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ACTIVITY 1 – DETECT & AVOID (D&A)

RPAS Definition Phase Workshop #2
2014-11-06
Saab

SESAR JOINT UNDERTAKING

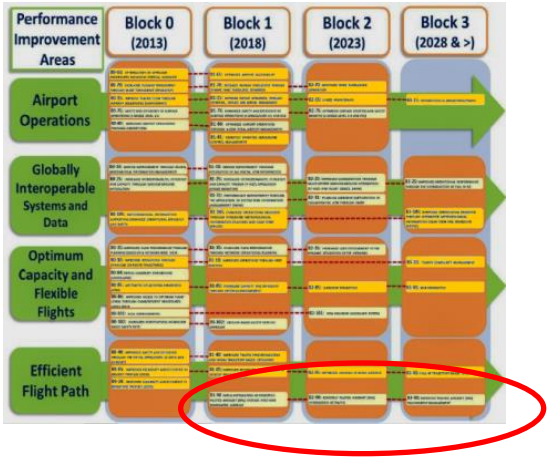
founding members
EUROPEAN UNION
EUROCONTROL

Scope

- **D&A** – *what* is it?
  - Traffic D&A (TrA & CA)
  - Non-traffic D&A
    (ground, obstacles, weather, wake, other)
  - Detectability (visual, non-visual)

EC Gap 3.3 Airborne based detect & avoid
EC Gap 3.4 Ground based detect & avoid
EC Gap 3.6 Ground and obstacles avoidance
EC Gap 3.7 Weather detection
EC Gap 3.8 Detectability solutions
EC Gap 3.10 Other hazards including wake

- **Timeline** – *when* D&A functions need to be ready for service?
  - based on IOC/FOC ("limited"/"full") in EU roadmap,
    ICAO ASBU, SESAR waves (in principle 2018, 2023, 2028)
  - for IFR, VFR, BVLOS respectively
  - Covering now until 2028 *but* focus
    (more detail) up to 2018 (equivalent
    of SESAR wave 1 & 2015 BAFO scope)



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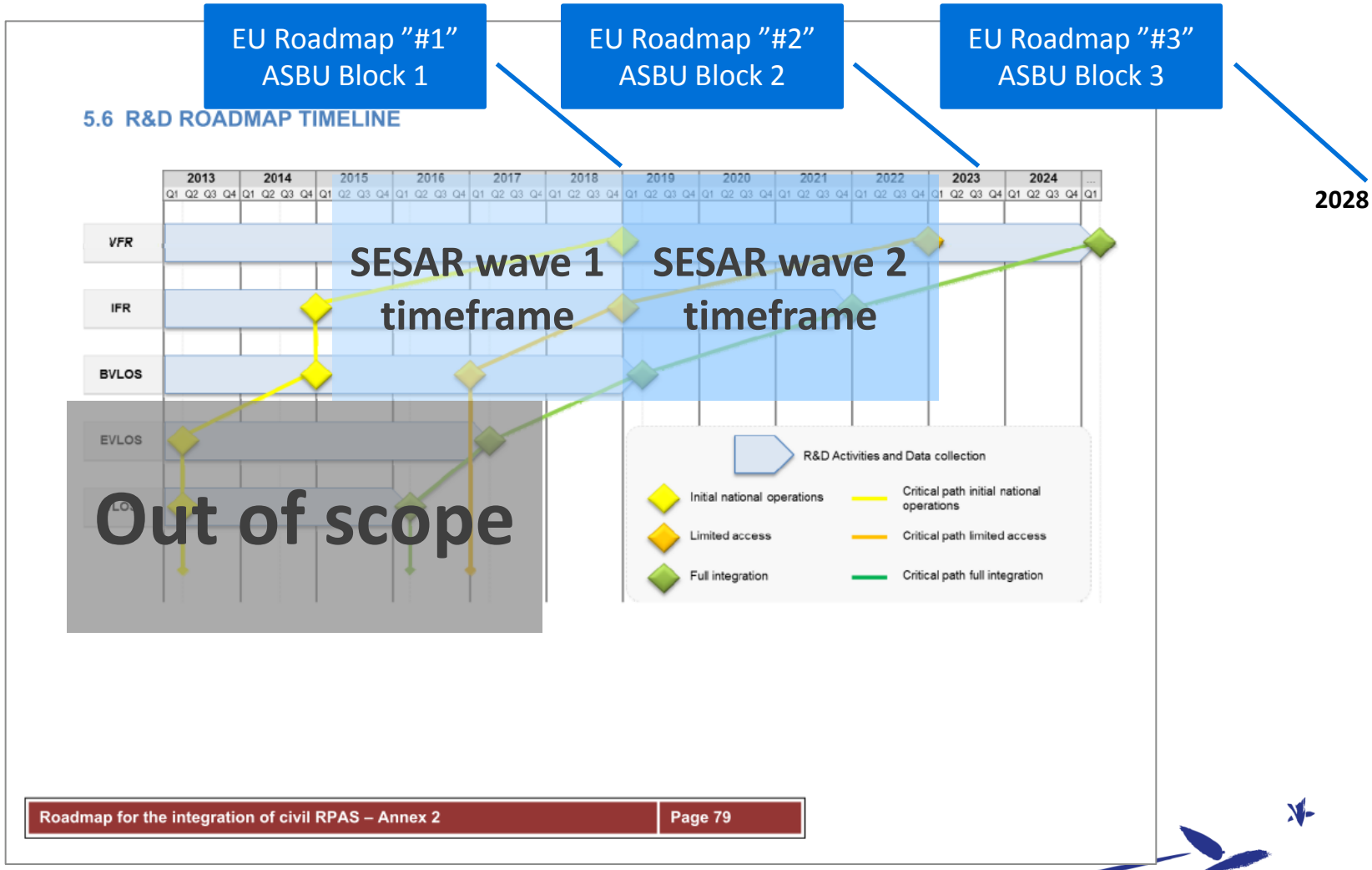
Scope: Timelines vs. EU (R&D) Roadmap & ICAO ASBU



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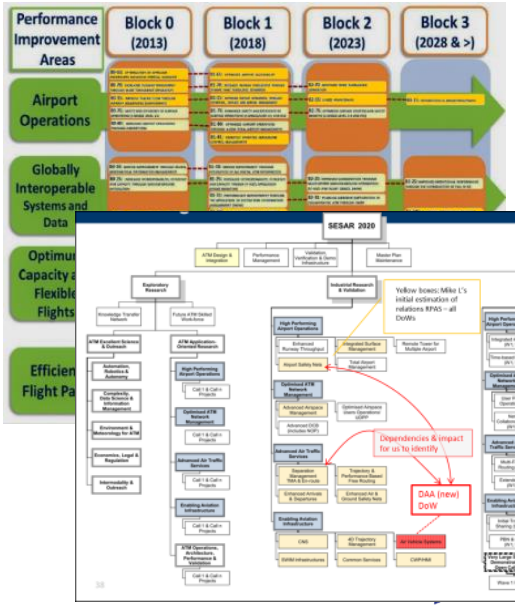
- **Delivery** to SESAR
  - Description of required D&A R&D work.
  - Mapping to SESAR (ER, IR&V, VLSD, RPAS)
  - *And* DOW draft



→ This is all in line with SESAR RPAS scope and European RPAS Roadmap

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The team

Points Of Contact for SESAR RPAS Definition Phase. Activity 1 Detect & Avoid (A1/DAA)

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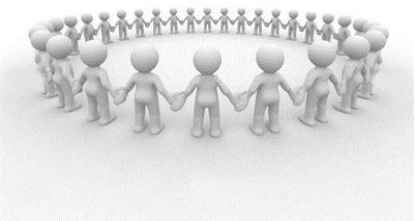

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Approach and Assumptions 1(2)

General approach

- Building on the existing European (ERSG) RPAS Roadmap
  - Annex 2 (R&D)
  - Follow the logic in terms of implementation steps (timeline), R&D Gaps, Regulatory roadmap link etc.
- Using existing and ongoing work
  - SESAR to close the *remaining* gaps
  - In particular for step 1 (2018) using, *existing work* is required
- D&A complex enough to require specific work plan *and* tight coordination with other activities
  - Dependencies on regulation, standardization, certification (in addition to other SESAR and external R&D).

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Approach and Assumptions 2(2)

Approach to D&A solutions for operational introduction per roadmap/ASBU step

- Integration by 2018
  - IFR: "Limited integration" assumed to be Airborne D&A, cooperative A-C airspace based on MIDCAS as baseline (also considering other relevant initiatives).
    GBD&A contribution to be investigated.
  - VFR: None
  - BVLOS VLL: "Limited integration" assumed to be achieved by procedural means (including airspace access restrictions) with limited technical support (possibly a simplified *Detect* system).
    VLL regulatory requirements not yet available. Challenging time schedule.
- Next step (2023)
  - IFR: "Full integration" assumed to be achieved by expanding to class D&E airspace and including non-cooperative target detection and sensors. GBD&A contribution to be investigated.
  - VFR: "Limited integration" assumed to be achieved by expanding to class F&G airspace including non-ATC airspace (coop & non-coop). (Full integration 2028)
  - BVLOS VLL: "Full integration" assumed to be achieved by procedural means as well as requiring some technical support, yet to be defined.
    An D&A system might be needed due to risk of other traffic entering below 400ft, as well as to reduce mid-air collision risk in order to maintain safety for people on ground. Such system need to be small/light-weight (miniaturization).
- Final step (2028) TBD
  - VFR "Full integration" and potential other remaining work
- Note: R&D work for implementation in later steps, still required in earlier steps, at lower TRL/E-OCVM level.

SESAR Release

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Work performed & planned

- 4 telecon/webex (29/9, 7/10, 14/10, 22/10)
- First draft delivered 23d Oct for working session #2
  - Draft word document update & new spreadsheet
  - Including updated (w.r.t. Roadmap) gaps, current maturity (TRL/E-OCVM), SESAR mapping etc.

- Integrate into **DOW** template (as provided at ws#2 23d Oct.)
- Maintain **existing material** for more detailed guidance (as far as possible w.r.t. time & effort)
- Planned meetings: 7/11, 18/11
- Final delivery to SESAR 10th Dec.

Dependencies to be further elaborated

- Regulatory coordination
- Coordination with “External processes & activities”
  - Standardization (WG-73,93; ICAO RPAS Panel etc.)
  - Regulation/regulatory roadmap (EASA, JARUS)
  - Non-SESAR European (D&A) activities, e.g. EDA
  - International harmonization (SC-228, NextGen, …)
- SESAR V&V process
  - SESAR-solutions/project V&V, overall RPAS consolidated V&V, VLSD, PJ22 V&V infrastructure etc.

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Thanks for your attention!

Comments and input appreciated to the activity!

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