RPAS integration in airport and TMA operations

Conclusions and Recommendations from the INVIRCAT Project
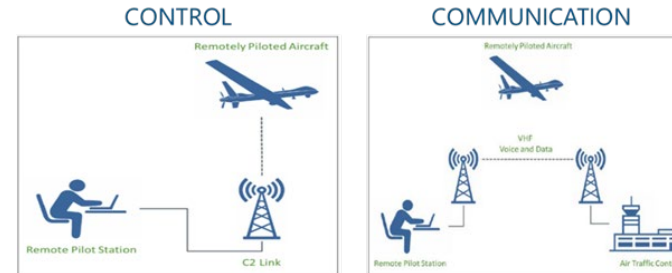
SESAR 2020 SHOWCASE

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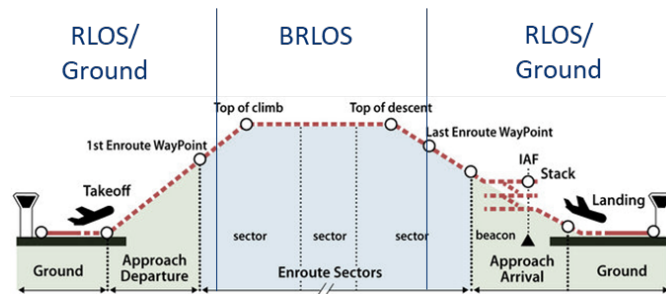
# Challenges for RPAs integration


Sources: dronedj.com, Airliners HD (Youtube)
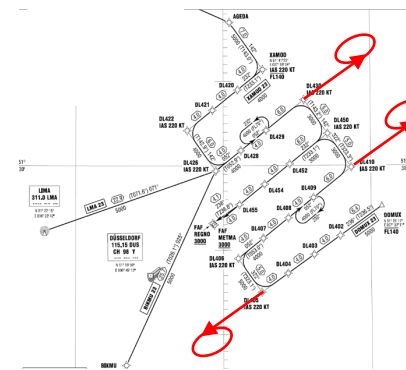
## RPAS Configurations


Source: ICAO Manual on RPAS, 2015

## Link Architectures


Source: Letondal et. al., Flights in my hands [...], 2013

## Latency Aspects



## RPAS Specialties in Operations

# INVIRCAT Scope

INVIRCAT developed a CONOPS for RPAS integration within the TMA and airports under IFR.

With special focus on

- Impact of latency,

- Automatic Take-off and Landing (ATOL), and

- Handover of RPA control between Remote Pilot Stations

# Validations

Real-time simulations

- C2 link focus
- R/T voice focus
- R/T handover focus
- ATOL focus

# Operational recommendations

- Specific procedures, phraseology and training for contingency situations

- New procedures so DAA use is correctly understood and integrated

- Training for AutoTaxi and WheelTug

- The handover procedure is made known to ATC and should be outside the TMA

More in D4.3 "Final Report: Impacts and Recommendations"
at https://www.invircat.eu/
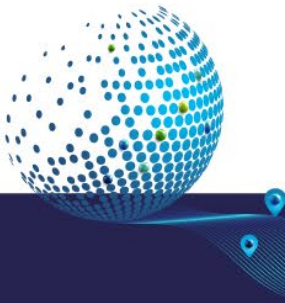
# Technical recommendations

- Identifying element/symbol for RPAS

- Report C2 link expected latency

- RPSs available at airports

- Compatibility between RPS and RPA during handover

- Indication on the ATCO HMI for simultaneous handovers of multiple RPAS

More in D4.3 "Final Report: Impacts and Recommendations"
at https://www.invircat.eu/

# Regulatory recommendations

- New ATOL and RPAS propulsion failure related regulations
- Standardization of the handover procedure
- Harmonization of C2 link failure procedures
- Back-up line in case of communication failure
- Enforcement of acceptable latency limits

More in D4.3 "Final Report: Impacts and Recommendations"
at https://www.invircat.eu/

**Investigate IFR RPAS Control in Airports and TMA**

# INVIRCAT

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