RPAS Airspace Integration Challenges for ATM & ANSPs
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Global Agreements - Regional Implementation
About CANSO

- CANSO – the Civil Air Navigation Services Organisation
- CANSO is the global voice of air traffic management (ATM) worldwide.
- Vision: to be the recognised leader in transforming global air traffic management (ATM) performance
- Mission: as the global voice of ATM, represents the views of ANSPs and creates value for its Members and stakeholders
- Delivers policy and standards of best practice through committees’ work programmes: Safety, Operations, and Policy
- CANSO Members support over 85% of world air traffic – 87 Full Members; 75 Associate Members
Global CANSO Presence
CANSO Programmes

Safety
Policy
Operations

ICAO

Organised by CANSO
Hosted by NANSO
Operation Standing Committee

- RPAS/CAWG
- AIMWG
- OASWG
- OPWG
- FIRBX
- ENVWG

- PBN SG
- ACDM SG
Background

- Remotely Piloted Aircraft Systems (RPAS) are an important element in the transition to the aviation system of the future

- Phases have been described as: Accommodation, Integration, and Evolution

- We are still in Accommodation.....we need to be about Integration

- But what does Integration mean for Air Traffic Management (ATM)?
More Background

- We still don’t know many things:
  - Can/should ANSPs apply the same separation standards as we do for manned aircraft?
  - Can/should ANSPs apply the same wake vortex criteria?
  - How will RPAS taxi on the surface of an aerodrome?
  - What will be the impact of RPAS operations be?
- Relationships with SESAR JU, FAA NEXTGEN, and ICAO ASBU all have some level of attention to RPAS, but the primary need is research ....
Goals for ANSPs

• Key factors
  – Ensuring safety
  – Maintaining efficiency
  – RPAS (regardless of size) operating within controlled airspace should comply with existing equipage requirements, procedures, and regulations unless operating with a waiver or exemption

• Work closely with RPAS stakeholders on integration issues
Actions - What is CANSO focusing on?

• Expanded the CAWG to include RPAS
• Integration of remotely piloted aircraft systems into current and evolving ATM systems
• Addressing insertion of Emerging Technologies
  – High Altitude Balloons
  – Commercial Space Reusable Launch Vehicles
  – So....what about Upper Class E?
• Work closely with RPAS stakeholders on integration issues
How is this turning into Action?

- Representing CANSO
  - ICAO RPAS Panel – SARPS development
  - Joint Authorities for Rulemaking Authorities (JARUS) Industry Stakeholder Consultation Board – Still exploring Roles and Products (Next meeting in Madrid/ This April)
  - SESAR Joint Undertaking
  - SESAR Horizon 2020
  - World wide events
    - ICAO small Unmanned Aircraft System (sUAS )Advisory Group – new!
- Finalizing RPAS Position Paper regarding ANSP concerns about the proliferation of small UAS
- Developing training materials on general RPAS operations
  - Backbone training outline is done
  - Want to go further
- Updating CANSO ANSP Considerations for RPAS Operations Publication
Challenges facing ANSPs

• ANSPs confirming that small RPAS operations are already impacting the safety and efficiency of ATM operations
  – Reports of close proximity events
  – Lack of State-by-state policy and regulations
• Demand for Beyond Visual Line of Sight Operations for RPAS
• Aerodrome vicinity activity
• Lack of standardised procedures and means to mitigate hazards associated with lost link and flyaway situations
• Insufficient application of existing safety management and safety risk management policy
• Lack of aviation/airspace knowledge among RPAS Operators
• Lack of standard phraseology and terminology
• Lots of focus on smalls......out of balance
What is the Scope of the Publication?

- Introduction and Objectives
- Conducting Routine RPAS Operations:
  - Unique Characteristics
  - Aerodrome and Terminal RPAS Operations
  - General RPAS Requirements
  - Special handling / In-Flight characteristics
  - Impact on FDP Systems
- Contingency and Emergency Operation Procedures:
  - Comm Loss / Lost Link
  - Emergency landing / Flight Termination
- Examples of Best Practice: US and Switzerland
- Conclusions
Guideline Objectives

- Raise awareness of RPAS operations to ANSPs
- Inform ANSPs how RPAS have been accommodated safely into ATM
- Identify issues to be addressed to achieve RPAS integration
- Suggested audience: policy-makers, management and those responsible for procedures
- Focus: Medium/High Altitude Long Endurance (MALE/HALE) RPA operating in Controlled Airspace
Impact of Routine RPAS Operations

- Ground movement / taxiing can be challenging
- In-Flight: IFR-only, slow, spiral climb, high altitude, non-standard GPS-based avionics
- Beyond Visual Line of Sight (BVLOS) operations normally only in segregated airspace, but employing SMS principles. Some exceptions: Swiss, USA and Arctic
- C2 datalink via satellite – potential for ‘latency’
- RPAS-specific phraseology not yet developed
- Impact on FDP Systems: multiple waypoints, long endurance, non-standard flight plan data
Contingency and Emergency Procedures

- Radio Failure ⇔ Manned Aircraft

- Lost Link: “The loss of C2 link with the RPA such that the remote pilot can no longer manage the aircraft’s flight”. RPA follows pre-programmed maneuver – requires detailed pre-flight ANSP-RPAS collaboration

- Diversion: Should be ⇔ Manned Aircraft, but ANSP-RPAS pre-planning required

- Flight Termination System (FTS): last resort CFIT

Note: All aspects of RPAS operations should have ANSP input
What does the near future look like?

- Finalize ANSP generic training material for RPAS that serves as an introduction to many in the work force that have yet to actually talk to or work an RPAS.

- Continued changes to the “Considerations” document by adding an artifacts list of known changes to existing automation and/or policies needed to be considered by ANSPs for ATM inclusion at some point in the future.

- Propose or publish a statement on the ANSP concerns relative to the increase of small RPAS operating at VLL, especially those operating too close to the aerodrome environment.
Dubai hosted the first World Drone Championship on 11 March 2016, what else??
Conclusions

- Drones, (RPAS), (UAVs), balloons, and commercial space vehicles are some of the multiple new users that are creating additional challenges to airspace management – from below, within, above, passing through and even undeliberate re-entries.
- They cannot be ignored or banned
- ATM industry needs to understand the unique opportunities and challenges that these users of rapidly developing new technology will bring.
- CANSO is engaged heavily in RPAS Integration
- In the process of finalizing a position documents in the near future
- Safety, Safety, Safety.....