ALFA
H2020 PROJECT:
Project

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Information exchange and interoperability

Advanced Low Flying Aircrafts Detection and Tracking
Contents

- The problem
- ALFA solution
- ALFA concept & interoperability
- Key technologies
The problem
Airborne smuggling

Spain

Small aircraft

Hangglider

Drones

Morocco

Remote controlled aircraft

Swarm of drones

Hangglider

Small aircraft
The problem

Three levels in Architecture

• Operational
  ✷ Already shown

• Functional
  ✷ Detection of suspicious low flying small aircraft

• Technical
  ✷ High background clutter
  ✷ Sensitivity
  ✷ Radar/optical horizon
  ✷ Unsuspected flights
  ✷ Natural objects
    • Birds
    • Fans
Contents

- The problem
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ALFA Solution - Interoperability

Spain

Guardia Civil
SIVE

Morocco

Guardia Nacional Republicana
SIVICC

Interoperability
ALFA Solution - Technology

1) Detect and classify
- Radar
- Swarm of drones
- Microlight aircraft
- Remote controlled aircraft

2) Predict likely landing area
- Landing very likely
- Landing less likely

Spain

Morocco

GIS info
ALFA solution

- Multi-sensor
  - Radar
  - Optical
  - Passive RF
- Additional info
  - GIS
  - AIS/IFF/ADSB
  - “Internet”
- Flight path analysis
- Landing zone prediction
Contents

- The problem
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- ALFA concept & interoperability
- Key technologies
ALFA Concept

- Fusion
- Analysis
- Landing site prediction
- Cueing and enrichment

ALFA core

ALFA users

Other users, e.g.
FRONTEX
Eurosur/CISE

ALFA open architecture backbone

ALFA mobile sensors

External border surveillance systems

Internet

ALFA sensors

Radar

EO

RF
ALFA Concept & Interoperability

- Fusion
- Analysis
- Landing site prediction
- Cueing and enrichment

ALFA open architecture backbone

ALFA sensors

ALFA mobile sensors

External border surveillance systems

Internet

ALFA users

Other users, e.g.

FRONTEX

Eurosur/CISE

• Fusion
• Analysis
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ALFA core

ALFA users

Other users, e.g.

FRONTEX

Eurosur/CISE
Alfa Operational concept
Contents

- The problem
- ALFA solution
- ALFA concept & interoperability
- Key technologies
Key technologies

- Active radar
- Electro optical sensors
- Radio location
Key technologies

- Sensor fusion
- Decision support
- Landing site prediction
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