Auf dem Weg zu europäischen Regeln für unbemannte Luftfahrzeuge

The way ahead on unmanned aircraft

Prepared by EASA Team
Presented by S Ronig
Table of Contents

- Background about EASA and European legislation in the Unmanned Aircrafts (UA) domain

- Pillars of the new regulatory framework defined by the EASA Technical Opinion including Categories of operation:
  - Open
  - Specific
  - Certified

- Implementation Roadmap for the new regulatory framework
Central safety regulator & advisory body for civil aviation in the EU

Mission:

to set & maintain
the
highest safety &
environmental
standards
Why a European Agency?

- **Legally binding rules within the EU**
- **Certificates valid across EU**
- Created by a European Parliament and European Council Regulation 2002
- Operational since September 2003
- Expansion of competencies in 2008 & 2009
- ca 750 staff
Main tasks of EASA

- Rulemaking
- Standardisation / Inspections
- Certification of products and parts
- Approval and Oversight – Design organisations
- Operational and Licencing Rules
- Aerodromes and Air Traffic Management
- Data collection, analysis and research
What is a Drone, RPAS, UAV, UAS, UA?

From small consumer devices used for recreation to large aircraft
UAS/Drones expand aviation services

Regulated civil aviation market

- Exploration
- Inspection
- Delivery

Aerial inspection
- Relay to remote areas

Regulated civil drones market

Other markets in the EU:
- Precision farming
- Link to aviation
- Including civil drones

- Intermodal connection
- Track and station inspections
- Security

- Just in time delivery
- Traffic information

- Exploration
- Oil rig delivery

- Cargo transport
- Last mile delivery

- Aerial inspection
- Energy exploration
With regard to UA, the scope of the EU regulation has always been limited to aircrafts with a mass higher than 150 kg and not used for “state” operations.

As a consequence today EASA MS’s legislation covering the vast majority of UA is not harmonized.

The proposed Basic Regulation change included in the “aviation strategy” published on 7 December 2015 intends to change this situation proposing common EU rules for all UA.

The EASA Technical Opinion has been developed in parallel with the Basic Regulation change and presents concrete proposals for a regulatory framework for UA operation and a roadmap to put them into practice.
Pillars of proposed approach

Operation centric
- Consequences of loss of control highly dependent on operating environment

Risk based
- 3 categories: open, specific, certified
- Commercial as well as non-commercial

Smooth
- No undue burden on the aviation system
Categories of Operation

OPEN:
- Low risk
- No involvement of Aviation Authority
- Limitations (Visual line of sight, Maximum Altitude, distance from airport and sensitive zones)
- Flights over crowds not permitted except for harmless subcategory

SPECIFIC
- Increased risk
- Approval based on Specific Operation Risk assessment (SORA)
- Approved by NAA possibly supported by accredited QE unless approved operator with privilege
- Manual of Operations mandatory to obtain approval

CERTIFIED
- Regulatory regime similar to manned aviation
- Certified operations to be defined by implementing rules
- Pending criteria definition, EASA accepts application in its present remit
- Some systems (Datalink, Detect and Avoid, ...) may receive an independent approval
Open Category: “Harmless” sub-category

Specific harmless thresholds tbc with Impact Assessment activity

<table>
<thead>
<tr>
<th>OPEN</th>
<th>Harmless</th>
<th>&lt; 250 g</th>
</tr>
</thead>
<tbody>
<tr>
<td>A0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A2</td>
<td>&lt; 25 Kg</td>
<td></td>
</tr>
</tbody>
</table>

- Light / Very light market regulation
- Subject to local restrictions
- Do not operate recklessly
- Follow operating instructions and does and don’ts
- Including FPV (First Person View)

Limited Drone Zone
- Geo-limitation System required
- Registration required
- Identification System required

Product Legislation

Instructions manual

08/03/2016 The way ahead on UA – Kolloquium Flugführung Braunschweig
Open Category: A0 – A2 subcategories

Product and Pilot Requirements

- Product must comply with legislation
- Adequate pilot competence required
- Mandatory Registration

Product Legislation

- Instructions manual

<table>
<thead>
<tr>
<th>Category</th>
<th>Weight Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPEN</td>
<td></td>
</tr>
<tr>
<td>HL</td>
<td>&lt; 250 g</td>
</tr>
<tr>
<td>A0</td>
<td>&lt; 25 Kg</td>
</tr>
<tr>
<td>A1</td>
<td></td>
</tr>
<tr>
<td>A2</td>
<td></td>
</tr>
</tbody>
</table>

08/03/2016

The way ahead on UA – Kolloquium Flugführung Braunschweig
Open Category: A0 – A2 subcategories

Operational and Functional Requirements

**Identification**

- **Compliance with Identification requirements**
- Compliance with no drone zones and special drone zones supported with automatic geo-limitation technology
- Observe minimum distance from uninvolved persons, fly only in VLOS and do not fly over crowds

<table>
<thead>
<tr>
<th>OPEN</th>
<th>HL</th>
<th>&lt; 250 g</th>
</tr>
</thead>
<tbody>
<tr>
<td>A0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A2</td>
<td></td>
<td>&lt; 25 Kg</td>
</tr>
</tbody>
</table>

**Geo-limitation**

- 150 m
- Limited Drone Zone
- 'No-drone zone'
- CAT A0
- CAT A1
- CAT A2

**Limited Drone Zone**
- Geo-limitation System required
- Registration required
- Identification System required

08/03/2016

The way ahead on UA – Kolloquium Flugführung Braunschweig
Specific category – SORA Elements

- Area of Operation
- Airspace
- UA Design
- Operational Procedure
- Pilot Competence
- Organizational Factors
- Effect on Environment

Risk Assessment

Operation Authorisation (OA)

Limitations
- Speed
- MTBM

Improvements Needed
Industry and Standardisation bodies are expected to provide standard solutions to address the risks associated with the use of UA in standard scenarios.

These solutions can be envisaged as pre-defined templates / forms of simplified risk assessments.

If the operation “fits” the form (all the fields can satisfactorily be compiled and/or criteria positively matched) the approval should be granted.

In this case the operation approval process would be very simple and would not require the know-how of traditional aviation organizations.
Standard Activity “Media Use in Urban Environment”

- Area of Operation
  - Population density during operation < ...
  - Presence of crowds: no
  - Traffic overflown: no
  - ...

- Airspace template
  - Nearest airport area > ... Km
  - Low level helicopter traffic: no
  - ...

- UA Design
  - Weight < ... Kg including payload
  - Dangerous materials: no
  - MTBCF (minimum time between critical failures) > ...
  - ...

- Operations Template
  - Max flight altitude < ...
  - Max speed: ...
  - Operation duration, number of operations forecasted, ...
Other standards Activities

- **Industrial Inspections**
  - Power centrals
    - Nuclear
    - ...
  - Mining
  - Naval
  - Aviation
  - ...
- **Precision farming**
  - Monitoring
  - Fertilizer spreading
  - ...
- **Infrastructures inspections**
  - Railways
  - Power lines
  - ..
  - ..
“Certified” category

Implementing rules included in existing rules for manned aviation

Drone and components
- Type Certificates (Full / Restricted)
- Certificates of Airworthiness
- European Technical Standard Order Approvals (ETSO) (option)

Organisations
- Design Organisation Approval
- Production Organisation Approval
- Maintenance Organisation Approval
- Training Organisation Approval

Personnel
- Licensed pilot
- Remote Operator Certificate (ROC)

Certification Specifications
- Safety Objectives
- Complemented by Technical Standards
- Standard for Operational aspects
- Standard for Licencing aspects

08/03/2016
The way ahead on UA – Kolloquium Flugführung Braunschweig
Roadmap in development

- Rulemaking Programme
- Impact Assessment
- Standards Production
- International Harmonization
- Research
- Safety Promotion and Communication Plan
Summary - Conclusion

- EASA technical opinion on UA:
  - Foundation for future work
  - Illustrate articles and essential requirements of the proposed Basic Regulation
  - Guidance for Authorities for further development of their rules
  - Provides roadmap

- Important step for safe, secure, environmentally friendly Unmanned Aircraft Operations respecting privacy of the citizens however significant work ahead of us

- Roadmap further developed in cooperation with EC and NL presidency

- EASA is committed to work in cooperation with all stakeholders
Thank you for your attention!

Comments and reactions welcome