



RPAS - Standardisation activities

ICAO Remotely Piloted Aircraft Systems Symposium

23-25 March 2015, Montreal

Alexander Engel, EUROCAE



- **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



EUROCAE is recognised by

- 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)
 - *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**

strategic vision of the activities in the context of the current environment
→ ICAO, EASA, SES and SESAR, FAA and NextGen, Industry, ...

- **Work programme**

Published EDs	190
EDs under development	60
Active WG	32

- **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 short-term 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_A : active surveillance - replacing TCAS II
- ACAS X_O : operational for ASA applications
- ACAS X_U : Unmanned Systems
- ACAS X_P : 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

EUROCAE

WG-75



WG-73



RTCA

SC-147



SC-228

ISRA

Interoperability & Coordination Requirements



Thank you for your attention!

EUROCAE

102 rue Etienne Dolet

+33 1 40 92 79 30

92240 Malakoff (France)

eurocae@eurocae.net