International Cooperation on UAS

and Cooperation with other EU Agencies

Drone Workshop

Singapore, June 12-13, 2018

Your safety is our mission.

JARUS

Joint Authorities for Rulemaking on Unmanned Air Systems

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What is JARUS

JARUS is a group of experts from 54 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 is currently chaired by EASA, assisted by 2 Co-Chairs

JARUS Members as of June 2018

Australia
Austria
Belgium
Brazil
Canada
China
Colombia
Croatia
Czech Republic
Denmark
EASA
EUROCONTROL
Estonia
Finland
France
Georgia
Germany
Greece
India
Ireland
Israel

Italy
Jamaica
Japan
Kenya
Latvia
Luxembourg
Macedonia
Malaysia
Malta
Moldova
Montenegro
Netherlands
New Zealand
Norway
Poland
Portugal
Qatar
Romania
Russian Federation

Serbia
Singapore
Slovakia
Slovenia
South Africa
South Korea
Spain
Sweden
Switzerland
Thailand
Trinidad And Tobago
Turkey
United Arab Emirates
United Kingdom
United States
Uruguay

Stakeholders Consultation Body

At the end of 2015, the SCB was established representing Industry:

➤ Aircraft Manufacturers (AIA and ASD)

➤ Unmanned System Industry (AUVSI, UVSI and small UAV Coalition)

➤ ANSPs (CANSO and COCESNA)

➤ Standardization Bodies (EUROCAE and RTCA)

➤ Operators and Pilots (IAOPA, IBAC, IFALPA, IFATCA, IATA)

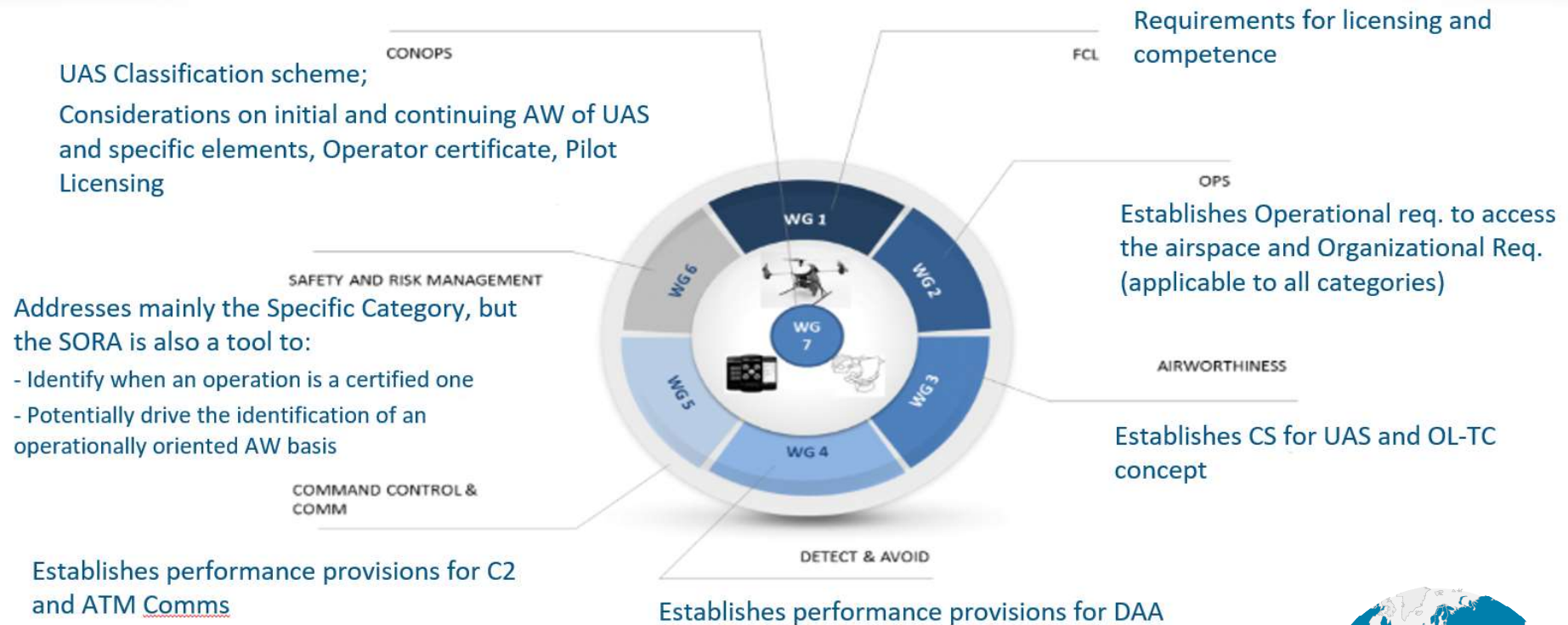Experts from the SCB have been contributing to the JARUS Working Groups efforts.

ASD	Aerospace and Defence Industries Association of Europe
canso	Civil Air Navigation Services Organisation
DRONE ALLIANCE EUROPE	Drone Alliance Europe
EHA EUROPEAN HELICOPTER ASSOCIATION	European Helicopter Association

FAI	Fédération Aéronautique Internationale
IAOPA	The international Council of Aircraft Owner and Pilot Associations

IATA	The International Air Transport Association
IFATCA	International Federation of Air Traffic Controllers' Associations
IFALPA The Global Voice of Pilots	The International Federation of Air Line Pilots' Associations
SMALL UAV COALITION A Partnership for Safety & Innovation	Small UAV Coalition
UVS INTERNATIONAL	UVS International

UAS Classification scheme;

Considerations on initial and continuing AW of UAS and specific elements, Operator certificate, Pilot Licensing

CONOPS

Requirements for licensing and competence

FCL

OPS

Establishes Operational req. to access the airspace and Organizational Req. (applicable to all categories)

SAFETY AND RISK MANAGEMENT

Addresses mainly the Specific Category, but the SORA is also a tool to:
- Identify when an operation is a certified one
- Potentially drive the identification of an operationally oriented AW basis

AIRWORTHINESS

Establishes CS for UAS and OL-TC concept

COMMAND CONTROL & COMM

Establishes performance provisions for C2 and ATM Comms

DETECT & AVOID

Establishes performance provisions for DAA

WG 1
WG 2
WG 3
WG 4
WG 5
WG 6
WG 7

EASA actively participate in all JARUS WGs

JARUS — Joint Authorities for Rulemaking of Unmanned Systems

JARUS Deliverables

➢ JARUS deliverables/products are recommended certification specifications and operational provisions made available to interested parties such as ICAO, NAAs and regional authorities for their consideration and use.

➢ JARUS does NOT develop law or mandatory standards

➢ It is up to NAAs and regional authorities to decide how to use the harmonized provisions produced by JARUS

➢ Before publication the recommendations are also undergoing external consultation

➢ **EASA is committed to use JARUS deliverables as far as possible in rulemaking activities**

JARUS Deliverables Overview 2013 - 2017

- 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*

Activities Overview 2017 - 2018

- **JARUS Plenary Meetings:**
  - Bucharest, Romania (March 2017)
  - Cape Town, South Africa (October 2017)
  - Cologne, Germany (April 2018)
  - San Diego, Unites States of America (Fall 2018)

- **Improved JARUS functioning**
  - 1 Chair and 2 Co-Chairs (global representation)
  - Fixed Plenary Meeting locations
  - SCB: better and more transparent procedures

- **Internal Consultations**
  - SORA Standard Scenario & Annexes
  - UAS Ops Categorization "High Risk Operations"

➤ **External Consultations**

   ➤ UAS Operational Categorization - Section 4 – Category B

   ➤ OPS Cat A (closed on 31st Dec)

➤ **Cooperation with ICAO:**

   ➤ JARUS participated in Drone Enable conference

   ➤ JARUS participated in the Global Air Navigation Industry Symposium

   ➤ JARUS Chair participate in the UAS Advisory Group, supported by leadership team

Upcoming Activities (1)

- Work on competencies (WG1)

- Rules for OPS in Cat A & B (WG-2)

- CS-UAS and Type Certificate with Operational limitations (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 Standard Scenarios and Annexes development (WG-6)

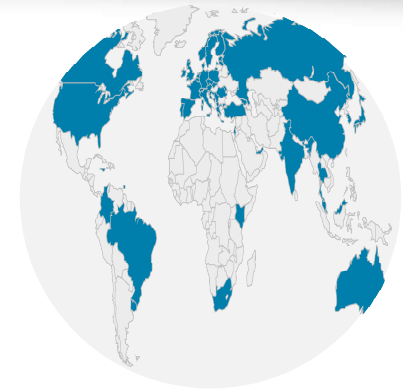- RPAS Operational Categorization (WG-7)

Upcoming Activities (2)

- Brainstorming on the future of JARUS has led to identify potential; domains in which JARUS should perform future activity (e.g.: Autonomy, guidelines for training / tests, cybersecurity, frequency allocation, …)

- Focus groups established to address how JARUS should proceed in the future on 2 domains:

  - Recommendation for a work program on UTM/U-space

  - Legal Status, IPR, Accreditation

ICAO RPAS Panel

▶ "RPAS": refers to operations in international air traffic and excludes autonomous systems (remote pilot always in the loop)

▶ Scope:

  ▶ Certified IFR operations mainly in controlled airspace

  ▶ WGs: AW, C2, DAA, FCL, OPS, ATM, HITS

  ▶ **EASA actively participates in AW, DAA, FCL and is involved in C2**

ICAO RPAS Panel

- AW:
  - Develop AW related provisions for RPA and RPS amending Annex 8
    - SARPS in consultation, working papers under development
- DAA and C2:
  - Currently working on Annex 2, 6 and 10
- FCL:
  - Amendment to Annex 1 (pilot licensing) adopted by the Air Navigation Commission: introduction of the remote pilot licence
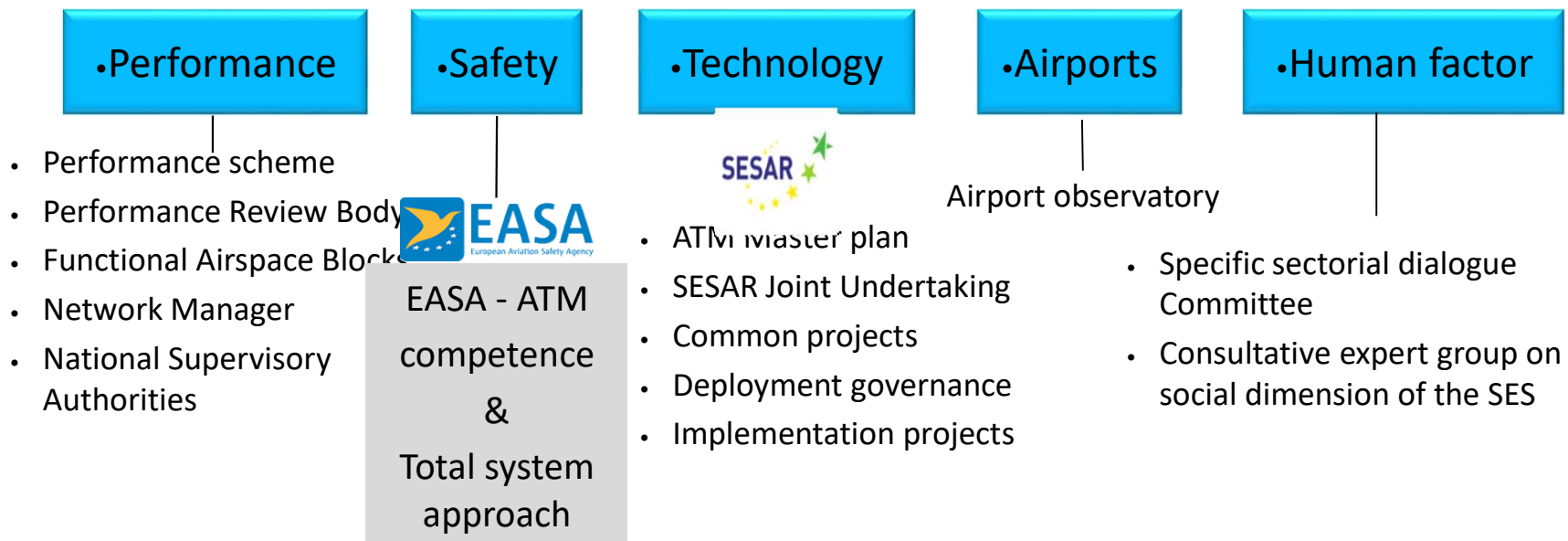
Further International Cooperations

- **Cooperation with FAA**
  - Regular exchanges on drones
  - Participation in Micro UAS ARC (May 2016)

- **Cooperation with Transport Canada**
  - Recent exchange on drone activities performed at the Agencies

- **Cooperation with CAAC:**
  - Exchange on Drones between Authorities (2017)
  - Workshop on Drones (June 2018)

- **Cooperation with EUROCONTROL**
  - Work program on Drones
  - ECTL Secretary General of JARUS
  - ECTL vice-chair of ICAO RPAS panel

- **Cooperation with CAAS**
  - **Exchange on Drones among Authorities (June 2018) - More to come !**

➤ Cooperation with SJU

•Performance	•Safety	•Technology	•Airports	•Human factor

- Performance scheme
- Performance Review Body
- Functional Airspace Blocks
- Network Manager
- National Supervisory Authorities

EASA - ATM

competence

&

Total system

approach

- ATM Master plan
- SESAR Joint Undertaking
- Common projects
- Deployment governance
- Implementation projects

Airport observatory

- Specific sectorial dialogue Committee
- Consultative expert group on social dimension of the SES

Objectives of EASA's involvement

➤ **EASA and SJU Signed a MoC to ensure:**

  ➤ <u>Objectives for Regulatory activities:</u>

    ⟫ Alignment of ATM Master Planning activities with EASA's programmes and activities. Development of regulatory means and industry standards to support SESAR solution implementation.

    ⟫ Alignment of international cooperation activities.

  ➤ <u>Objectives for the Technical support:</u>

    ⟫ Support and advice: Reviewing final technical deliverables (safety cases, safety assessments, safety performance requirements, risk assessments, interoperability and technical files) with a particular focus on essential operational changes; and

    ⟫ Providing support/advice for very large scale demonstration and validation exercises

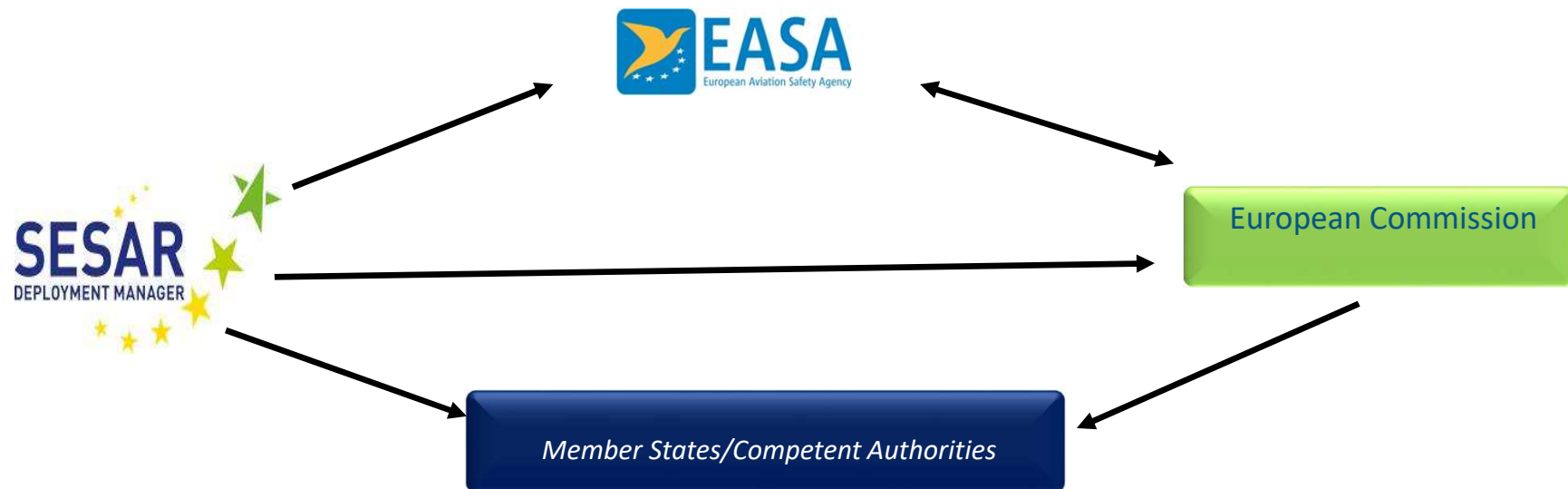# Main areas on involvement in SESAR 2020

- **Technical involvement:**
  - Between others: CNS, RPAS, safety nets (incl. ACAS), projects having impacts at Pan-EU network level and all very large scale demonstrations;

- **ATM MP and ATM MP updates;**

- **Review and advice EC and SJU on future Common Projects** (SESAR solutions requiring synchronisation and harmonisation for their implementation);

- **Review of deployment programmes and advising EC, SJU and SESAR Deployment Manager.**

- The SDM establishes and manages the deployment plan
- EASA advise the Commission, produce necessary soft law, ensure end to end certification, ensure oversight and review overall safety case
- Commission produce the necessary regulations to support the deployment plan
- MS do certification and oversight locally and review the applications safety case

Other EU Agencies

- Cooperation with:
  - EDA (European Defence Agency) for:
    - Airworthiness Regulatory Framework Working Groups
    - Support for MALE integration in the airspace
  - EMSA (European Maritime Safety Agency) and FRONTEX
    - Development of Memorandum of Cooperation to advise on drone safety and to exchange information
  - CEPT / ECC
    - Frequency Allocation for drones in the Open and Specific Category

Standardization Bodies

- EASA cooperates with several standardization bodies, among which:
  - EUSCG (European Standardization Cooperation Group) aimed at the definition of a Rolling Development Plan for standards adequate to cover the Open UAS Catgeory
  - EUROCAE (on DAA, Design and AW, C2 and other domains)
    - EUROCAE chairs EUSCG
  - CEN/CENELEC/ETSI (official bodies tasked by the EC to adopt harmonized EU standards)
  - ASTM
    - Major source for AMCs of new performance based CS-23