Introduction of a regulatory framework for the operation of drones in the open and specific category

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Your safety is our mission.
Draft revised Basic Regulation envisages that all UAS are under EU competence

- Regulatory concept: Operation centric; proportionate; performance and risk based

**OPEN:**
- Low risk
- Competent Authority notified by Member States; no-pre approval envisaged
- Limitations (25 kg; Visual line of sight (VLOS), Maximum height; system of zones)
- Rules: no flight over crowds, pilot competence
- CE marking allows for design requirements
- Sub-categories including toys

**SPECIFIC**
- Increased risk
- Authorisation by NAA based on Specific Operation Risk assessment (SORA)
- Standard scenarios either with declaration or authorisation
- Optional concept of approved operator with privilege

**CERTIFIED**
- Regulatory regime similar to manned aviation
- Certified operations to be defined by implementing rules
- Certified means certified UAS and certified operator and licenced pilot (?)
- Pending criteria definition, EASA accepts application in its present remit
- Some systems (Datalink, Detect and Avoid, ...) may receive an independent approval
Overview of NPA open and specific: General

Some key points:

➢ Responsibilities of operator and pilots defined,

➢ Registration of operators and UAS with some exceptions,

➢ e-identification on some UAS

➢ geo-fencing on some UAS

➢ Use of product legislation (making available on the market) for technical requirements for the UAS (CE marking)

➢ Contribute to security and privacy

➢ Several authorities involved in UAS in Member States

➢ Autonomy is addressed in Specific category

➢ Cover also model aircraft

➢ Does not apply to in-door operations

Cover regulation:

Article 1 Subject matter and scope
Article 2: Definitions
Article 3: principles applicable to all UAS operations
Article 4: Open category UAS operations
Article 5: Specific category UAS operations
Article 6: Designation of the competent authority (Aviation)
Article 7: Responsibilities of the competent authority (Aviation)
Article 8: Designation and responsibilities of the market surveillance authority
Article 9: Exchange of Safety Information
Article 10: Third Country UAS operators
Article 11: Means of Compliance
Article 12: Airspace Areas and Special Zones for UAS Operations
Article 13: Exchange of information and safety measures
Article 14: UAS operations conducted in the framework of model clubs and associations
Article 15: Applicability
Article 16: Entry into Force and application

Plus two annexes 1. UAS and 2. MKT
Overview of NPA: open and specific categories

Article 1: Subject matter and scope
Article 2: Definitions
Article 3: Principles applicable to all UAS operations

Article 4: Open Category
Article 5: Specific Category

Subcategories
- Risk Assessment
- Standard Scenarios
- LUC
- Mutual Recognition

- No pre authorisation required
- Declaration
- Authorisation

Light Operator Certificate: Privileges to self authorise operations in specific category (Subpart C)

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Unmanned aircraft pose 2 kind of risks:

- **Ground risk**: for people and critical infrastructure
- **Air risk**: mid-air collision with manned aircrafts

### Open category

**Main operational limitations**
- Height < 120 m
- Weight < 25 Kg

**Technical requirements**
- 5 classes (C0-C4)

**Visual Line Of Sight (VLOS)**
- 120m

**Remote pilot competence**
- Leaflet
- Online training
- Certificate of competence
Basic information on how to operate a UAS summarised in a leaflet provided by manufacturer in the drone package

Homebuilt drones can be used within defined limitations
Specific category: risk assessment

- Specific category:
  - Risk assessment or standard scenarios define mitigating measures:

- Pilot competence is part of the risk assessment
Overview of NPA: flexibility for Member States

Article 1 Subject matter and scope
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Defined by Member States
Overview of NPA: Applicability

Assuming that new Basic Regulation will be adopted by the end of 2017

Adoption of EU regulation

(UAS on the market comply with EU regulation)

All UAS operated according to EU regulation*

UAS operator convert existing authorisations

MS publishes zones

*After 2021 legacy UAS are considered equivalent to homebuilt

Overview of NPA: Applicability

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Planned regulatory work

• Categories open and specific
  • Consultation period ended on 15 September;
  • Workshop held on July 5
  • Opinion: planned for January 2018;
  • Adoption of regulation depending on adoption of the Draft BR

• Next activities:
  • Development of Standard supporting technical requirements
  • Category certified: NPA planned for Q1 2018
  • Standard scenarios for specific category planned for Q2 2018
  • CS-UAS planned for Q1 2019
U-space

- U-space and ATM master plan
  - Cooperation with EC, EDA, EUROCONTROL and SJU
  - Set of services, high level of digitalisation and Automation;
  - Adoption end of the year of an addendum to the ATM master plan
  - U-Space a reality by 2019 with a step by step approach:
    - Registration, E-identification, Geo-fencing are the 3 pillars in 2019

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Other activities

• Strong Cooperation with EC, Member States and Stakeholders:
  • E.g. Rulemaking, development of standards

• International cooperation:
  • Active participation to ICAO and JARUS; close contacts with FAA

• Safety promotion: in addition to leaflets
  • Survey of ECAC Member States activities
  • preparing a European UAS safety promotion campaign

• On-going certification of 5 projects

• Dual-Use UAS:
  • cooperation with EDA and several military airworthiness authorities

• Research:
  • Cooperation with EDA and SJU (e.g. support to their projects)
  • Definition of a research programme for the UAS-manned aircraft collisions
Urban mobility: EASA-NAA cooperation needed

- Performance based; risk based holistic approach
- How to proceed when rules are not available?

Technical challenges:
- Batteries: Power to weight/volume ratio, endurance; availability of necessary metals, fire, charge, replacement; disposal.
- Role of the human: competencies; autonomy; artificial intelligence; ethics:
- Integration of mobility projects in the airspace and platform in cities
- Cybersecurity
- Noise physically less but issue of perception
Questions
Back Up

Your safety is our mission.
List of Acronyms

- ASD: Organization representing European Aeronautics, Space and Defence Industry
- CE: Conformité Européenne
- CS-UAS: Certification Specification-Unmanned Aircraft Systems
- C2: Command and Control
- D&A: Detect and Avoid
- ECAC: European Civil Aviation Conference
- EDA: Europe Defence Agency
- FAA: Federal Aviation Administration
- FCL: Flight Crew License
- ICAO: International Civil Aviation Organization
- KE: Kinetic Energy
- MP: MegaPixels
- MS: Member States
- NAA: National Aviation Authority
- NPA: Notice of Proposed Amendment
- RIA: Regulatory Impact Assessment
- SAE: Society of Automotive Engineers
- SJU: SESAR Joint Undertaking
- UA: Unmanned Aircraft
- UAS: Unmanned Air System
‘certified category’ means a category of UAS operation that, considering the risks involved, requires the certification of the UA, of its operator and licensing of the flight crew;

- Some examples of certified category of operation are:
  - large or complex UAS operating continuously over open assemblies of people;
  - large or complex UAS operating BVLOS in high-density airspace;
  - UAS used for transport of people; and
  - UAS used for the carriage of dangerous goods, which may result in high risk for third-parties in case of crash.

- two possible approaches:
  - Set of NPAs affecting many rules OR Stand-alone rule
<table>
<thead>
<tr>
<th>UAS subcategory</th>
<th>UAS class</th>
<th>MTOM/Joule (J)</th>
<th>Distance from people</th>
<th>Maximum height of the operation</th>
<th>Remote-pilot competence</th>
<th>Age of the remote pilot</th>
<th>Main technical requirements (CE marking)</th>
<th>UAS registration</th>
<th>Electronic identification (EI), geofencing (G)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Privately built</td>
<td>C0</td>
<td>&lt; 250 g</td>
<td>Fly over uninvolved people (not over assemblies of people)</td>
<td>&lt; 50 m</td>
<td>Leaflet</td>
<td>No limitation</td>
<td>N/a</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>C1</td>
<td>&lt; 80 J or 900 g</td>
<td>Fly over uninvolved people (not over assemblies of people)</td>
<td>&lt; 120 m or up to 50 m above a higher obstacle, at the request of the owner of the object</td>
<td>Leaflet plus online training with a test</td>
<td>14 years or with supervisor</td>
<td>kinetic energy, no sharp edges, selectable height limit, awareness leaflet</td>
<td>Only for operator</td>
<td>EI if with a camera of &gt; 5 MP or an audio sensor, EI and G if required by the zone of operations</td>
</tr>
<tr>
<td>A2 Fly close to people</td>
<td>C2</td>
<td>&lt; 4 kg</td>
<td>Fly intentionally in proximity to but at a safe distance from uninvolved people (&gt; 20 m for rotorcraft UAS or &gt; 50 m for fixed-wing UAS)</td>
<td>&lt; 120 m or up to 50 m above a higher obstacle, at the request of the owner of the object</td>
<td>Leaflet plus certificate of competence (theoretical qualification) and exam in an approved centre</td>
<td>16 years or with supervisor</td>
<td>Mechanical strength, lost-link management, selectable height limit, awareness leaflet</td>
<td>Operator and UA</td>
<td>Yes</td>
</tr>
<tr>
<td>A3 Fly far from people</td>
<td>C3</td>
<td>&lt; 25 kg</td>
<td>Fly in an area where it is reasonably expected that no uninvolved person will be present</td>
<td>&lt; 120 m or up to 50 m above a higher obstacle, at the request of the owner of the object</td>
<td>Leaflet plus online training with a test</td>
<td>16 years or with supervisor</td>
<td>Lost-link management, selectable. height limit, awareness leaflet</td>
<td>Operator and UA</td>
<td>If required by the zone of operations</td>
</tr>
<tr>
<td></td>
<td>C4</td>
<td>&lt; 25 kg</td>
<td>In addition to the above, keep a safety distance from the boundaries of congested areas of cities, towns or settlements, or aerodromes</td>
<td>&lt; 120 m or up to 50 m above a higher obstacle, at the request of the owner of the object</td>
<td>Leaflet plus online training with a test</td>
<td>16 years or with supervisor</td>
<td>Operational. instructions, awareness leaflet</td>
<td>Operator and UA</td>
<td>N/a</td>
</tr>
</tbody>
</table>