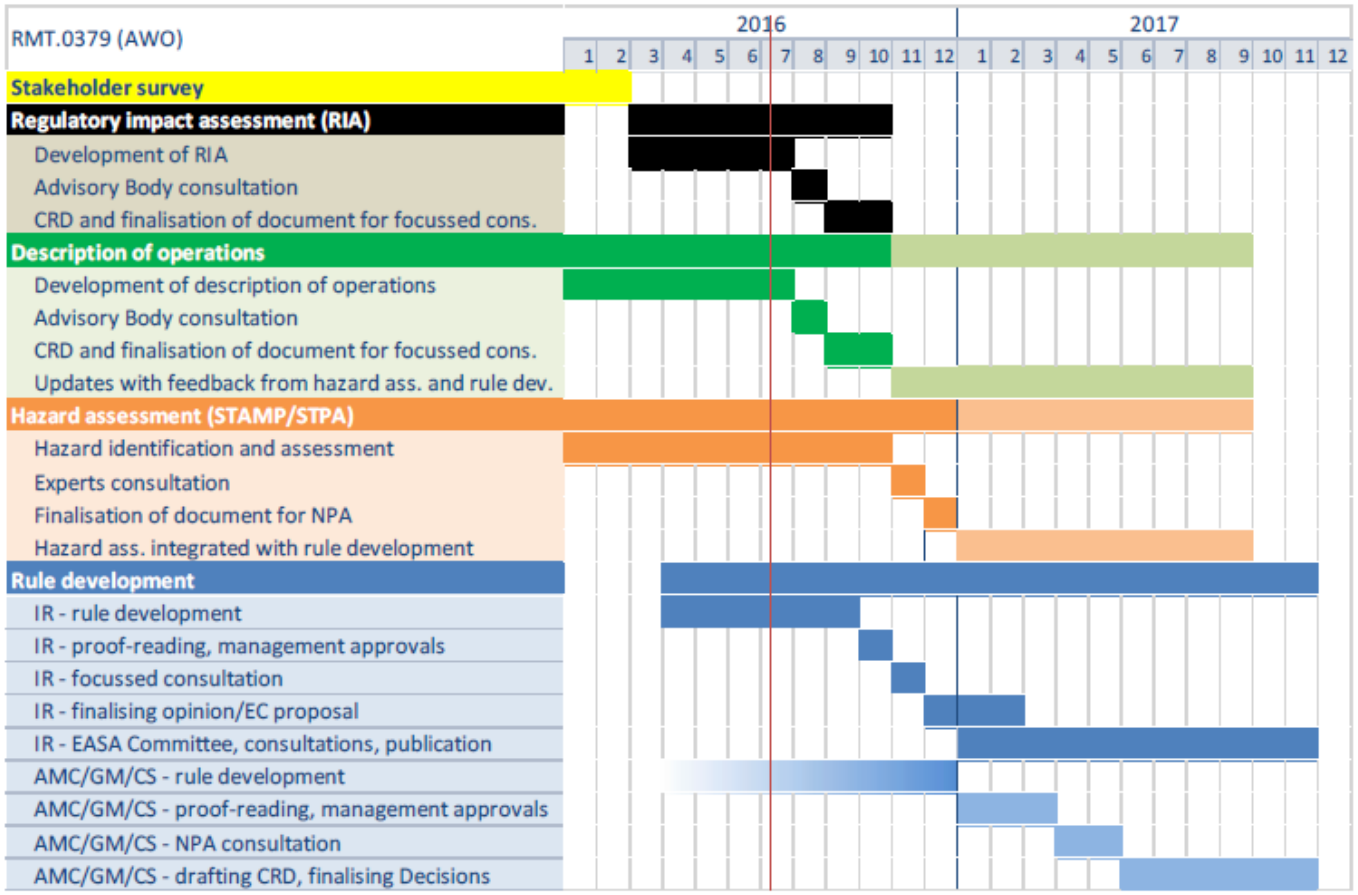
Cont. New Subpart E in Annex V – Part SPA

- SPA.LVO.105 Specific approval criteria. This paragraph has undergone a major change. It specifies the main criteria to obtain a specific approval for LVO and/or operational credits. Criteria to be demonstrated includes:
  - Aircraft capabilities;
  - Flight crew competence;
  - Operating procedures;
  - MEL;
  - Continuous airworthiness;
  - Safety assessments and continuous monitoring.
- Corresponds to ICAO/FLTOPSP proposals for amendments to Annex 6. Pending finalisation and ICAO procedure.
- Detailed criteria at AMC/GM level. SA CAT I, SA CAT II and EVS to touch down introduced.

Cont. New Subpart E in Annex V – Part SPA

- SPA.LVO.110 ATM/ANS and aerodrome-related requirements
  - The proposed OPS rule does not require that an aerodrome operator is approved to serve operations with an operational credit" but it needs to be suitable for the intended operations. ICAO Annex 14 does not yet address operational credit.
  - However aerodrome operators falling within the scope of Regulation (EU) No 139/2014 will require an approval to serve operations with operational credits.
- SPA.LVO.120 Flight crew competence
  - All the requirements related to training, testing and checking with regard to LVO operations will be located in Annex V (Part-SPA) and the related AMC/GM.
  - Part-FCL in Reg. (EU) 1178/2011 amended - FCL.605 IR - Priveleges refers to SPA.LVO.120, Section 6 of Appendix 9 to Part-FCL also amended.

Timelines


RMT.0379 (AWO)
2016
2017
1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12
Stakeholder survey
Regulatory impact assessment (RIA)
Development of RIA
Advisory Body consultation
CRD and finalisation of document for focussed cons.
Description of operations
Development of description of operations
Advisory Body consultation
CRD and finalisation of document for focussed cons.
Updates with feedback from hazard ass. and rule dev.
Hazard assessment (STAMP/STPA)
Hazard identification and assessment
Experts consultation
Finalisation of document for NPA
Hazard ass. integrated with rule development
Rule development
IR - rule development
IR - proof-reading, management approvals
IR - focussed consultation
IR - finalising opinion/EC proposal
IR - EASA Committee, consultations, publication
AMC/GM/CS - rule development
AMC/GM/CS - proof-reading, management approvals
AMC/GM/CS - NPA consultation
AMC/GM/CS - drafting CRD, finalising Decisions

- http://www.easa.europa.eu/newsroom-and-events/events/awo-consultation-workshop

- Questions and Comments to AWOproject@easa.europa.eu by 30 November 2016.

END

Thank you for your attention!

Deleting some definitions e.g.

- The following definitions are deleted:
- ‘“approach procedure with vertical guidance (APV) operation’;
- “Category I (CAT I) approach operation”;
- “Category II (CAT II) approach operation”;
- “Category IIIA (CAT IIIA) approach operation”;
- “Category IIIB (CAT IIIB) approach operation”;
- “enhanced vision system (EVS)”;
- “head-up display (HUD)”;
- “head-up guidance landing system (HUDLS)”;
- “low-visibility procedures (LVPs)”;
- “lower-than-standard Category I (LTS CAT I) operation”;

Overview amendments

‘“aerodrome operating minima” means the limits of usability of an aerodrome for:

(a) take-off operations, expressed in terms of visibility and/or runway visual range (RVR) and, if necessary, cloud conditions;

(b) two-dimensional (2D) instrument approach operations or circling approach operations, expressed in terms of visibility and/or RVR, minimum descent altitude/height (MDA/H) and, if necessary, cloud conditions; and

(c) three-dimensional (3D) instrument approach operations, expressed in terms of visibility and/or RVR and decision altitude/height (DA/H);

Reasons for a new ICAO approach classification ICAO SL 12/40

- Unclear instrument approach terminology, especially regarding the relationship between instrument approach procedures and instrument approach operations; and
- Unclear or insufficient cross-referencing of ICAO provisions for supporting instrument approach operations, especially regarding PBN.
- Confusion among pilots primarily related to the approach procedure with vertical guidance (APV) operations
- Similarly, when a vertically guided approach is executed on a non-precision approach, it again is confused with an APV
- Separate requirements for the flight operation from the instrument approach procedure as designed for a specific runway

- New classification in EU through proposed changes from EASA RMT.0379

Proposed new definitions in Annex I Reg (EU) 965/2012

"aerodrome operating minima" means the limits of usability of an aerodrome for:

(a) take-off operations, expressed in terms of visibility and/or runway visual range (RVR) and, if necessary, cloud conditions;

(b) two-dimensional (2D) instrument approach operations or circling approach operations, expressed in terms of visibility and/or RVR, minimum descent altitude/height (MDA/H) and, if necessary, cloud conditions; and

(c) three-dimensional (3D) instrument approach operations expressed in terms of visibility and/or RVR and decision altitude/height (DA/H);

“instrument approach operations” means an approach and landing using instruments for navigation guidance based on an instrument approach procedure. There are two methods for conducting instrument approach operations:

(a) 2D instrument approach operation, using lateral navigation guidance only; and

(b) 3D instrument approach operation, using both lateral and vertical navigation guidance;

“instrument approach procedures” means a series of predetermined manoeuvres by reference to flight instruments with specified protection from obstacles from the initial approach fix or, where applicable, from the beginning of a defined arrival route to a point from which a landing can be completed and thereafter, if a landing is not completed, to a position at which holding or en-route obstacle clearance criteria apply. Instrument approach procedures are classified as follows:

(a) non-precision approach (NPA) procedure, which means an instrument approach procedure designed for Type A 2D instrument approach operations;

(b) approach procedure with vertical guidance (APV) means a performance-based navigation (PBN) instrument approach procedure designed for Type A 3D instrument approach operations;

(c) precision approach (PA) procedure means an instrument approach procedure based on navigation systems designed for Type A or B 3D instrument approach operations;

Rule development

Taking into account

- RIA
- Cross-domain description of operation
- Results of the safety assessments
- Current rule text
- FAA rules
- AWOHARC results
- ICAO documents
- Documents of standardisation bodies
- Deliverables of SESAR projects
- Results of stakeholder survey

Systems-Theoretic Accident Model and Processes STAMP/STPA

The high-level safety constraints generated so far are as follows:

S1: The aircraft shall be under control when airborne (instrument and visual segment) (Note: This includes runway contact during go-around manoeuvres);

S2: The aircraft shall maintain adequate separation from terrain and obstacles excluding the intended landing surface;

S3: The aircraft shall maintain adequate separation from flying objects;

S4: The aircraft shall maintain adequate separation from objects on the ground;

S5: The aircraft shall be under control during landing and roll-out on the intended landing surface;

S6: The aircraft shall be under control during taxiing;

S7: The aircraft shall remain within the movement area (on the ground);

S8: The aircraft shall be under control during take-off.

Classification of operations

a) approach operations are classified based on the lowest designed operating minima as:

1) Type A: At or above 75 m (250 ft);

2) Type B (with CATI/II/III categorization): Below 250 ft;

b) there are two methods for flying instrument approach operations, either 2D (lateral navigation guidance only) or 3D (lateral and vertical navigation guidance).