New Regulatory Framework for UAS

CEPT Workshop on Spectrum for Drones/UAS

Copenhagen, 29.05.18

The EASA Team

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Content of the Presentation

- Setting the Stage
  - The Helsinki High Level Conference on Drones
    - Legal Requirements
    - Standards
    - Demonstrators
  - Regulatory Concept: Open, Specific and Certified
- The Legal Requirements for drones operation
  - The New Basic Regulation
  - The Open and Specific Drone Categories
- Standards and Standard Setting Process in the EU
- U-Space and Demonstrators
- Future Activities

The Big picture: Helsinki High level conference

- Called for clear and simple rules that keep the burden for citizens, operators and authorities as light as possible, and that lower the threshold for entering the EU drone services and U-Space markets;
- Confirmed the commitment of all stakeholders present to open the EU drones services market by 2019 by working in parallel and with maximum cooperation on three pillars:
  - The legal requirements for drones and drone operations, for the safe and effective use of the airspace, and for the delivery of cost-effective U-Space services;
  - Further investment in demonstrators that systematically help to open the drone services market, as well as in longer term R&D projects that prepare for more autonomous vehicles and more dense traffic; and
  - An effective standard setting process that is adapted to fast evolving digital technologies from all sectors, and uses and adapts existing standards where available.
- Stressed the need for protection of citizens based on safety, security, privacy and the environment

Regulatory concept

- operation centric
- proportionate
- performance based
- risk based

OPEN:

Low risk

No authorisation or declaration by UAS operator required before starting the operation

SPECIFIC

Increased risk

UAS operator required to conduct a risk assessment and receive authorisation by NAA before starting the operation

CERTIFIED

Regulatory regime similar to manned aviation

Certified UAS operator

Certified UAS

Licensed pilot

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Legal Requirements (1)

New EC Basic Regulation

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Extension of EU legislation

- With regard to unmanned aircrafts, the scope of the EU regulation has been limited, up to now, to aircrafts with a mass higher than 150 kg and not used for “state” operations
- As a consequence EASA MS’s legislation covering the vast majority of UA is not harmonized

- The European Commission’s **New Basic Regulation** changes this situation proposing **common EU rules for all unmanned aircraft, independently from their maximum take-off mass**
- http://data.consilium.europa.eu/doc/document/ST-5218-2018-INIT/en/pdf

Council of the European Union

Brussels, 11 January 2018
(OR. en)

5218/18

Interinstitutional File:
2016/0277 (COD)

AVIATION 6
CODEC 18
RELEX 22
CSC 6

OUTCOME OF PROCEEDINGS

From:	General Secretariat of the Council
To:	Delegations
No. prev. doc.:	15689/17 AVIATION 192 CODEC 2064 RELEX 1113 CSC 301
No. Cion doc.:	14991/15 AVIATION 152 CODEC 1667 RELEX 1014 + ADD 1-5
Subject:	Proposal for a Regulation of the European Parliament and of the Council on common rules in the field of civil aviation and establishing a European Union Aviation Safety Agency, and repealing Regulation (EC) No 216/2008 of the European Parliament and of the Council

Following the Coreper meeting on 20 December 2017, delegations will find attached the final version of the text agreed with the European Parliament on the above-mentioned proposal.

Main Highlights of the NBR with regard to unmanned aircraft

- Rules must be *Proportionate and Risk – Based*
- *Certification: required only when nature of risk and type of operation justify such requirement*
- *Use of market surveillance mechanisms provided by Union product harmonization legislation to reach adequate level of safety* (CE Marking)
- Possibility to *declare compliance* with relevant industry standards, where this is considered to ensure an acceptable level of safety
- State operations excluded from NBR - but can Opt-in
- *A degree of flexibility should be provided for the Member States to taking into account local characteristics*

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Legal Requirements (2)

The EASA Opinion on the Open and Specific UAS Categories

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

- Regulatory concept:
  - Operation centric; proportionate; performance and risk based.
- Provide for a meaningful open category (e.g. fly over non-involved people, fly close to people, fly at night)
  - More complex but made simple through consumer information
- 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
  - Issue all authorisations and certificates; allow them to create Drone Zones
- Includes registration, identification and geo awareness
- Contribute to security, privacy and data protection and environmental protection
- Key role of cooperation:
  - Member States; Unmanned and Manned Aircraft Communities
  - EU Commission, other EU Agencies and EUROCONTROL
  - ICAO, JARUS, FAA, Transport Canada

Open category – Overview

Operation		Remote pilot competency (age according to MS legislation)	UAS				UAS operator registration
Subcategory	Area of operation (far from aerodromes, maximum height 120 m)		class	MTOM/ Joule (J)	Main technical requirements (CE marking)	Electronic ID/ geo awareness	
A1 Fly over people	You can fly over uninvolved people (not over crowds)	Read consumer info	Privately built	< 250 g	N/a	No	no
			C0		Consumer information, Toy Directive or <19 m/s, no sharp edges, selectable height limit		
		• Consumer info • online training • online test	C1	< 80 J or <900 g	Consumer information, <19m/s, kinetic energy, mechanical strength, lost-link management, no sharp edges, selectable height limit.		
A2 Fly close to people	You can fly at a safe distance from uninvolved people	• Consumer info • online training • online test • theoretical test in a centre recognised by the aviation authority	C2	< 4 kg	Consumer information, mechanical strength, no sharp edges, lost-link management, selectable height limit, low-speed mode.	Yes + unique SN for identification	yes
A3 Fly far from people	You should: • fly in an area where it is reasonably expected that no uninvolved people will be endangered • keep a safety distance from congested areas	• Consumer info • online training • online test	C3	< 25 kg	Consumer information, lost-link management, selectable height limit.		
			C4		Consumer information, no automatic flight	if required by zone of operations	
			Privately built		N/a		

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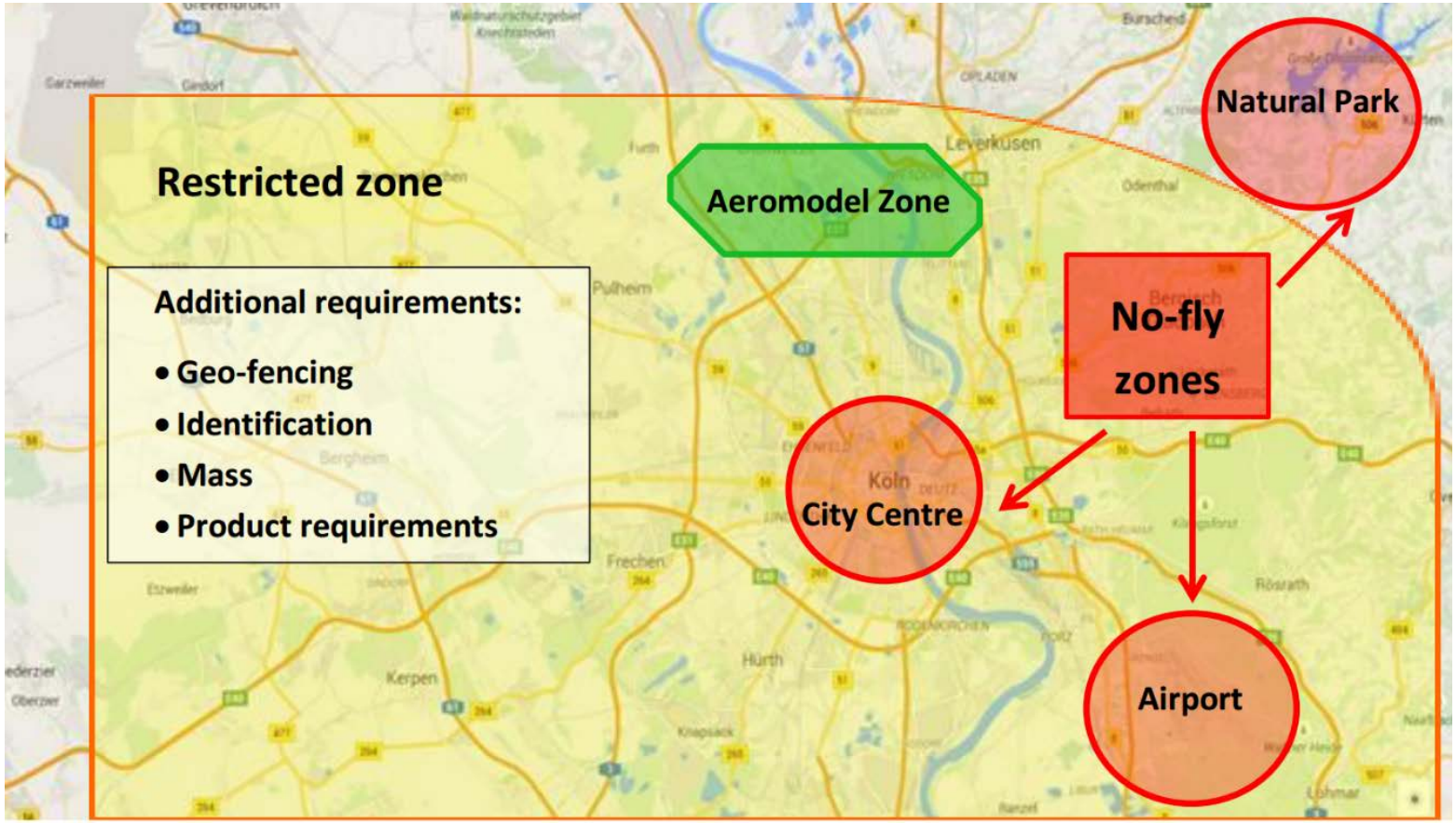
Flexibility for Member States

Zones defined by Member States



Geo awareness on drones to support remote pilot

Registration

- Registration of UAS operators when using a UA:
  - able to transfer ‘80 J’ of terminal kinetic energy in an impact with a person; → UA with MTOM> 900g
  - posing a security, privacy or environmental risk; → UA with MTOM> 250g

DG JRC study

  - that is certified. → applicable to specific category
- Registration of UA only when certified
- Registrations must be digital, interoperable, accessible to all Competent Authorities of MSs

Tools for enforcement authorities

- Local E-identification broadcasting:
  - UAS operator registration number and UA unique serial number
  - UA take off position
  - UA current position, height, timestamp
- Fire-resistant placard with UAS operator registration number
- Interoperable, real time registration databases

Specific category

- Operational risk assessment is the key element
  - **SORA (Specific Operation Risk Assessment)** as a possible AMC: annexes to be completed by JARUS within 2018
  - Requirements for security and privacy risk assessments added
- Standard scenarios developed by EASA proposed as simplification for the UAS operator:
  - Mitigation measures easy to be implemented: declaration by UAS operator is sufficient
  - Implementation of mitigation measures more demanding: Authorisation by NAA before starting the operation
  - NAA and operator may propose alternative standard scenario using the AltMoc process

Applicability

- Drones put on the market only with CE marking after 2 years from Adoption of Regulation
- MSs who has decided to create drone zones will have to make public this information in digital format after 2 years from adoption of Regulation
- Operation of drones in A1 and A3 categories with drones not yet CE marked possible after adoption of Regulation, with some mitigation
- Operation in specific category possible after adoption of Regulation

Applicability of Specific EU Directives

Current Basic Regulation

MTOM	Operation	Directive 2014/30/EU Directive 2014/53/EU
Up to 150 Kg	According to MS Rules	Applicable for UAS on the market. For UAS not on the market it depends on MS rules
Above 150 Kg	Certified under EASA regulation	Not Applicable

New Basic Regulation

MTOM	Operation: under EASA rules	Directive 2014/30/EU Directive 2014/53/EU
Not strictly determining the Operation "per se"	Open Category (below 25 Kg)	Applicable
	Specific category	Applicable
	Certified Category	Not applicable (*)

DIRECTIVE 2014/30/EU: on the harmonisation of the laws of the Member States relating to electromagnetic compatibility

DIRECTIVE 2014/53/EU: on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment

(*) **Certified Aircraft** are subject to essential requirements relating to electromagnetic compatibility and radio spectrum as part of the rules of certification, oversight and enforcement. The NBR requires the following essential requirements to be included in the set of requirements to be met for certified UAS:

- the electromagnetic disturbance generated does not exceed the level above which radio and telecommunications equipment or other equipment cannot operate as intended;
- they have a level of immunity to the electromagnetic disturbance which allows them to operate without unacceptable degradation of their intended use
- effectively use and support the efficient use of radio spectrum in order to avoid harmful interference

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STANDARDS

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Use of standards in conformity assessment

- The use of standards is voluntary, it facilitates the demonstration of conformity
  - Application of the specifications included in an "harmonized standard" confers a "**presumption of conformity**" with the essential requirements it covers
  - When manufacturers choose not to apply a harmonised standard, they need to demonstrate how the compliance is reached (e.g.: involvement of conformity assessment bodies)
- To provide a 'presumption of conformity', a standard
  - must be a **harmonized standard:** created with the participation of all stakeholders – consensus based
  - the references of which has been **published** in the Official Journal of the European Union.
- A harmonised standard
  - is a European standard developed by a recognised European Standards Organisation: **CEN, CENELEC, or ETSI**.
  - is created following a request from the European Commission to one of these organisations (**adoption of a mandate by the EC**)

EUSCG

- EASA participates in EUSCG: European Forum coordinated by EC in charge of defining a **rolling development plan (RDP)** for standardization activities in the Civil UAS domain
  - Identifies gaps and overlaps looking at needs vs available standards
  - Several standardisation bodies involved (EUROCAE, ISO, SAE, ASTM)
  - Particular focus on standards to cover the Open Category Technical Requirements and the Specific Category Standard Scenarios
  - Priority standards included in the RDP for the Open Category:
    - E-Ident
    - Geo-fencing
    - Height limitation
    - Reliable and predictable method to terminate flight
    - …
- Similar forum established in US (UASSC – UAS Standardisation Collaborative)

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U-Space and Demonstrators

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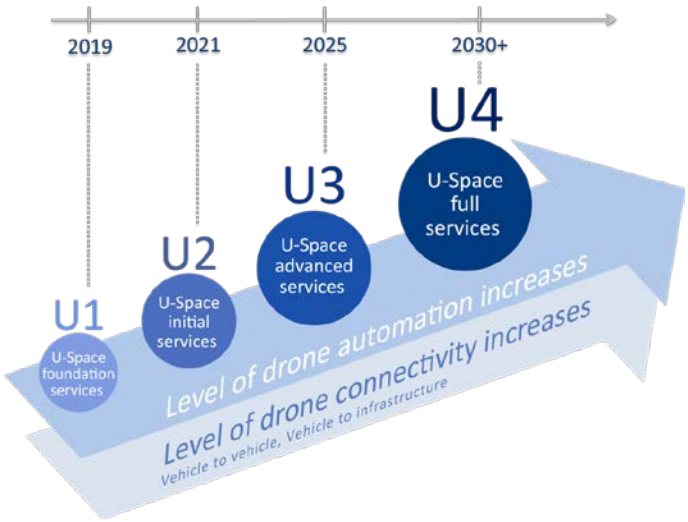
U-space

- Captured by Drone Addendum to the ATM master plan “Roadmap for the safe integration of drones into all classes of airspace”,
- U-Space a reality by 2019 with a **step by step regulatory approach**:

  - **Registration, E-identification, Geo-fencing** are the 3 foundation services
  - They are included in EASA Opinion and, together with the definition of **drone zones** and the **air risk model of the SORA (Annex D)** constitute the first regulatory phase of U-space



U-Space regulation in the longer term

- The foundation services, the zones definition and the SORA Annex D will be complemented, in the longer term, by:
  - 2 step review of the SERA (European rules of the Air)
  - Regulatory framework for further U-space services and providers (including the services description, performance, certification/declaration/oversight provisions, service providers requirements cybersecurity, etc)

U-Space demonstrators

- SESAR funded projects – focus on integration efforts of more automated drones in more complex operations – results by 2019-2020
- Smart Cities funded projects – focus on drones in wider transport chain - results by 2019-2020
- EU demonstrator network – focus on gaining regulatory experience on the basis of **private/public partnerships** with clear business needs to speed up opening market – **results now**

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Future Activities

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Way Ahead

- Opinion 01-2018 on open and specific categories published
  - Support to EC for adoption of the rules
  - Adoption planned by the end of 2018
- Standard scenarios for specific category
  - Workshop scheduled 9 to 11 July
  - Adoption of first standard scenarios as AMC: early 2019
- Increased effort on standards:
  - Active participation into the European Unmanned Aircraft Standardisation Coordination group
- Certified category: medium term
- Support to U-space:
  - Cooperating with SJU and EC
  - Developing gap analysis between Opinion and the necessary rules for U-space
  - Supporting EC with EUROCONTROL and SJU in the network of demonstrators

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Questions and comments welcome

antonio.marchetto@easa.europa.eu

EASA documents on UAS available at

http://www.easa.europa.eu/easa-and-you/civil-drones-rpas

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