Demonstration of Satellites Enabling the Insertion of Remotely Piloted Aircraft Systems in Europe

UAS/RPAS Air Traffic Insertion Starts Now

Dirk-Roger Schmitt, Frank Morlang, Henk Hesselink,

AT-One EEIG

AT-One combines the strength of NLR and DLR in ATM Research
DeSIRE

Demonstration of Satellites enabling the Insertion of RPAS in Europe
DeSIRE: Demonstration of Satellites enabling the Insertion of RPAS in Europe

Demonstrate the safe insertion of RPAS in no-segregated airspace, using satellites
Demonstrate to the user/stakeholders that RPAS and flying in non-segregated airspace can fulfill their needs
Performed in Murcia, Spain
Test of ground based detect and avoid
- ATC separation
- Safety operator in the GCS
- Two intruder aircraft

Follow on to simulations performed at AT-One
DeSIRE: Aircraft preparation
CLAIREF

CiviL Airspace Integration of RPAS in Europe
CLAIRE: CiviL Airspace Integration of RPAS in Europe
Societal impact
• Safe integration of RPAS into non-segregated civil airspace (mixed operations TMA & airport)
• Contribution to establish legislation which allows RPAS operations

Economic impact
• Efficient procedures for integration of RPAS into non-segregated civil airspace
• New RPAS legislation will boost legal usage of RPAS

SESAR RPAS ‘Demonstration Activities’ Projects
- Integration of RPAS into non-segregated airspace in a multi-aircraft and manned flight environment
- Concrete results filling the operational and technical gaps identified for RPAS integration into non-segregated airspace
**Simulations, followed by live trials in UK airspace**

(Class A/D, Cardiff TMA) using Watchkeeper RPAS

- Handover to other ATC centres
- Merging take-off and landing with other traffic
- Approach on remote airport

**Status:**

- Simulations have been performed
- This summer: live trials

**Challenges:**

DAA (IFR/VFR, by ATC), ATM (sector handover, communication, back-up communication)

**Intended for:** ANSP, state operators, military operators

**Applications:** Surveillance by HALE / MALE type RPAS, communications relay
AIRICA

ATM Innovative RPAS Integration for Coastguard Applications
AIRICA: ATM Innovative RPAS Integration for Coastguard Applications

**Phase 3**
*Operations beyond sight of the pilot, but in parts of the airspace where there is no other aviation (BVLOS operations)*

- Cooperation with NL Coastguard for demonstrating safe RPAS operations BVLOS in (non-)segregated airspace

- **Coastguard activities**
  - Various missions, e.g. Search and Rescue
  - Various airspace classes

- **Goals / requirements**
  - VLOS for take-off and landing, BVLOS for transit and en-route
  - On-board Detect & Avoid capabilities (cooperative intruders)
  - Intruders en-route
  - Interface with air traffic controller

- **Challenges**
  - RPA flying at low level BVLOS (RLOS)
  - Segregated and non-segregated airspace
  - Other traffic en-route and at airport

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[www.sesarju.eu/node/1627](http://www.sesarju.eu/node/1627)
November 2015 demo flights:
- Gain experience by flights in EHKD CTR + EHR8
- Report lessons learned and recommendations for
  - Research
  - Flights in non-segregated airspace

Challenges:  DAA (VLL) (cooperative), C2 (reliability / integrity), Airport operations (continued), Intruders
Intended for:  Customs, rescue services, ANSP, electricity companies, railroads, ministry of infrastructure
Applications:  Border patrol, search and rescue, surveillance of dykes / infrastructure (rail, power lines)
AT-One facilities
AT-One
RPAS-related facilities

NARSIM ATM enroute

Tower Research Simulator

Skywalker X8

Cessna Citation II Pseudo UAS

Swearingen Metro II Pseudo UAS

NLR site Marknesse

Bergen Turbine

Multicopters