IMPACT OF RPAS ON ATM

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RPAS INTEGRATION PRINCIPLES

- INTEGRATE NOT ACCOMMODATE
- As safe as manned aviation
- Should not excluded other airspace users
- Transparent to other airspace users and ATC

So what is the possible impact of RPAS On ATM?
INTEGRATION or ACCOMODATION
TYPES OF OPERATIONS

Instrument Flight Rules (IFR)

Visual Flight Rules (VFR)

Very Low Level Operations
- Visual Line of sight (VLOS)
- Extended- Visual line of sight (E-VLOS)
- Beyond visual line of sight (B-VLOS)
INTEGRATION CHALLENGES (1)
PERFORMANCE

- Need to develop minimum performance requirements for the Network
  - Speed
  - Climb/descent
  - Turns

- TMA
  - Speed
  - Climb/descent
  - Turns

- Outside Network and TMA
  - No requirements for performance
INTEGRATION CHALLENGES (2)

- DATA LINK requirements
- SPECTRUM
- CNS
CNS requirements

- SPECTRUM
  - Availability
  - Use on non-aviation bands

- CNS Infra structure
  - Surveillance
  - GPS vulnerability
  - Frequency interference

- ATM infrastructure
  - ATC systems
  - Flight planning
  - NOTAMS
INTEGRATION CHALLENGES (3)

DETECT & AVOID
Rules of the AIR
RULES of the Air

- See and avoid
  - Not sufficient
  - 82 mid air collisions in 5 year (light aircraft)
  - Detect ability

- AIRPORTS
  - Ground operations
  - IFR/VFR versus small RPAS (non-IFR?VFR)
  - Use of RPAS by airports and airlines
COMPARISON Manned versus Unmanned

- **Manned world:**
  - Conservative
  - Evolutionary
  - Organised
  - Safety culture

- **Unmanned world:**
  - Innovative
  - Revolutionary
  - Organised? 
  - Safety culture?

What? Without a pilot?
WHAT ARE THE ISSUES?

• See and avoid
• Rules of the air
• Lack of organisation
• Mix of airspace users
• Solutions might impact ATM/CNS
• Spectrum availability
• AIRPORTS
• Illegal operations
WHAT IS BEING DONE?

- Strong push from EC
- R&D in SESAR 2020
- Regulation through JARUS and EASA
- ICAO launches RPAS manual
- Single cockpit operations?
- Accommodation for MIL (for now)

EUROCONTROL PRO-ACTIVE in supporting and leading RPAS ATM integration
WORK TOGETHER!

- EUROCONTROL
- EC
- EASA
- RPAS COMMUNITY
- Airline associations
- ESA
- ANSP
- JARUS
- ICAO

WE NEED A GLOBAL HARMONISED AND SAFE APPROACH!