Plenary Panel III – CNS for UAS integration

European RPAS Initiatives

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What we see **today** in Europe

- Drones are a ‘hot’ topic (read disruptive)
- Very regular VLOS operations
- BVLOS increasingly happening
  - Up to 100KM
  - Segregated & Non-Segregated
  - More coming soon
- Urban operations are happening too
  - Mostly VLOS, some BVLOS
  - Under well ‘controlled’ circumstances
- Politicians, regulators, service providers, industry, … finding their way
Example - UK

Top drone applications in UK controlled airspace

The UK permits access to controlled airspace via our Non-Standard Flight (NSF) notification process.

We have seen a ten-fold increase in requests over the last 12 months.
Example - France

The current context in France

A growing activity

The rise of the activity

- 2500 Operators
- ~4500 Light RPAS
- + 35% Number of operators growth over the past 6 months
- 349 Distinct manufacturers, of which 25
- < 4Kg supply 66% of the fleet
- 1245 € HT Average daily rate for an aerial photo report
- More than 60 training centers

New manufacturers
New UAS – quick turn over
New technologies: UAS, payload, software, big data treatment...
New applications
New projects

... Creating jobs
SESAR JU – Market Outlook study

**Controlled airspace**

<table>
<thead>
<tr>
<th>Manned aviation in controlled airspace</th>
<th>Unmanned aviation in controlled airspace</th>
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<tbody>
<tr>
<td>Hrs</td>
<td>~33M</td>
</tr>
<tr>
<td>Kms</td>
<td>~20B</td>
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**Controlled + Uncontrolled**

<table>
<thead>
<tr>
<th>Manned aviation often in uncontrolled airspace</th>
<th>Long endurance surveying &amp; monitoring</th>
</tr>
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<tbody>
<tr>
<td>Hrs</td>
<td>~2M</td>
</tr>
<tr>
<td>Kms</td>
<td>~0.6B</td>
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</table>

**Very low level "VLL" airspace (initially at 150m or 500 ft)**

<table>
<thead>
<tr>
<th>Densely populated usage</th>
<th>Remote infrastructure &amp; rural usage</th>
<th>Leisure usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hrs</td>
<td>~250M</td>
<td>Hrs</td>
</tr>
<tr>
<td>Kms</td>
<td>~15B</td>
<td>Kms</td>
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**Protected Sites**

-European RPAS initiatives-
Challenges

- Actors
- Technology
- Manned aviation
- Operations
- Enforcement
- Urban areas
- Airworthiness
- Safety
- Privacy
- ANSPs
- Funding
- Towards full automation?
Regulation & Standardisation

- **Regulation**
  - National level - Many initiatives
  - **European level**
    - Existing – Rules for above 150kg
    - Being extended - Prototype regulation (Certified/Specific/Open categories, registration, geo-fencing, …)

- **Global**
  - JARUS
  - ICAO

- **Standardisation**
  - Many cooks in the kitchen (ISO, OGC, RTCA, EUROCAE, GUTMA, …)
Inventory of solutions building up

- Practical solutions are being worked out - VLOS & BVLOS
- ATM best practices still apply, though no straightforward copy/paste
  - Airspace maps, registration, flight planning, tracking, detect and avoid, post-analysis, …
  - Education – Awareness
  - Non-punitive reporting
  - Human performance
  - ..
- Consumer technologies for CNS
- UTM industry offering innovative ready-to-go products & services
- EUROCONTROL RPAS ATM CONOPS

http://www.eurocontrol.int/publications/remotely-piloted-aircraft-systems-rpas-atm-concept-operations-conops
Drone - Safe-to-fly applications!

Drone Traffic Management solutions SWIM enabled from day 1 / Cloud based!
EU Drones ecosystem – U-SPACE

- **Core objective**
  - Deliver drones specific **update proposal** for the European ATM Master Plan (~10 pager addendum) leading to formal blessing at institutional & industry level by end of 2017

- **Key tasks**
  - Deliver vision for safe integration of drones
  - Prioritized operational & deployment view (incl. standardisation & regulatory roadmap)
  - Business view
  - Risk Management

- **Timeline**
  - April: blueprint on U-Space (3 pages)
  - October: final addendum (10 pages)
  - 2019 implementation

Leveraging EU-US MoC
Final words

Drones/UAS/RPAS – UTM/DTM/…

Huge challenges & Opportunities

Bottom-Up & Top-Down are finding each-other