

# **RPAS - Standardisation activities**

#### ICAO Remotely Piloted Aircraft Systems Symposium

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• About EUROCAE

• Relevant EUROCAE Activities



#### What is EUROCAE ?

#### EUROCAE

- is the only European organisation exclusively dedicated to the development of technical standards in support of the aviation community
- produces since over 50 years standards used in the certification of avionics and approval of CNS and ATM equipment and applications
- provides all aviation stakeholders with a forum to work together to achieve an effective standardisation framework in Europe
- offers for many years a proven mechanism for the development of required aviation technical standards and other associated documents
- has over 160 members from 30+ countries in Europe and beyond representing all main stakeholder categories



 the European Commission as the competent body to collaborate with the European Standardisation Organisations (ESOs) in the preparation of European Standards (ENs) / Community Specifications (CS)

 $\rightarrow$  Article 4.1.a) of the Interoperability Regulation (EC) 552/2004.

- the European Aviation Safety Agency (EASA) as a major European stakeholder in the development of Technical documents concerning Aviation safety (i.e. ETSO "European Technical Standard Order")
- the FAA as having the right expertise to collaborate, when appropriate, with US organizations (RTCA, SAE, ARINC) in the development of specific standards related to Aviation
- ICAO
  - references EUROCAE Documents (EDs)
  - invites EUROCAE to participate in number of its Study Groups
  - involves EUROCAE in Aviation System Block Upgrade as the main standardisation body for Europe



#### **EUROCAE** Activities

• EUROCAE Technical Work Programme

→ ICAO, EASA, SES and SESAR, FAA and NextGen, Industry, ...

• Work programme

Published EDs190EDs under development60Active WG32

• About 50% carried out jointly with RTCA, 10% with SAE



• About EUROCAE

- Relevant EUROCAE Activities
  - WG-73 and WG-93



#### **EUROCAE RPAS Activities**

- EUROCAE WG-73 'Unmanned Aircraft Systems (UAS)'
  - Created early 2007
  - Focus on operations in Airspace Classes A, B, and C
- EUROCAE WG-93 'Light Remotely Piloted Aircraft Systems Operations'
  - Created in 2012
  - Previously dealt with in WG-73 / Subgroup 4
  - Focus on VLOS operations (Visual Line of Sight)
  - Most RPAS in this category: below 25kg



## WG-73 Unmanned Aircraft Systems

- WG73 is to **deliver technical standards** and **appropriate guidance material** to enable the safe operation of RPAS in all classes of airspace and in all operational environments.
- The work is to address the differences between RPAS and manned aviation and to deliver appropriate solutions for RPAS.
- **Key aspects** are RPAS airworthiness certification, command, control and communications (C3), and 'Detect & Avoid' (D&A).
- Formally outside the remit of WG-73: specification of safety objectives and criteria, regulatory rule-making and most matters associated with personnel.
- **Expected deliverables**: OSED, SPR, INTEROP; where necessary MASPS and MOPS



## WG-73 Unmanned Aircraft Systems

#### **Deliverables**:

- MASPS / MOPS for RPAS C2 Datalink
- OSED/SPR/INTEROP for En-route flight in Class A, B, C BVLOS Operations in Class G Airspace Terminal Area and Aerodrome Operations Oceanic Operations
- Guidance Material: RPAS Classification Scheme Flight Operations Management Security Requirements
- Contribution to European RPAS Roadmap



### WG-93 Light RPAS

- **Develop standards and recommendations** for guidance material for the safe operation of **Light RPAS**, sequenced in **order of priority** for the Light RPAS community, with output primarily directed towards **regulators**.
- Focus on VLOS and Initial work on BVLOS
- To actively involve SMEs in the regulatory process as SMEs are key to shortterm innovation
- Guided by regulators needs and approval oversight such as EASA, JARUS, NAAs



## EUROCAE activities: WG-73 and WG-93

#### **Publications**

- ER-004 A concept for UAS Airworthiness Certification and Operational Approval
  - Published Nov 2010
  - 5 Volumes + Supplement
- ER-010 UAS / RPAS Airworthiness Certification "1309" System Safety Objectives and Assessment Criteria
  - Published Aug 2013
- ER-012 C3 CONOPS
  - To be published still in 2015
- VLOS Operations Guidance to Regulators
  - To be published still in 2015



#### **European RPAS Roadmap Contribution**

- 2012-13, European Commission initiative leading to Road Map and 8 April 2014 communication to European Parliament
- EUROCAE contribution to development of European RPAS Roadmap / European RPAS Steering Group
- Almost 20 roadmap lines identified as EUROCAE activities in both WG-73 and WG-93
- WG-73 and WG-93 ToR updates to align activities
- Some deliverables already finalised; work ongoing on others
- Clear target timeframes for each deliverable



## **A Prominent Example**

# for Cooperation



#### Interoperability of CA Systems

Current system: TCAS II

Future System: ACAS X

- ACAS X<sub>A</sub>: active surveillance replacing TCAS II
- ACAS X<sub>o</sub>: operational for ASA applications
- ACAS X<sub>U</sub>: Unmanned Systems
- ACAS X<sub>P</sub>: passive surveillance, not yet started

## ➔ Interoperability



#### Interoperability of CA Systems

#### EUROCAE

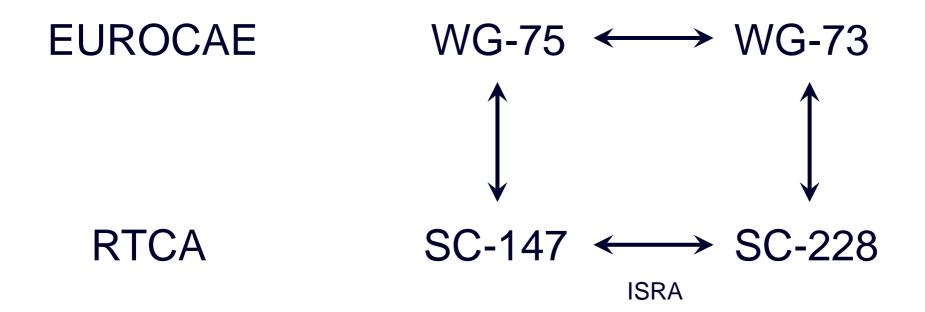
WG-75 CA-Systems WG-73/93 RPAS

RTCA

SC-147 CA-Systems SC-228 RPAS



#### Interoperability of CA Systems



#### Interoperability & Coordination Requirements



## Thank you for your attention!

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