



Trafi

Finnish Transport Safety Agency

NewSpace and High Altitude RPAS; New extensions of Air and Space

ICAO/UNOOSA AeroSpace Symposium
18 March, Montreal
Taro Kuusiholma
CAA Finland

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Where we are...

- RPAS are not a new phenomenon as they date back to the mid-1800 but their development in the civil market is relatively recent. 2013 has been qualified by some as the year of the drones.
- Size, configuration and complexity of drones are also extremely varied. For example High Altitude Platforms (HAP) loitering more or less over the same geographical area for weeks, at an altitude not used by commercial conventional aviation, at very low speed for a long duration;
- Sub-orbital aeroplanes (SoA) which, even if reaching 90-120 km of altitude in ballistic flight propelled by a rocket engine, are essentially aircraft: cooperation among space and aviation authorities is crucial in order to avoid duplication of efforts, discrepancies and diseconomies; and
- Trans-atmospheric intercontinental commercial passenger transport.
- They are developed by not only classical aviation companies but also by non-aviation companies, usually Small and Medium-sized Enterprises.

... as I see it

- HAP will be used in near space in growing numbers benefiting from economic and operational advantages such as improved reliability, decreased mission risk and reduced cost compared to conventional satellites or even micro and nanosatellites.
- The present regulatory approach to RPAS phenomenon is constructed and inspired by ICAO system as a basic, balanced and comprehensive regime of rules, standards, recommended practices and advisory material.
- In the short term the aim is their integration into non-segregated common airspace. RPAS and the present ICAO systems approach - RPAS seen as a system rather than aircrafts, engines and parts - provides versatile and robust legal basis for addressing the issue for the time being.
- In the longer term (academic) questions like: Aviation or space activity, air or space law? "functional" or "spatial" approach? Maybe RPAS, as such, is not only a spice or genus of the order of classical "ICAO aircraft tree"?

RPAS experience for the integration and/or regulation of aerospace

- Practical use of air/near space will not be only determined by technological and economical feasibility but also by its regulatory framework.
- Regulatory development is at best incremental, gradual and evolutionary.
- Societal and professional resistance (from "as safe as or safer", ELOS to tolerable level of safety).
- EASA 12.3.2015: "The proposed regulatory framework should set a level of safety and of environmental protection **acceptable to the society** and offer enough flexibility for the new industry to evolve, innovate and mature. Therefore the exercise is not simply transposing the system put in place for manned aviation but creating one that is proportionate, progressive, risk based and the rules must express objectives that will be complemented by industry standards."
- Requires enhanced coordination between numerous actors involved with different roles and responsibilities.

RPAS experience for the integration and/or regulation of aerospace

- EASA BR “total aviation system” concept. The aim of the new total system approach is to reduce risks coming from gaps, overlaps or confused responsibilities between different aviation domains.
- The total system approach - i.e. all safety and technical regulations under “one roof” and developed in coherent manner.
- In regard to RPAS the systems approach, as implied by the term “RPAS”, is not only a technical concept – it is a comprehensive regulatory approach, for the new technical elements of RPAS reach beyond the traditional elements of airframe, power plant and avionics.

RPAS experience for the integration and/or regulation of aerospace

- Guiding principles for the development of a regulatory concept for RPAS (fairness, equivalence, responsibility and accountability, transparency etc.).
- Recently there have been discussions on the ramifications of the approach (for RPAS) and of the fundamental relations between the parts of the total aviation system, ELOS and guiding principles.
- For the specific category an **“Operations Authorisation” (OA) will be issued either by the National Aviation Authorities (NAA) possibly supported for technical tasks by Qualified Entities (QE)** as defined today in the EASA Founding Regulation or by a specifically approved organisation. Such an organisation could be called an accredited body (to differentiate from a qualified entity) and would have the possibility to perform legal acts such as issuing the authorisation. This option would necessitate a change to the EASA Founding Regulation. The OA should clearly specify the specific conditions and limitations for the intended operation and can be issued to authorise a single event or a series of operations under specified conditions.

Lessons learned in ICAO in regard to RPAS

- One should – for instance in view of ICAO Space Learning Group – dedicate enough time to figuring out what is really necessary and vital for the global community i.e. don't rush, do study and narrow focus to core issues and focus on those.
- Know the related international Conventions and instruments and consider legal issues from beginning, for there are many hidden implications that have to be discovered before it is too late and for instance possible ICAO Standards or guidance have been developed in a direction that contravenes the conventions.
- Task a multidisciplinary group to develop a holistic vision; for example of the flying “object itself”, the personnel involved, the operator and operations, the insertion in ATM or equivalent and the spaceports/aerodromes.
- It's a process during which one should take time to acquire experience, debate and build consensus.



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Thank You!

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