



EUROPEAN AVIATION SAFETY AGENCY  
AGENCE EUROPÉENNE DE LA SÉCURITÉ AÉRIENNE  
EUROPÄISCHE AGENTUR FÜR FLUGSICHERHEIT

# Rulemaking progress on RPAS:

ICAO, EU, JARUS ..... and EASA

Filippo Tomasello

(EASA R4.1)

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# ICAO progress & plans for UAS

- Establishment UAS Study Group (2007)
- Amendment 13 to Annex 13 (appl. Nov 2010)
- Circular 328 (March 2011): UA are aircraft
- **Amendment 43 Annex 2 (applicable Nov 2012):**
  - RPAS need approval/certification
  - (civil) Operators under safety oversight
  - Remote pilots competent, fit and licensed
- Amendment 6 to Annex 7 (Nov 2012)
- Recommendation 4/6 from ANC 12 (Nov 2012)
- **RPA into Global Air Navigation Plan endorsed by 38<sup>th</sup> General Assembly (Oct 2013)**

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- RPAS Manual (2014)
- RPAS Symposium (Nov 2014)
- **SARPs for BVLOS (2018): Annexes 1, 6, 8, 10**

Organisations and developers	Title	Release
<p>(USA/FAA)</p> <p>FAA – UAS Aviation Rulemaking Committee (ARC)</p>	<p><i>"Integration of Civil Unmanned Aircraft Systems (UAS) in the National <b>Airspace System</b> (NAS) Roadmap"</i></p>	<p><b>7 November 2013</b> Washington (D.C.)</p>
<p>(EU)</p> <p>European RPAS Steering Group (ERSG)</p>	<p><i>"Roadmap for the integration of civil Remotely-Piloted Aircraft Systems into the European <b>Aviation System</b>"</i></p>	<p><b>20 June 2013</b> Paris (province of Bruxelles DC)</p>

Organisations	Title	Emphasis
<p><b>USA/FAA</b></p>	<p><i>"Integration of Civil Unmanned Aircraft Systems (UAS) in the National Airspace System (NAS) Roadmap"</i></p>	<p>Integration into <b>ATM/airspace</b></p>
<p><b>ERSG</b></p>	<p><i>"Roadmap for the integration of civil Remotely-Piloted Aircraft Systems into the European Aviation System"</i></p>	<p>Integration into the <b>total aviation system</b> (ref. Amdt 43 to ICAO Annex 2): airworthiness; pilot licencing; operator certification and only after application by operator to access airspace</p>

# Access of current UAS to airspace

## ➤ USA

- Public operator (US government, or entity at State level; Universities): **Certificate of Waiver or Authorization (COA)**
- Experimental category for civil UAS (R&D, market survey, crew training purposes): **special airworthiness certificate**

## ➤ EU

- Commercial operations allowed in some MS: cornerstone **RPAS operator certificate (or equivalent)**
- **AW certification not always necessary**

... approved  
RPAS operator  
even for  
non-commercial!



# JARUS: Above and below 150 Kg

WG			Deliverables
Id.	Topic	Rapporteur	Subject
1	Licencing of remote crews	B. Davidor (Israel CAA)	JARUS-RPL
	Requirements for RPAS OPS		JARUS-OPS
2	Requirements for organisations	F. Tomasello (EASA)	JARUS-ORG
3	Certification specifications	V. Shibaev (Russia)	CS-LURS (<600 Kg)
			CS-LUAS (<600 Kg)
4	Detect and avoid	H. Bohlin (SW MoD)	TLS and safety objectives for D&A
5	Command and control	D. Colin (ECTL)	Performance requirements for C2
6	AMC 1309	D. Haddon (EASA)	Airworthiness safety objectives
7	Airworthiness processes (FAR/Part 21)	S. George (FAA)	Proportionate requirements for DOA, POA, MOA



# EASA/EU Progress & plans

Date		Milestone
1999	Aug	Certification policy (GM) published
2012	Aug	NPA 2012-10 (transp. amdt 43 to ICAO Annex 2)
2013	Jun	ERSG handed over RPAS 'roadmap' to EC
<b>2013</b>	<b>18 Nov</b>	<b>CRD 2012-10 (RPAS in SERA)</b>
<b>PLANS</b>		
2014	Mar	New (2 <sup>nd</sup> ) NPA (RPAS in SERA)
	<b>Jun</b>	<b>ToR x Project 'IniRPAS'</b> (7 to 10 deliverables)
	Sept	Opinion (RPAS in SERA = SERA.3138)
	<b>Nov</b>	<b>NPA to amend Basic Regulation (ER)</b>
	<b>Dec</b>	<b>Farewell party FTom (70% probability)</b>
2015	Q2	Opinion to amend Basic Regulation



# Comments to NPA 2012-10

- RMT.0148 (ATM.001(a)), ToR issue 2, 29/10/10
- NPA developed by Agency (no Rulemaking Group)
- >200 comments
- Focused Consultation
  - ❖ Informal interviews (04 Dec 2012)
  - ❖ **Workshop (05/06 March 2012)**
  - ❖ **Peer review of resulting text (almost 150 comments)**
- **Text of rules completely revised:**
  - Now more AMC/GM than implementing rules
  - CRD 2012-10 only 'summary'
  - Legal Department revised IR
  - **New (2<sup>nd</sup> NPA)**





# 2<sup>nd</sup> NPA: Requirements

- **AMC** for special authorization to access non-segregated airspace
- **Only above 150 Kg:**
  - ❖ RPA **should** have a certificate of airworthiness
  - ❖ Components (e.g. station) should have specific certificates
  - ❖ Operators should have operator certificate
  - ❖ Remote pilots and other members of crew should be licensed



# Specific objectives IniRPAS

1. initial civil operations, **avoiding fragmentation** of the rules
2. maximum possible **global harmonisation** based on emerging ICAO provisions
3. free movement of persons, goods and services within the EU for RPAS of any mass through an **initial set of common rules**
4. **proportionate rules, since it would be disproportionate to impose to an RPA in VLOS the same rules applicable to IFR flights in controlled airspace in BVLOS**
5. **Subsidiarity (AMC) and proximity (TC locally issued )**
6. **optimum use of available resources, building upon JARUS** and taking advantage of contributions from industry in kind



# Approach to regulation of ops

Density of population	Types of operations								
	Very Low Level (<500 ft)				Above 500 ft				
	Teth	VLOS	E-VLOS	VLL/B-VLOS	Teth	VFR		IFR/BVLOS	
						E-VLOS	B-VLOS	RLOS	B-RLOS
Unpopulated (e.g. remote, agricultural, over sea or fenced)									
Populated									
Congested (e.g. pedestrian areas)									



# General approach

Density of population	Types of operations: <b>always ROC</b>								
	Very Low Level (<500 ft)				Above 500 ft				
	Teth	VLOS	E-VLOS	VLL/B-VLOS	Teth	VFR		IFR/BVLOS	
						E-VLOS	B-VLOS	RLOS	B-RLOS
Unpopulated (e.g. remote, agricultural, over sea or fenced)	<b>No TC (if no pax); no pilot license</b> <b>Proportionate AW ERs</b> <b>Safety assessment by operator or QE</b>			TC + CofA + RPL	<b>TC</b> <b>CofA</b> <b>RPL</b>		TC (RPA/RPAS and possibly engine, propellers, RPS), CofA, RPL, COM SP, RPS SP		
Populated									
Congested (e.g. pedestrian areas)	<b>Declaration backed by report by QE (1309)</b>			<b>ETSOA (D&amp;A, C2, autopilot, etc.)</b>					



# Glossary (1)

<b>Acronym</b>	<b>Spelling</b>
AMC	Acceptable Means of Compliance
ANSP	Air Navigation Service Provider
ATM	Air Traffic Management
C2	Command, Control and Communication (data-link)
CAA	Civil Aviation Authority
CAT	Commercial Air Transport
CONOPS	Concept of Operations
CRD	Comment Response Document
CS	Certification Specification
D&A	Detect and Avoid
DGAC	Directors General of Civil Aviation
DOA	Design Organisation Approval

Acronym	Spelling
EASA	European Aviation Safety Agency
EC	European Commission
ECTL	EUROCONTROL
EDA	European Defence Agency
ERSG	European RPAS Steering Group
ETSO	European Technical Standard Order
EU	European Union
FAA	Federal Aviation Administration (USA)
GM	Guidance Material
ICAO	International Civil Aviation Organisation
IFR	Instrument Flight Rules



## Glossary (3)

Acronym	Spelling
JARUS	Joint Authorities for Rulemaking Unmanned Systems
LUAS	Light Unmanned Aeroplane Systems
LURS	Light Unmanned Rotorcraft Systems
MASPS	Minimum Aviation System Performance Specifications
MOA	Maintenance Organisation Approval
MOPS	Minimum Operational Performance Specifications
MIDCAS	Mid-Air Collision (Programme of EDA)
NPA	Notice of Proposed Rulemaking
ORG	Organisations
OPS	Operations
POA	Production organisation Approval

Acronym	Spelling
RMT	Rule Making Task
ROC	RPAS Operator Certificate
RPA	Remotely Piloted Aircraft
RPAS	Remotely Piloted Aircraft System
RPL	Remote Pilot Licence
RPS	Remote Pilot Station
TC	Type Certificate
TLS	Target Level of Safety
ToR	Terms of Reference