



The AIRICA Project



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Overview



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- 2. RPAS integration roadmap
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 - Overview
 - Consortium

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- Demonstration
- D&A system overview
- Expected achievements

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RPAS introduction

• RPAS as defined by ICAO

- Remotely Piloted Aircraft System
- Subset of Unmanned Aircraft Systems (UAS)

• Autonomous flight?

- RPAS: no
- UAS: yes

• ICAO not 'happy' with (civil) autonomous flights

• Who is responsible?

⇒ In civil aviation ICAO limits its scope to RPAS

• RPAS have large potential, but are limited

⇒ European roadmap (following ICAO approach)



RPAS integration roadmap: overview

• RPAS integration into European Aviation System





RPAS integration roadmap: details

Initial operations: operations under CAA's restrictions

- (almost) no cross-border operations
- strict conditions for integration into non-segregated airspace

Integration: operations according to harmonized regulations

- access non-segregated airspace
- operate at aerodromes
- **Evolution:** achieving ultimate goal
- certified and approved RPAS
- flown by licensed pilots
- operated by certified operators
- operating cross-border in non-segregated airspace over populated territory
- \Rightarrow Complete integration





AIRICA project

• ATM Innovative RPAS Integration for Coastguard Applications



• Demonstrate RPAS integration into non-segregated airspace

SESAR project
Airspace integration with current capabilities





AIRICA overview

• Challenges

- Flying low level Beyond Visual Line Of Sight
- Different airspace classes (segregated & non-segregated)
- Other traffic, en-route as well as on airport

Requirements

- On-board Detect & Avoid (D&A) capabilities
- Simultaneous Non-Interfering (SNI) operations at airport
- Interface with air traffic controller

• Phasing

- Start on 25 October 2013
- Duration 2 years

AIRICA consortium

- NLR (consortium coordinator / project manager)
 - Expertise on Detect & Avoid, Air Traffic Management interfacing, Simultaneous Non-Interfering operations

Netherlands Coastguard

- Prime stakeholder & intruder aircraft
- Royal Netherlands Air Force
 - Air Traffic Control services & intruder aircraft

SCHIEBEL

- Glasemann Systems
 - OPV provider
- Schiebel
 - RPAS provider













Royal Netherlands Air Force



AIRICA demonstration: objectives

• Demonstrate realistic mission

- In non-segregated airspace
- Beyond Visual Line of Sight
- Using D&A based separation (Mode S & ADS-B)

• Demonstrate feasibility of communication with ATC

• Detailed live information on waypoint route navigation

• Show

- Feasibility of (SNI) concept
- Fly prescribed path in line with local navigation aids accuracy



source: OPTIMAL



AIRICA demonstration: flight scenario

Dutch Coastguard

- Variety of missions in North Sea area
- Beyond Visual Line Of Sight (BVLOS)
- (Non-)segregated airspace



• RPAS mission

- Surveillance mission
- Under military Air Traffic Control
- Airspace classes
 - Segregated airspace: intruder test flights
 - Non-segregated airspace: demonstration flight
- To the West of Den Helder Airport



Waiver requirements for test and demonstration flights

• Exemptions for

- Remote pilot license
- Certificate of airworthiness
- Noise certificate

Approved

- Operations Manual
- Emergency procedures & test flight

• Operational Risk Assessment & Mitigation Plan, because

- No Certificate of Airworthiness
- Beyond Visual Line Of Sight







AIRICA D&A system overview

• Processing system

- Send sensor signals to RPS
- Execute D&A algorithms
 - Inform remote pilot & safety pilot
 - Automatic evasive action
 - Instructions to be TCAS compliant





AIRICA expected achievements

• Equip RPAS

- Recently developed state-of-the-art D&A equipment
- Automatically executed D&A actions

Implement

• State-of-the-art interaction between ATC and RPAS

Demonstrate

- Effective functioning of D&A system in realistic mission in non-segregated airspace
- Integration with ATC, low to no impact on airport operation

Successfully fly

 Realistic mission, demonstrating functionality and advantage of systems used



Conclusions

• RPAS's have potential, but are limited due to

- (Lack of) regulations
- Lack of qualified/certified RPAS's

• European roadmap for RPAS integration

- Stepwise implementation
- Time frame 2013-2028

AIRICA project demonstrates realistic mission

- Non-segregated airspace
- Beyond Visual Line Of Sight
- On-board D&A equipment

• AIRICA is important step towards complete integration





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