RAeS RPAS Integration – Risk-Based Approach Seminar – 22 Mar 2017

Overview. Brief outline of one-day seminar, not all discussions captured. Encouraging signs of flexibility from the regulators and recognition that RPAS here to stay, burgeoning sector that requires proportionate regulation.   It was clear from conversations and presentations that there was a significant amount of work ongoing to develop viable UTM systems.

-        Mike Gadd (CAA) Described CAA view of the total safety picture, noting that responsibilities extended to protecting those being overflown. Discussed the CS25-1309 standards as an example of how Safety Condition Targets aggregate to generate an overall platform risk of 1×10^{-7} or less. Lessons from manned aviation need to be adapted to the new RPAS ops, life-cycles and environments. Starting point for oversight will be compliance with min regulatory demand. PBO will rely on a shared understanding of risk, with credit being given for over-performance (against simple compliance) and for improvements in safety performance.

-        Craig Lippett (ARPAS-UK) noted that most UK activity is <20kg but that there was a high first-year attrition rate for smaller operators (of which now 2000+). There are 150-200 medium-scale operators (5-7 staff) with risk approach driven by commercial aspects. Larger operators (150-200), but now seeing more partnerships being developed, with collaboration seen as the key to survival. Risk mitigation tools included geo-fencing from within a separate UTM, and some operators were now looking at ballistic recovery systems as a means of gaining access to high-risk and congested (urban) areas. BVLOS would need integration with ATC. Mention of (BVLOS) "Project Airstart", link here.

-        Antonio Marchetto (EASA) discussed lack of harmonisation across EASA MS, the move to common rules was intended to be proportionate and flexible. Certification would only be required for larger/complex/high-risk platforms and use of the CE mark in other cases (taking advantage of harmonised EU regs). BVLOS rules are being developed and EASA has a bi-weekly conference with the FAA under the JARUS banner. Low-risk standard scenarios would be dealt with under a simple declaration but high-risk ops would require an authorisation. The concept of U-space (at very low levels) was being explored and the first concept paper would be published in the near future.

-        Dewar Donnithorne-Tait. (RAeS RPAS Gp) Concept of mathematical risk analysis, need to handle air and surface risk separately. One size does not fit all for airworthiness purposes. If the C2 link fails, you cannot blame the pilot – so questions about liability in such cases. Caution about GPS jammers, an unknown quantity at the moment.

-        Simon Phippard. (Bird & Bird) Liability and other legal considerations. Bulk of risk are 3rd party and so normal law applies (tort, product liability, statutory duties and strict liability), no fundamental change in liability exposure. European Parliament Transport Committee is pushing for "high uniform standard" vice "adequate" despite Art 4.2 of the new Basic Regulation requiring a proportionate approach – this could drive significant cost into the commercial ops sector.

- Neil Kidd (Altitude Angels) Working with EU on UTM system. Aim is to build air picture to better enable sense/detect and avoid. Company has already built DroneAssist app for NATS.

- QinetiQ Zephyr-S and development of Safe Separation Argument. Strategy included early engagement with regulators and ANSPs, and use of a range of Airspace Control Measures. Zephyr treated as a sphere for traffic separation, conservative assumptions used on traffic density and separation criteria. Converted verbal (sic) barrier values into numerical factors for inclusion in BowTie XP model.

- Boeing Mil/MOD ScanEagle and S-100 camcopter involvement in Ex UNMANNED WARRIOR 2016. Used HSE and MIT (Weibel and Hansman) basics to define an expected level of safety for ground impact - aiming to reduce 3rd party risk. ALARP factoring used (York Univ) Goal Structuring Notation. During live fly, operators tasked to clear flightpath visually using onboard systems as further mitigation in defined ALARP corridors.

- Ed Klinger (Flock) Interesting pitch on PAYF insurance for drone operators. Data sets (ground, obstacles etc) plus operator details and user-generated FPLN to generate a risk index via bespoke algorithms, leading to an individual insurance price for an operation. Drag and drop feature allowed risk (and hence premium) to be mitigated by shifting op away from higher-risk locations. Iterative/learning process that would improve with time, so increasing operator experience/competence would be rewarded with lower premiums.

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