JOINT AUTHORITIES FOR RULEMAKING OF UNMANNED SYSTEMS

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Secretary General

Joint Authorities for Rulemaking of Unmanned Systems

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JARUS PURPOSE

JARUS is a group of experts from 55 countries, representing NAAs, regional authorities, as well EASA and EUROCONTROL.

JARUS members collaborate to recommend a single set of technical, safety and operational requirements for the certification and safe integration of UAS into airspace and at aerodromes.

The Industry is represented through the Stakeholder Consultation Body (SCB).

JARUS MEMBERS

(as of August 2018)

1. Australia
2. Austria
3. Belgium
4. Brazil
5. Canada
6. China
7. Colombia
8. Croatia
9. Czech Republic
10. Denmark
11. EASA
12. Eurocontrol
13. Estonia
14. Finland
15. France
16. Georgia
17. Germany
18. Greece
19. Ireland
20. India
21. Israel
22. Italy
23. Jamaica
24. Japan
25. Kenya
26. Latvia
27. Luxembourg
28. Malaysia
29. Malta
30. **Moldova**
31. Montenegro
32. Netherlands
33. **New Zealand**
34. **Nigeria**
35. Norway
36. Poland
37. **Portugal**
38. Qatar
39. Republic of Korea
40. Republic of Macedonia
41. Republic of Serbia
42. Romania
43. Russia
44. Singapore
45. Slovakia
46. **Slovenia**
47. South Africa
48. Spain
49. Sweden
50. Switzerland
51. Thailand
52. Trinidad & Tobago
53. Turkey
54. United Arab Emirates
55. United Kingdom
56. United States of America
57. **Uruguay**

Six new members countries in 2017/2018

- Moldova
- New Zealand
- Nigeria
- Portugal
- Slovenia
- Uruguay

STAKEHOLDER CONSULTATION BODY (SCB)

At the end of 2015, the SCB was established representing the worldwide UAS Community:

- UAS Manufacturers
- UAS Operators
- UTM hardware and software manufacturers
- ANSP and controllers, UTM/U-Space providers
- Communications providers
- General aviation
- Manufacturers of large UAS and manned aircraft
- Commercial aviation operators
- Commercial manned and unmanned pilots
- Standards Bodies

Since 2016 representatives from these organisations join the JARUS Plenary Meetings.

Experts from the SCB have been contributing to the JARUS Working Groups efforts.

More information at http://jarus-rpas.org/stakeholders-consultation-body

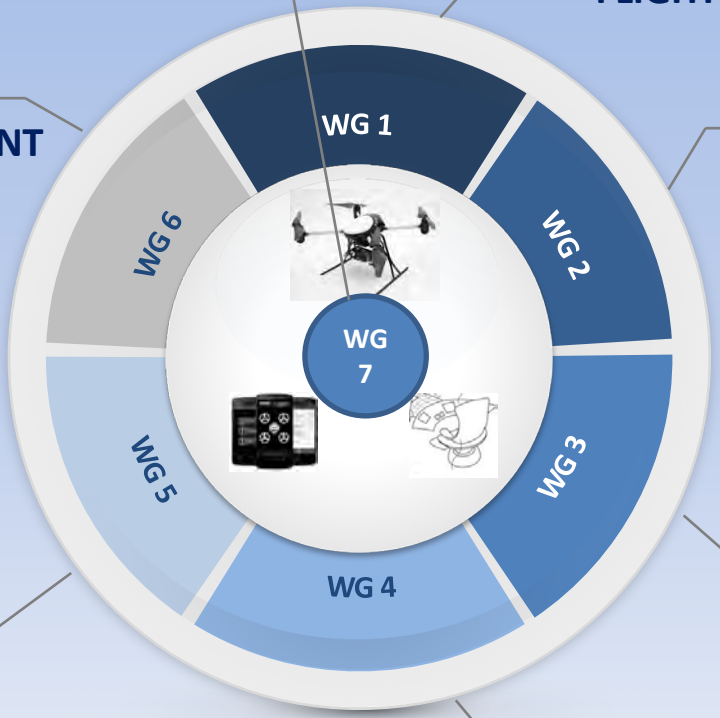
JARUS WORKING GROUPS

CONOPS

FLIGHT CREW LICENSING

SAFETY AND RISK MANAGEMENT

OPERATIONS



AIRWORTHINESS

COMMAND CONTROL & COMM

DETECT & AVOID

Joint Authorities for Rulemaking of Unmanned Systems

JARUS DELIVERABLES – OVERVIEW 2013-2018

- CS-LURS (Certification Specification for Light Unmanned Rotorcraft Systems) – *October 2013*
- RPAS C2 Link (required Communication Performance concept) – *October 2014*
- FCL (Flight Crew Licensing) Recommendations – *September 2015*
- AMC (Acceptable Means of Compliance) RPAS 1309 – *November 2015*
- RPAS "Required C2 Performance (RLP) concept" – *May 2016*
- Recommendations on the use of Controller Pilot data Link Communications (CPDLC) – *June 2016*
- CS - LUAS (Certification Specification for Light Unmanned Aircraft Systems) – *December 2016*
- Guidance Material to FCL Recommendations – *April 2017*
- Specific Operations Risk Assessment – *July 2017*
- Recommendations for Unmanned Aircraft Systems (UAS) Category A Operations - *July 2018*
- OPS Cat A – *July 2018*

http://jarus-rpas.org/publications

WORKING GROUPS (WGs) – 1/2

WG 1 – Flight Crew Licensing (FCL)

- Requirements for licensing and competencies in RPAS activities
- Pilot licensing and training

WG 2 – Operations

- Operational requirements for access to airspace
- Organizational requirements for RPAS operations

WG 3 – Airworthiness

- UAS certification & airworthiness provisions/specifications for:
  - ✓ *Rotary wing, Light Unmanned Rotocraft System (CS-LURS)*
  - ✓ *Fixed wing, Light Unmanned Aeroplane System (CS-LUAS)*
  - ✓ *Very light UAS (VLUAS)*
  - ✓ *Airships, free/tethered balloons*

WG 4 – Detect and Avoid

- Define performance provisions (operational/technical)
- Establish safety objectives for the risk of collisions

WORKING GROUPS (WGs) – 2/2

WG 5 – Command, Control & Communications

- Establish performance provisions (operational & technical) for C2

WG 6 – Safety and Risk Management

- Create a methodology to assess the risks of «specific» RPAS operations and evaluate relevant mitigations
- Define top level RPAS airworthiness, system safety objectives and guidance material (known as AMC RPAS.1309)
- Establish UAS recommendations & conclusions on UAS failure classifications in terms of severity definition and probability requirements.

WG 7 – Concept of Operations (CONOPS)

- Develop a classification scheme for RPAS
- Considerations for RPS Certification, C2 & signal relay and launch and recovery equipment

ACTIVITIES 2017-2018

- **JARUS Plenary Meetings:**
  - Bucharest, Romania (March 2017)
  - Cape Town, South Africa (October 2017)
  - Cologne, Germany (April 2018)
  - San Diego, USA (October 2018)
- **Improved JARUS functioning**
  - Two Chairs for a global representation
  - Fixed Plenary Meeting locations
  - SCB: better procedures and more transparent
- **Internal Consultations**
  - SORA Standard Scenario & Annexes
  - UAS Ops Categorization “Section 5 - High Risk Operations”
  - AMC RPAS.1309 (Issue 3)
  - CAT B Operations

ACTIVITIES 2017-2018

- **External Consultations**
  - UAS Operational Categorization - Section 4 – Category B
  - OPS Cat A
  - SORA Package Version 2.0
  - UAS Operational Categorization: Category C
- **JARUS Publications:**
  - Guidance Material to JARUS-FCL Recommendation
  - Specific Operations Risk Assessment (SORA)
  - Recommendations for Unmanned Aircraft Systems (UAS) Category A Operations - *July 2018*
  - JARUS Glossary – *July 2018*
- **Cooperation with ICAO:**
  - JARUS participated in Drone Enable conference (September 2017)
  - JARUS participated in the Global Air Navigation Industry Symposium (December 2017)
  - JARUS Chair participate in the UAS Advisory Group:
    - UTM – A Common Framework With Core Boundaries for Global Harmonization
    - Chair is supported by a small team

UPCOMING ACTIVITIES

- Work on competencies (WG1)
- Rules for OPS in Cat A & B (WG-2)
- CS-UAS and Type Certificate with Operational limitations and concept o High Level Standard Mitigation (WG3)
- Detect and avoid Design Objectives and requirements for Surveillance; Remain Well Clear and Collision Avoidance (WG-4)
- Framework for defining and refining C2 Link specifications (WG-5)
- SORA Annexes and Standard Scenarios development (WG-6)
- RPAS Operational Categorization (WG-7)
- Brainstorming on the future of JARUS

Categorisation

- EASA's perspective on Categorisation
- Developed by JARUS
- Cat A changes to original proposal

New Basic Regulation envisages that all civil UAS are under EU competence

OPEN

Low risk

NO-PRE APPROVAL

LIMITATIONS : 25 kg; Visual line of sight (VLOS), height <120m; system of zones

3 SUB-CATEGORIES: fly over, close, far from people

CE MARKING allows for design requirements

SPECIFIC

Increased risk

Authorisation by NAA based on specific operation risk assessment (SORA)

STANDARD SCENARIOS

Optional concept of approved operator with privilege

CERTIFIED

Risk as manned aviation

Certification of UAS and operator and licenced pilot (unless autonomous flight)

EASA accepts application in its present remit

Some systems (Datalink, Detect and Avoid, …) may receive an independent approval

Background and principles for operations of civil drones in open and specific categories

- Operation centric; performance and risk based however ensuring legal certainty.
- Allows an open category with a significant scope
- Integrates both aviation and product legislation (CE marking)
- Cover commercial and hobby thus includes model aircraft
- Clarify the role of Member States and provide flexibility to them
- Includes registration of operators and certified unmanned aircraft, identification and geo awareness
- Contributes to security, privacy and environment protection
- Key role of cooperation:
  - Member States; Unmanned and Manned Aircraft Communities
  - EU Commission, other EU Agencies and EUROCONTROL
  - ICAO, JARUS, FAA, Transport Canada

Schedule legislative proposal

- Opinion published 6 February in the form of an implementing and delegated act
- Several meetings with Member States and Stakeholders were organised by EC with support from EASA
- The first EC Inter Service Consultation has been performed
- First Commission Services draft implementing and delegated acts have been circulated
- 2nd Inter Service Consultation finishes early September
- Implementing act should be submitted for vote at EASA Committee end of October
- Implementing and delegated acts should be published end of 2018