



JARUS WORKING GROUPS ACTIVITIES OVERVIEW

This documents provides an overview of the past and future activities of the seven JARUS Working Groups (WG):

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WORKING GROUP 1 – FLIGHT CREW LICENCING

Task # 1	FLIGHT CREW LICENCING - <u>COMPLETED</u>																					
Objective	<ul style="list-style-type: none"> ✓ This JARUS-FCL Recommendation ultimately aims at providing recommendations for States to use for their own national legislation, concerning uniform personnel licensing and competencies for personnel involved in the operation of remotely piloted aircraft systems (RPAS). ✓ This JARUS-FCL Recommendation are aimed at the certified category as published by EASA and for the specific category when applicable 																					
Description	JARUS FCL recommendation																					
Deliverable (s)	JARUS FCL RECOMMENDATION Ed.00.1 published on 09/09/2015 at http://jarus-rpas.org/publications																					
Start Date	2010																					
End Date	2015																					
WG leader	Benny Davidor (CAA Israel)																					
Members	<table border="1"> <thead> <tr> <th>Organisation</th> <th>Name</th> </tr> </thead> <tbody> <tr> <td>CAA China</td> <td>Chen Guangcheng</td> </tr> <tr> <td>CAA China</td> <td>Bai Yiqin</td> </tr> <tr> <td>EASA</td> <td>Henri Rodenburg</td> </tr> <tr> <td>German Federal Aviation Office</td> <td>Daniel Phiesel</td> </tr> <tr> <td>CAA Israel</td> <td>Benny Davidor</td> </tr> <tr> <td>IAA Ireland</td> <td>Simon White</td> </tr> <tr> <td>Singapore</td> <td>Sio Somerton</td> </tr> <tr> <td>South African CAA</td> <td>Kirsty Barker</td> </tr> <tr> <td>AESA Spain</td> <td>Luis Conde</td> </tr> </tbody> </table>		Organisation	Name	CAA China	Chen Guangcheng	CAA China	Bai Yiqin	EASA	Henri Rodenburg	German Federal Aviation Office	Daniel Phiesel	CAA Israel	Benny Davidor	IAA Ireland	Simon White	Singapore	Sio Somerton	South African CAA	Kirsty Barker	AESA Spain	Luis Conde
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South African CAA	Kirsty Barker																					
AESA Spain	Luis Conde																					



Task # 2	GUIDANCE MATERIAL TO FLIGHT CREW LICENCING																					
Objective	<ul style="list-style-type: none"> ✓ GM to flight crew licencing provides a harmonised basis to regulate organisations involved in the life cycle of civil RPAS. ✓ The JARUS-FCL Recommendation and its GM may be used by the competent authorities to develop provisions regarding licensing and competencies in RPAS activities in relation to the concept of operations in their respective States or Regions. 																					
Description	JARUS GM for FCL recommendation																					
Deliverable (s)	First draft of JARUS FCL GM – Internal consultation – 5/2016																					
Start Date	2015																					
End Date	2017																					
WG leader	Benny Davidor (CAA Israel)																					
Members	<table border="1" data-bbox="539 1099 1374 1688"> <thead> <tr> <th data-bbox="547 1104 954 1155">Organisation</th> <th data-bbox="962 1104 1366 1155">Name</th> </tr> </thead> <tbody> <tr> <td data-bbox="547 1160 954 1211">CAA China</td> <td data-bbox="962 1160 1366 1211">Chen Guangcheng</td> </tr> <tr> <td data-bbox="547 1216 954 1267">CAA China</td> <td data-bbox="962 1216 1366 1267">Bai Yiqin</td> </tr> <tr> <td data-bbox="547 1272 954 1323">EASA</td> <td data-bbox="962 1272 1366 1323">Henri Rodenburg</td> </tr> <tr> <td data-bbox="547 1328 954 1379">German Federal Aviation Office</td> <td data-bbox="962 1328 1366 1379">Daniel Phiesel</td> </tr> <tr> <td data-bbox="547 1384 954 1435">CAA Israel</td> <td data-bbox="962 1384 1366 1435">Benny Davidor</td> </tr> <tr> <td data-bbox="547 1440 954 1491">IAA Ireland</td> <td data-bbox="962 1440 1366 1491">Simon White</td> </tr> <tr> <td data-bbox="547 1496 954 1547">CAA Singapore</td> <td data-bbox="962 1496 1366 1547">Sio Somerton</td> </tr> <tr> <td data-bbox="547 1552 954 1603">South African CAA</td> <td data-bbox="962 1552 1366 1603">Kirsty Barker</td> </tr> <tr> <td data-bbox="547 1608 954 1659">AESA Spain</td> <td data-bbox="962 1608 1366 1659">Luis Conde</td> </tr> </tbody> </table>		Organisation	Name	CAA China	Chen Guangcheng	CAA China	Bai Yiqin	EASA	Henri Rodenburg	German Federal Aviation Office	Daniel Phiesel	CAA Israel	Benny Davidor	IAA Ireland	Simon White	CAA Singapore	Sio Somerton	South African CAA	Kirsty Barker	AESA Spain	Luis Conde
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AESA Spain	Luis Conde																					



Working Group 2 – Operations

Task # 1	JARUS ORG
Task # 2	JARUS OPS
Objective	<p>JARUS-ORG and JARUS-OPS recommendations aim at governing oversight of organizations involved in:</p> <ul style="list-style-type: none"> ✓ The design, production, and continuing airworthiness of Remotely Piloted Aircraft Systems (RPAS); ✓ RPAS operations; ✓ Training of remote pilots for RPAS; ✓ Provision of Communication (COM) Service for command and control; ✓ Provision of Remote Pilot Station (RPS) services.
Description	<p>Initial focus will be on the ‘A’ and ‘B’ category. The ‘C’ category will be addressed later.</p> <p>The output of the Working Group will be a report containing the proposal for the operational requirements (JARUS-OPS) and a report containing the proposal for the organization requirements (JARUS-ORG).</p> <p>Workplan:</p> <ol style="list-style-type: none"> 1. Develop material for the ‘A’ and ‘B’ category in parallel. Both will go through a similar process <ol style="list-style-type: none"> a. Draft assumptions based on the JARUS overall Concept of Operations and the various detailed Concepts of operations, like e.g. for ATM, C2 and DAA. b. Evaluate currently available draft documents for JARUS-OPS and JARUS-ORG on applicability and required additions. c. Develop the required structure of the documents. d. Develop text for the documents for working group approval, JARUS plenary approval and publication. 2. Develop material for the ‘C’ category. <ol style="list-style-type: none"> a. Evaluate received comments from external consultation on JARUS-ORG. b. Evaluate received comments from internal consultation on JARUS-OPS. c. Prepare JARUS-OPS document for external consultation. d. Evaluate received comments from external consultation on JARUS-OPS. e. Prepare JARUS-OPS document for official publication.



Deliverable (s)	Note: JAR-DEL-WG2-ORG-No. XX- document already published for external consultation in 2014 but needs to be restructured to be aligned with Categorization CONOPS from WG 7.		
	Task	Topic	Date
	WG-2 charter completed/ approved	WG-2 Charter	September 2016
	WG-2/2	Assumptions Paper for 'A' category Assumptions Paper for 'B' category	July 2016
	WG-2/3	Document structure for JARUS-ORG and JARUS-OPS	September 2016
	WG-2/4	JARUS-ORG and JARUS-OPS for 'A' category for internal consultation	January 2017
	WG-2/5	JARUS-ORG and JARUS-OPS for 'A' category for external consultation	April 2017
	WG-2/6	JARUS-ORG and JARUS-OPS for 'A' category for publication	September 2017
	WG-2/7	JARUS-ORG for 'B' and JARUS-OPS category for internal consultation	April 2017
	WG-2/8	JARUS-ORG and JARUS-OPS for 'B' category for external consultation	September 2017
	WG-2/9	JARUS-ORG and JARUS-OPS for 'B' category for publication	April 2018
	WG-2/10	JARUS-OPS for 'C' category for external consultation	September 2018
	WG-2/11	JARUS-OPS for 'C' category for publication	April 2019
WG-2/12	JARUS-ORG for 'C' category for publication	September 2018	
Start Date	Jul 2016 for Cat "A" and Cat "B"		



End Date	Sep 2017 for Cat "A" / Apr 2018 for Cat "B" / Sep 2018 for Cat "C"
WG leaders	Liu Hao (co-rapporteur) Ron van de Leijgraaf (co-rapporteur)
ORG WG Team Leader	Filippo Tomasello (Estonian CAA)
OPS WG Team Leader	Nigel Dunkerley (Transport Malta)

Members	<u>Members WG 2 ORG</u>	
	Organisation	Name
	EUROCONTROL	Julia Sanchez
	Dutch MoT	Ron van de Leijgraaf (co-rapporteur)
	South African CAA	Dale McErlean
	DJI	Christian Struwe
	IFATCA/NATCA	Chris Stephenson
	<u>Members WG 2 OPS</u>	
	Organisation	Name
	National Research Center of ATM Law and Standard	Liu Hao(co-rapporteur)
	EUROCONTROL	Anastasiia Sobchenko
	DGCA France	Victor Neel
	IAA Ireland	Lou Fine
	AESA Spain	Laura Lopez

Working Group 3 – Airworthiness

Task # 1	CS-LURS- <u>COMPLETED</u>
Objective	<ul style="list-style-type: none"> ✓ Recommend a set of technical requirements for all aspects linked to the safe operation of RPAS. ✓ For CS-LURS, the expected outcome is to establish RPAS Certification Specification and associated AMC material for Light Unmanned Rotorcraft Systems up to 750 kg.
Description	<ul style="list-style-type: none"> ✓ Certification Specification based on existing Requirements for manned and unmanned rotorcrafts and aircrafts in general (CS-VLR, FAR/CS-27 & 29, STANAG-4671, STANAG-4703) ✓ Covers all technical aspects of the RPA and RPS ✓ This should comply with ICAO Annex 8 ✓ Intended to be used for the “Regulated Category”, but some or all can be used in the “Specific Category” as well, as part of the outcome of the Specific Operational Risk Assessment (SORA). ✓ Can be used for “Standard Operation” Requirements which may go in the “Open Category” or “Restricted Category”
Deliverable (s)	CS-LURS published on 31/10/2013 at http://jarus-rpas.org/publications
Start Date	By founding of JARUS
End Date	September 2014
WG-Leader	Markus Farner (FOCA Switzerland)
Members	See list on page 13 and 14



WG 3 # 2	CS-LUAS - <u>COMPLETED</u>
Objective	<ul style="list-style-type: none">✓ Recommend a set of technical requirements for all aspects linked to the safe operation of RPAS.✓ For CS-LUAS, the expected outcome is to establish RPAS Certification Specification and associated AMC material for Light Unmanned Aircraft Systems up to 750 kg.
Description	<ul style="list-style-type: none">✓ Certification Specification based on existing Requirements for manned and unmanned rotorcrafts and aircrafts in general (CS-VLA, FAR/CS-23 & 25, STANAG-4671, STANAG-4703)✓ Covers all technical aspects of the RPA and RPS✓ This should comply with ICAO Annex 8✓ Intended to be used for the "Regulated Category", but some or all can be used in the "Specific Category" as well, as part of the outcome of the Specific Operational Risk Assessment (SORA).✓ Can be used for "Standard Operation" Requirements which may go in the "Open Category" or "Restricted Category"
Deliverable (s)	CS-LUAS (JAR_DEL_WG3_D.02_CS-LUAS_V1.0)
Start Date	September 2014
End Date	23 December 2016
WG-Leader	Markus Farner (FOCA Switzerland)
Members	See list on page 13 and 14



Task # 3	Reorganisation of CS-LURS & CS-LUAS to CS-UAS											
Objective	<ul style="list-style-type: none"> ✓ Through this reorganisation of the current CS-LURS & CS-LUAS, a new concept will be introduced to cover all design concepts of RPAS. 											
Description	<ul style="list-style-type: none"> ✓ The certification specifications will be replaced by objective requirements that are design-independent and applicable to the entire range of RPAS. These objective requirements, due to their higher abstract level, will become also suitable for fix-wing, rotary-wing and any other aircraft design. ✓ These objective requirements will be accompanied by acceptable Airworthiness Design Standards (ADSs), where the design-specific details are captured. ✓ The new concept of objective rules accompanied by ADS allows the use of appropriate and proportionate standards as Acceptable Means of Compliance (AMC) to CS-RPAS. This flexibility is intended to encourage the introduction of safety-enhancing features and reduce certification costs for these types of aeroplanes. ✓ Intended to be used for the “Regulated Category”, but some or all can be used in the “Specific Category” as well, as part of the outcome of the Specific Operational Risk Assessment (SORA). ✓ Can be used for “Standard Operation” Requirements which may go in the “Open Category” or “Restricted Category” 											
Deliverable (s)	CS-LURS (JAR_DEL_WG3_D.03_CS-RPAS_V1.0)											
Start Date	Beginning 2017											
End Date	End 2018											
WG-Leader	Markus Farner (FOCA Switzerland)											
Members	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;">Organisation</th> <th style="width: 40%;">Name</th> </tr> </thead> <tbody> <tr> <td>CASA Australia</td> <td>Glen Steemson</td> </tr> <tr> <td>ANAC Brazil</td> <td>Alessandro Adinolfi</td> </tr> <tr> <td>Estonian CAA</td> <td>Kalle Allikson</td> </tr> <tr> <td>Civil Aviation Management Institute of China</td> <td>Lu Kun</td> </tr> </tbody> </table>		Organisation	Name	CASA Australia	Glen Steemson	ANAC Brazil	Alessandro Adinolfi	Estonian CAA	Kalle Allikson	Civil Aviation Management Institute of China	Lu Kun
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	EASA	Cristina Angulo
	EUROCONTROL	Dominique Colin
	FAA	James Blyn
	FAA	James D. Foltz
	Irish Aviation Authority	Gerard Lawlor
	ENAC Italy	Giovanni Di Antonio
	ENAC Italy	Vito Foti
	CAA Japan	Takuya Yamaguchi
	CAA Korea	Won Jung-Yun
	CAA-NL	Joseph van Baal
	CAA Norway	Jack Farstad
	CAA Romania	Catalin Dumitru Marin
	TSAGI Russia	Valery A. Matveev
	TSAGI Russia	Vladimir Shibaev
	CAA Singapore	Chee Wei For
	CAA Singapore	Ming Ren Quah
	CAA Singapore	Gerald Hock Guan Poh
	CAA South Africa	Georg Portwig
	SENASA Spain	Francisco Javier Ajo Ortiz
	CAA Turkey	Gökhan Kazan
	CAA UK	Keith Dodson
	CAA UAE	Hamad Al Mutawa



Working Group 4 – DAA Design Objective document

Task # 1	DAA DESIGN OBJECTIVE DOCUMENT																	
Objective	<ul style="list-style-type: none"> ✓ Perform internal consultation, adjudicate and prepare for external consultation. ✓ Perform external consultation, adjudicate and prepare for release. ✓ To establish the concept and principles for derivation of DAA Design Objective(s), including the TLS for the probability of MAC; ✓ To identify the relevant components in the total aviation system, including how they relate to one another in determining whether safety requirements for the risk of collision are met, based on reasonable assumptions, based on current regulations and practices, but outside the control of the RPAS designer; ✓ To propose a quantification for the contributions of the components (= external barriers) to maintain the probably of MAC within the proposed TLS; and finally ✓ To provide a justification and rationale for the derived DAA Design Objective(s) in different scenarios, applicable to both the 'Remain Well Clear' and Collision Avoidance functions. 																	
Description	<p>The document is to establish the concept and principles to derive Design Objective(s) for DAA, to mitigate the risk of Mid-Air collision (MAC). The design objectives are essentially based on airspace requirements. DAA is to address the risk of MAC relative to operation in a particular airspace. This means that DAA capability is relative agnostic to the RPAS categories of Open, Specific or Certificated. The document is to address integrated operations with manned aviation in airspace classes A-G, which may include operations within Specific and Certificated RPAS categories.</p>																	
Deliverable (s)	<p>JARUS Design Objectives for RPAS Detect and Avoid. Subject to Internal consultation until June 3 2016.</p>																	
Start Date	2013																	
End Date	Version #1: 2016 / Version #2: 2018																	
WG leader	Hans Böhlin (FMV/SE CAA)																	
Members	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th data-bbox="427 1503 847 1563">Organisation</th> <th data-bbox="847 1503 1267 1563">Name</th> </tr> </thead> <tbody> <tr> <td data-bbox="427 1563 847 1624">Austrocontrol</td> <td data-bbox="847 1563 1267 1624">Gerhard Lippitsch</td> </tr> <tr> <td data-bbox="427 1624 847 1684">EASA</td> <td data-bbox="847 1624 1267 1684">Hette Hoekema</td> </tr> <tr> <td data-bbox="427 1684 847 1744">FAA</td> <td data-bbox="847 1684 1267 1744">Paul Campbell</td> </tr> <tr> <td data-bbox="427 1744 847 1805">German MAA</td> <td data-bbox="847 1744 1267 1805">Matthias Grall</td> </tr> <tr> <td data-bbox="427 1805 847 1865">ENAC Italy</td> <td data-bbox="847 1805 1267 1865">Gaetano Santaniello</td> </tr> <tr> <td data-bbox="427 1865 847 1926">Romanian CAA</td> <td data-bbox="847 1865 1267 1926">Cristina Pavel</td> </tr> <tr> <td data-bbox="427 1926 847 1982">South African CAA</td> <td data-bbox="847 1926 1267 1982">Zia Meer</td> </tr> </tbody> </table>		Organisation	Name	Austrocontrol	Gerhard Lippitsch	EASA	Hette Hoekema	FAA	Paul Campbell	German MAA	Matthias Grall	ENAC Italy	Gaetano Santaniello	Romanian CAA	Cristina Pavel	South African CAA	Zia Meer
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German MAA	Matthias Grall																	
ENAC Italy	Gaetano Santaniello																	
Romanian CAA	Cristina Pavel																	
South African CAA	Zia Meer																	



Task # 2	DAA CONOPS DRAFT FOR VLL OPEN AND SPECIFIC													
Objective	<ul style="list-style-type: none"> ✓ Describe the DAA Concept of operations for RPAS. ✓ Describe interoperability from an DAA perspective with other airspace users and ATC as applicable ✓ To be elaborated when next version is defined, planned continuation during 2016. 													
Description	<p>The purpose is to describe the operational context for DAA for operation with Open, Specific and Certificated category RPAS. The CONOPS is to elaborate particularly on DAA interoperability in the airspace.</p> <p>This first version Draft DAA CONOPS for VLL operation, aims at supporting initial developments within JARUS WGs on VLL operation with RPAS categories Open and Specific.</p> <p>The ATM CONOPS (Eurocontrol draft March 2016) is the baseline for the document.</p>													
Deliverable (s)	<p>Version 1; DAA CONOPS draft for VLL Open and Specific.</p> <p>Version 2; DAA CONOPS.</p>													
Start Date	April 2016													
End Date	May 2016													
WG leader	Hans Böhlin (FMV/SE CAA)													
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MITRE	Brian Patterson													
NLR	Hans Brants													
NLR	Job Smeltink													
NLR	Lennaert Speijker													
SAAB	Bengt-Göran Sundqvist													

Working Group 5 – Command and Control

Task # 1	RPAS C2 Link RCP- COMPLETED																	
Objective	<p>The purpose of this guidance material is to :</p> <ul style="list-style-type: none"> ✓ Explain the concept of C2 link RCP ✓ Identify C2 link RCP requirements applicable to the provision of C2 communications ✓ Support the use of command and control communications within a remote piloted aircraft system, and ✓ Provide a basis for the application of C2 link RCP in the context of operational scenarios. 																	
Description	<p>The concept of required communications performance of the C2 link (C2 link RCP) is derived from ICAO Doc 9869 to ensure the consistency if the two concepts are being used for the same technical system. This document is also in line with ICAO Doc 10019. The C2 link RCP concept characterizes the performance required of communication capabilities that support RPAS C2 functions without reference to any specific technology and is open to new technology. This approach is essential to the revolution of operational concepts that use emerging technologies.</p>																	
Deliverable (s)	<p>JAR-DEL-WG5-RPAS C2 Link RCP published on the 10th Oct 2014. On the JARUS website http://jarus-rpas.org</p>																	
Start Date	Nov 2013																	
End Date	10 Oct 2014																	
WG-Leader	Dominique Colin																	
Members	<table border="1"> <thead> <tr> <th data-bbox="539 1491 960 1554">Organisation</th> <th data-bbox="960 1491 1382 1554">Name</th> </tr> </thead> <tbody> <tr> <td data-bbox="539 1554 960 1617">EASA</td> <td data-bbox="960 1554 1382 1617">Filippo Tomasello</td> </tr> <tr> <td data-bbox="539 1617 960 1680">FAA</td> <td data-bbox="960 1617 1382 1680">Ken Fugate</td> </tr> <tr> <td data-bbox="539 1680 960 1742">South African CAA</td> <td data-bbox="960 1680 1382 1742">Thami Stein</td> </tr> <tr> <td data-bbox="539 1742 960 1805">FOCA Switzerland</td> <td data-bbox="960 1742 1382 1805">Markus Farner</td> </tr> <tr> <td data-bbox="539 1805 960 1868">FOCA Switzerland</td> <td data-bbox="960 1805 1382 1868">Roger Larpin</td> </tr> <tr> <td data-bbox="539 1868 960 1930">UK CAA</td> <td data-bbox="960 1868 1382 1930">Gerry Corbett</td> </tr> <tr> <td data-bbox="539 1930 960 1993">UK CAA</td> <td data-bbox="960 1930 1382 1993">Alixtair Maxwell</td> </tr> </tbody> </table>		Organisation	Name	EASA	Filippo Tomasello	FAA	Ken Fugate	South African CAA	Thami Stein	FOCA Switzerland	Markus Farner	FOCA Switzerland	Roger Larpin	UK CAA	Gerry Corbett	UK CAA	Alixtair Maxwell
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EASA	Filippo Tomasello																	
FAA	Ken Fugate																	
South African CAA	Thami Stein																	
FOCA Switzerland	Markus Farner																	
FOCA Switzerland	Roger Larpin																	
UK CAA	Gerry Corbett																	
UK CAA	Alixtair Maxwell																	



Task # 2	Controller Pilot Data Link Communications (CPDLC) - <u>COMPLETED</u>																		
Objective	<p>The purpose of this document is to summarize the most relevant information about CPDLC and the supported ATS services, and to associate them with RPAS operations.</p> <p>This document will propose a set of recommendations to review and change EUROCAE standard ED-228 / RTCA standard DO-350 to cope with the specifics of RPAS. It is recommended by WG 5 that this document be made available to EUROCAE and RTCA.</p>																		
Description	<p>The CPDLC application provides a means of communication between the controller and the pilot, using data link for ATC communication. This application includes a set of clearance / information / request message elements which correspond to the phraseologies used in the radiotelephony environment.</p> <ul style="list-style-type: none"> ✓ The controller is provided with the capability to respond to messages, including emergencies, to issue clearances, instructions and advisories, and to request and provide information, as appropriate. ✓ The pilot is provided with the capability to respond to messages, to request clearances and information, to report information, and to declare or cancel an emergency. ✓ The pilot and the controller are provided with the capability to exchange messages which do not conform to defined formats (i.e. free text messages). 																		
Deliverable (s)	JAR-DEL-WG5-07-D.04 Ed.1.0 published on 02/06/2016 at http://jarus-rpas.org/publications																		
Start Date	May 2015																		
End Date	02 June 2016																		
WG-Leader	Dominique Colin																		
Members	<p>It has varied in the last three years and members did not contribute as much as it was required therefore the WG leader drafted the document. There are no members for the time being. Nevertheless, the WG leader has launched 3 Call for Experts which have been submitted to the Chairman of the SCB (Stakeholders Consultation Body) asking for support.</p> <table border="1"> <thead> <tr> <th>Organisation</th> <th>Name</th> </tr> </thead> <tbody> <tr> <td>EASA</td> <td>David Mancebo</td> </tr> <tr> <td>Estonian</td> <td>Filippo Tomasello</td> </tr> <tr> <td>Estonian CAA</td> <td>Kea Toi</td> </tr> <tr> <td>FAA</td> <td>Ravi Jain</td> </tr> <tr> <td>Dutch Ministry of Infrastructure</td> <td>Petra Syaifoel</td> </tr> <tr> <td>FOCA Switzerland</td> <td>Markus Farner</td> </tr> <tr> <td>FOCA Switzerland</td> <td>Roger Larpin</td> </tr> <tr> <td>UK CAA</td> <td>Gerry Corbett</td> </tr> </tbody> </table>	Organisation	Name	EASA	David Mancebo	Estonian	Filippo Tomasello	Estonian CAA	Kea Toi	FAA	Ravi Jain	Dutch Ministry of Infrastructure	Petra Syaifoel	FOCA Switzerland	Markus Farner	FOCA Switzerland	Roger Larpin	UK CAA	Gerry Corbett
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UK CAA	Gerry Corbett																		



Task # 3	RPAS RLP - <u>COMPLETED</u>							
Objective	<p>The purpose of this document is to :</p> <ul style="list-style-type: none"> ✓ Update the concept of C2 link RCP; ✓ Include the lessons learned from application of the C2 RCP concept. 							
Description	<p>The concept of required link performance of the C2 link (RLP) provides a common understanding of the parameters of the C2 Link parameters. It has been introduced in the ICAO RPAS Panel and is used by NATO in their SOP.</p>							
Deliverable (s)	<p>JAR-DEL-WG5-D04 Ed.1.0 published on 30/05/2016 at http://jarus-rpas.org/publications.</p>							
Start Date	Sep 2015							
End Date	May 2016							
WG-Leader	Dominique Colin							
Members	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th data-bbox="539 1128 959 1182">Organisation</th> <th data-bbox="959 1128 1378 1182">Name</th> </tr> </thead> <tbody> <tr> <td data-bbox="539 1182 959 1236">ACES Inc</td> <td data-bbox="959 1182 1378 1236">Michael Neale</td> </tr> <tr> <td data-bbox="539 1236 959 1283">EUROCONTROL</td> <td data-bbox="959 1236 1378 1283">Willem Brondsema</td> </tr> </tbody> </table>		Organisation	Name	ACES Inc	Michael Neale	EUROCONTROL	Willem Brondsema
Organisation	Name							
ACES Inc	Michael Neale							
EUROCONTROL	Willem Brondsema							



Task # 4	C 2 Link CONOPS					
Objective	Required to complement the RPAS ATM CONOPS					
Description	<p>This document describes the C2 Link Concept of operations for RPAS. It considers all types of unmanned operations and makes no distinction between civil or military operations as the integration challenges are identical. The CONOPS assumes the required technology, standards, procedures and regulations will be available in the 2018 to 2023 time-frame.</p> <p>This CONOPS is aligned as closely as possible with the EASA airworthiness CONOPS and ATM CONOPS.</p> <p>The CONOPS aims to adhere to the RPAS integration principles and thereby ensure no negative impact on manned aviation while supporting the development of this new type of industry.</p>					
Deliverable (s)	JAR-DEL-WG5-XX-C2Link CONOPS					
Start Date	May 2016					
End Date	2016					
WG-Leader	Dominique Colin					
Members	<table border="1" data-bbox="539 1283 1375 1386"> <thead> <tr> <th data-bbox="539 1283 962 1337">Organisation</th> <th data-bbox="962 1283 1375 1337">Name</th> </tr> </thead> <tbody> <tr> <td data-bbox="539 1337 962 1386">EUROCONTROL</td> <td data-bbox="962 1337 1375 1386">Willem Brondesema</td> </tr> </tbody> </table>		Organisation	Name	EUROCONTROL	Willem Brondesema
Organisation	Name					
EUROCONTROL	Willem Brondesema					

Working Group 6 – Safety & Risk Management

Task # 1	AMC RPAS 1309 - COMPLETED																					
Objective	<ul style="list-style-type: none"> ✓ Define top level RPAS airworthiness, system safety objectives and guidance material (AMC RPAS. 1309) ✓ Establish RPAS recommendations and conclusions on RPAS failure classifications in terms of severity definition and probability requirements. ✓ Provide a scoping paper that covers the general 1309 philosophy when applied to RPAS 																					
Description	AMC RPAS.1309 and Scoping Paper																					
Deliverable (s)	AMC RPAS 1309 (Issue 2) published on 01/11/2015 at http://jarus-rpas.org/publications AMC RPAS 1309 (Issue 3) published by end 2017																					
Start Date	2010																					
End Date	2017																					
WG leader	Lorenzo Murzilli (FOCA Switzerland)																					
Members	<table border="1" data-bbox="539 1245 1378 1771"> <thead> <tr> <th data-bbox="539 1245 963 1301">Organisation</th> <th data-bbox="963 1245 1378 1301">Name</th> </tr> </thead> <tbody> <tr> <td data-bbox="539 1301 963 1357">Croatian CAA</td> <td data-bbox="963 1301 1378 1357">Dario Tomasic</td> </tr> <tr> <td data-bbox="539 1357 963 1413">EASA</td> <td data-bbox="963 1357 1378 1413">Alexandra Florin</td> </tr> <tr> <td data-bbox="539 1413 963 1469">FAA</td> <td data-bbox="963 1413 1378 1469">Jeffrey Bergson</td> </tr> <tr> <td data-bbox="539 1469 963 1525">FAA</td> <td data-bbox="963 1469 1378 1525">James Foltz</td> </tr> <tr> <td data-bbox="539 1525 963 1581">FAA</td> <td data-bbox="963 1525 1378 1581">Ifeolu Onguleye</td> </tr> <tr> <td data-bbox="539 1581 963 1637">FAA</td> <td data-bbox="963 1581 1378 1637">Wes Ryan</td> </tr> <tr> <td data-bbox="539 1637 963 1693">ENAC Italy</td> <td data-bbox="963 1637 1378 1693">Angela Rapaccini</td> </tr> <tr> <td data-bbox="539 1693 963 1749">Latvian CAA</td> <td data-bbox="963 1693 1378 1749">Elina Millere</td> </tr> <tr> <td data-bbox="539 1749 963 1771">UK CAA</td> <td data-bbox="963 1749 1378 1771">Jonathan Hughes</td> </tr> </tbody> </table>		Organisation	Name	Croatian CAA	Dario Tomasic	EASA	Alexandra Florin	FAA	Jeffrey Bergson	FAA	James Foltz	FAA	Ifeolu Onguleye	FAA	Wes Ryan	ENAC Italy	Angela Rapaccini	Latvian CAA	Elina Millere	UK CAA	Jonathan Hughes
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ENAC Italy	Angela Rapaccini																					
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UK CAA	Jonathan Hughes																					



Task # 2	RE-CONCILIATION WITH EUROCAE WG-73 (AMC RPAS.1309)																
Objective	Explore re-conciliation possibilities between WG-6 and EUROCAE WG-73 on means to comply to 1309 (system safety) requirement for RPAS.																
Description	<ul style="list-style-type: none"> ✓ Starting from ER-010 (defining WG-73 position) provide WG-6 position on each recommendation and explore ways to reconcile each. ✓ Collaboration with strong technical focus + small team (3 WG-6 + 3 WG-73) 																
Deliverable (s)	Final report issued on 01/11/2015																
WG leader	Lorenzo Murzilli (FOCA Switzerland)																
Start Date	2015																
End Date	2015																
Members	<p><u>Members</u></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Organisation</th> <th style="text-align: left;">Name</th> </tr> </thead> <tbody> <tr> <td>EASA</td> <td>Alexandra Florin</td> </tr> <tr> <td>FOCA Switzerland</td> <td>Lorenzo Murzilli</td> </tr> <tr> <td>UK CAA</td> <td>Jonathan Hughes</td> </tr> </tbody> </table> <p><u>Participants from WG-73</u></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Organisation</th> <th style="text-align: left;">Name</th> </tr> </thead> <tbody> <tr> <td>IAI</td> <td>Michael Allouche</td> </tr> <tr> <td>NLR</td> <td>Hans Brants</td> </tr> <tr> <td>Thales</td> <td>Andrew Jones</td> </tr> </tbody> </table>	Organisation	Name	EASA	Alexandra Florin	FOCA Switzerland	Lorenzo Murzilli	UK CAA	Jonathan Hughes	Organisation	Name	IAI	Michael Allouche	NLR	Hans Brants	Thales	Andrew Jones
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Task # 3	Specific Operation Risk Assessment (SORA)																					
Objective	✓ Create a methodology to assess the risks of «specific» UAS operations and evaluate relevant mitigations																					
Description	<ul style="list-style-type: none"> ✓ Define holistic risk model and assessment methodology and provide increasing level of detail as well as model validation thanks to advisors involvement ✓ Collaboration with strong technical focus ✓ WG-6 + 4 Advisors (Matternet, AeroVironment, senseFly, EuroUSC) ✓ Introduce the concept of Specific Assurance and Integrity Level (SAIL = level of confidence that a specific operation will stay under control) 																					
Deliverable (s)	<ul style="list-style-type: none"> ✓ Initial version ready for JARUS internal consultation ✓ Core methodology defined, additional details to be implemented in parallel with JARUS comments resolution and model validation ✓ Publication foreseen for 2017 																					
WG leader	Lorenzo Murzilli (FOCA Switzerland)																					
Start Date	2015 Internal consultation: April 2016 / External consultation: Sept 2016																					
End Date	Tentative January 2017																					
Members	<table border="1" data-bbox="539 1442 1380 1966"> <thead> <tr> <th data-bbox="539 1442 962 1496">Organisation</th> <th data-bbox="967 1442 1380 1496">Name</th> </tr> </thead> <tbody> <tr> <td data-bbox="539 1503 962 1547">Croatian CAA</td> <td data-bbox="967 1503 1380 1547">Dario Tomasic</td> </tr> <tr> <td data-bbox="539 1554 962 1599">EASA</td> <td data-bbox="967 1554 1380 1599">Alexandra Florin</td> </tr> <tr> <td data-bbox="539 1606 962 1650">FAA</td> <td data-bbox="967 1606 1380 1650">Jeffrey Bergson</td> </tr> <tr> <td data-bbox="539 1657 962 1702">FAA</td> <td data-bbox="967 1657 1380 1702">James Foltz</td> </tr> <tr> <td data-bbox="539 1709 962 1753">FAA</td> <td data-bbox="967 1709 1380 1753">Ifeolu Onguleye</td> </tr> <tr> <td data-bbox="539 1760 962 1805">FAA</td> <td data-bbox="967 1760 1380 1805">Wes Ryan</td> </tr> <tr> <td data-bbox="539 1812 962 1856">ENAC & FOCA</td> <td data-bbox="967 1812 1380 1856">Angela Rapaccini</td> </tr> <tr> <td data-bbox="539 1863 962 1908">Latvian CAA</td> <td data-bbox="967 1863 1380 1908">Elina Millere</td> </tr> <tr> <td data-bbox="539 1915 962 1960">CAA UK</td> <td data-bbox="967 1915 1380 1960">Jonathan Hughes</td> </tr> </tbody> </table>		Organisation	Name	Croatian CAA	Dario Tomasic	EASA	Alexandra Florin	FAA	Jeffrey Bergson	FAA	James Foltz	FAA	Ifeolu Onguleye	FAA	Wes Ryan	ENAC & FOCA	Angela Rapaccini	Latvian CAA	Elina Millere	CAA UK	Jonathan Hughes
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Advisor	Organisation	Name
	AeroVironment	Andrew Thurling
	EuroUSC	Andre Clot
	IAI	Michael Allouche
	Matternet	Oliver Evans
	Matternet	Andreas Raptopoulos
	Safran Group	Segalite Sellem-Delmar
	senseFly	Samuel Depraz



Working Group 7 – CONOPS – Concept of Operations

Task # 1	RPAS OPERATIONAL CATEGORIZATION PAPER		
Objective	<ol style="list-style-type: none"> 1. Categorization for the purposes of establishing Aviation Safety Regulator involvement in RPAS approvals. 2. Considerations and rationale for designation of UAS control stations as an aeronautical product analogous to engines and propellers: <ol style="list-style-type: none"> a. Partitioning and allocations of aircraft functions implemented over C2 data link in terms of criticality of failure or malfunction b. Type Design considerations for aircraft functions implemented over C2 provided by service providers 3. Design considerations of systems and equipment for signal relay (e.g. satellite, airborne relay/repeaters) 4. Launch and Recovery equipment as part of type design 		
Description	<p>A Concept of Operations (CONOPS) working group (WG-7) has been established to construct and define the level of regulatory involvement and the instruments (e.g. certificates) in the design, certification, production and operation of RPAS. This includes the development of an RPAS classification scheme for the purposes of establishing a basis for state regulator involvement in the issuance of Type Design (e.g. Type Certificates) and Airworthiness/Operational approvals (e.g. Certificates of Airworthiness). These schemes could be implemented by civil aviation authorities to perform type design, supplemental type design, production (including interfaces with the production organization) and airworthiness certification of unmanned systems consistently and includes criteria and their exposure to public risk in their operation (airspace, altitudes, airspeed, etc.).</p> <p>The expected outcome is to establish criteria and process requirements for the evaluation of unmanned aircraft systems to the extent that regulatory authorities can develop procedures, policy and guidance to enable airworthiness and operational approval of RPAS that could be recognized for international RPAS operations.</p> <p>The output of the Working Group will be a report documenting terms and definitions, concepts (including categorization) and approval process requirements and risk methodologies to enable civil type design, production and airworthiness approvals of RPAS where those processes may differ from those historically employed for the approval of traditional “manned” aircraft.</p>		
Deliverable (s)	WG-7/1	Draft how to establish criteria (and artefacts) for issuance of certificates.	June 2016
	WG-7/2	UAS Control Station as an Aeronautical Product	February 2017
	WG-7/3	Establish methodologies for classification criteria for operations to include design criteria, airworthiness criteria, production and maintenance to differentiate between “open”, “specific” and “regulated airworthiness” approvals. Consequences on other WG would be required of the operator once an RPAS is classified in one of the three categories (e.g. pilot licensing, C2 service, maintenance organization).	October 2016
	WG-7/4	Final Report – Recommendations on UAS/RPAS Categorization and Control Station certification/C2 integration.	June-July 2017



Start Date	2015																																																																	
End Date	2017																																																																	
WG leader	Jacquelyn Erinne (FAA)																																																																	
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JARUS consolidation group- ATM CONOPS

Task # 1	ATM CONOPS									
Objective	<ul style="list-style-type: none"> • Assess and validate the comments provided by the JARUS members on the EUROCONTROL ATM CONOPS. • Consolidate responses from the regulatory perspective for incorporation of updated version of EUROCONTROL ATM CONOPS • The final deliverable is one of the building blocks of the overall JARUS CONOPS which includes: <ul style="list-style-type: none"> ○ Operational concept ○ D&A concept ○ C2 CONOPS 									
Description	<p>The document describes the EUROCONTROL ATM Concept of operations for RPAS. It considers all types of unmanned operations and makes no distinction between civil or military operations as the integration challenges are identical. The CONOPS assumes the required technology, standards, procedures and regulations will be available in the 2018 to 2023 time-frame.</p> <p>This CONOPS is aligned as closely as possible with the ICAO GANP, supports the EASA airworthiness CONOPS and addresses all phases of flight</p> <p>The CONOPS aims to adhere to the RPAS integration principles and thereby ensure no negative impact on manned aviation while supporting the development of this new type of industry.</p> <p>The CONOPS will not describe or address different detailed scenarios, but provides an operational ATM perspective based on areas of operation:</p> <ul style="list-style-type: none"> • Very Low Level • 500ft up to FL600 (including airports) • Very high level operations (above FL600) 									
Deliverable (s)	JARUS ATM CONOPS									
Start Date	29-04-2016									
End Date	30-06-2016									
Lead	EUROCONTROL									
Members	<table border="1"> <thead> <tr> <th data-bbox="515 1715 935 1760">Organisation</th> <th data-bbox="935 1715 1362 1760">Name</th> </tr> </thead> <tbody> <tr> <td data-bbox="515 1760 935 1812">EUROCONTROL</td> <td data-bbox="935 1760 1362 1812">Mike Lissone</td> </tr> <tr> <td data-bbox="515 1812 935 1863">UK CAA</td> <td data-bbox="935 1812 1362 1863">Mike Gadd</td> </tr> <tr> <td data-bbox="515 1863 935 1912">University of Being</td> <td data-bbox="935 1863 1362 1912">Hao Liu</td> </tr> </tbody> </table>	Organisation	Name	EUROCONTROL	Mike Lissone	UK CAA	Mike Gadd	University of Being	Hao Liu	
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