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# Infoday – BORDER EXTERNAL SECURITY

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*European Commission*

*DG Migration and Home Affairs*

Lisbon 19 April 2016



# Content

- ✓ *EU Security Research (as related to border management)*
- ✓ *H-2020 "Secure Societies" and policy context*
- ✓ *BES topics in the workprogramme 2016*
- ✓ *Some words on preparing the future...*



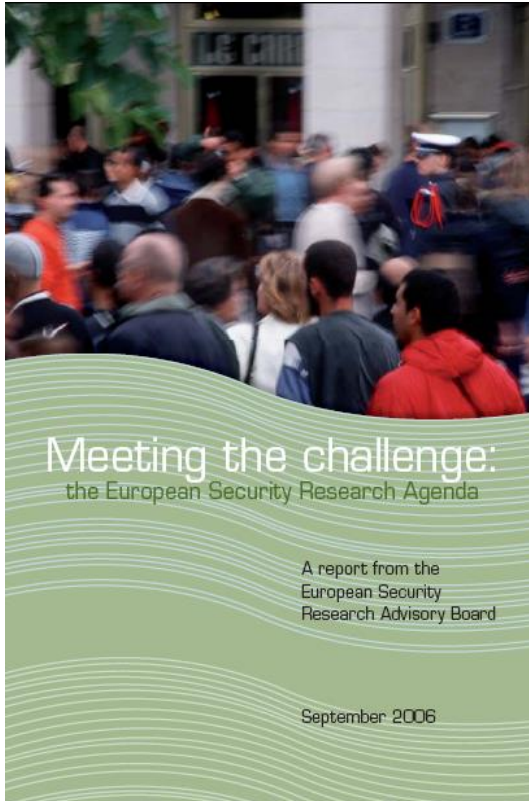


## ***Policy objectives:***

- *Contribute to setting up a European Research Area,*
- *Promote R&D activities in the areas of interest to other EU Policies*
- *Support the competitiveness of the EU Industry.*

## ***PRINCIPLES:***

- **Proposals** in response to calls, on the basis of yearly workprogrammes
- **Collaborative R&D:** Min 3 entities from 3 countries
- **Competitive selection** based on **Peer Review**
- **Grants** (subventions): shared costs, IPR to proposers.



*Develop technologies and produce knowledge to reduce capability gaps*

*Overcome fragmentation of markets*

*Stimulate collaboration between technology providers and users*

# FP7 (2007 – 2013) Security Research: Mission Areas



Increasing the Security of Infrastructures and Utilities	20.0 %
Increasing the Security of the Citizens	21.0 %
<b><u>Intelligent Surveillance and enhancing Border Security</u></b>	<b><u>15.6 %</u></b>
Restoring Security and Safety in case of Crisis	22.8 %
Security systems Integration, Interconnectivity and Interoperability	7.2 %
Security and Society	8.4 %
Security research coordination and structuring	5.0 %

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***1.4 B€: EU funding ~50% of total (European) civilian Security R&D***

***More than 300 projects (32 borders) and 1,500 participants (21% SME)***

[http://ec.europa.eu/dgs/home-affairs/financing/fundings/pdf/research-for-security/security\\_research\\_catalogue\\_2014\\_en.pdf](http://ec.europa.eu/dgs/home-affairs/financing/fundings/pdf/research-for-security/security_research_catalogue_2014_en.pdf)



- SEC-2007-3.1-01 Integrated border management system (phase 1)**
- SEC-2007-3.2-01 Main port area security system (including containers)**
- SEC-2007-3.2-02 Unregulated land borders and wide land surveillance system**
- SEC-2007-3.2-03 Integrated check points security**
- SEC-2007-3.3-01 Air 3D detection of manned and unmanned platforms**
- SEC-2007-3.3-02 Surveillance in wide maritime areas through active and passive means**
- SEC-2007-3.3-03 Solutions for ensuring disruption-tolerant end-to-end communication availability, relying on physical and logical technologies, on diversity of hybrid systems**
- SEC-2009.3.2.1: Main port area security system**
- SEC-2009.3.2.3 Exploitation of Open Source Information in Support of Decision Making Processes**
- SEC-2009.3.2.2: Sea border surveillance system**
- SEC-2009.3.4.1 Continuity, coverage, performance (incl. UAV), secure data link**
- SEC-2010.3.1-1 European-wide integrated maritime border control system – phase II**
- SEC-2010.3.2-1 Monitoring and tracking of shipping containers**
- SEC-2011.3.4-1 Security of biometric data and travel documents**
- SEC-2011.3.4-2 “Artificial sniffer”**
- SEC-2011.3.4-3 Border crossing points of the future**



- SEC-2012.3.1-1 Increasing trustworthiness of vessel reporting systems**
- SEC-2012.3.1-2 Pre-Operational Validation (POV) at EU level of common application of surveillance tools**
- SEC-2012.3.4-1 Research on "automated" comparison of x-ray images for cargo scanning with reference material (use of historic images in an automated environment) to identify irregularities**
- SEC-2012.3.4-2 Research and validation for sub-surface fingerprint live scanners**
- SEC-2012.3.4-3 Tools and processes for assessing the impact of policies/actions on border control**
- SEC-2012.3.4-4 Innovative, cost-efficient, and reliable technology to detect humans hidden in vehicles/closed compartments**
- SEC-2012.3.4-5 Further research and pilot implementation of Terahertz detection techniques (T-Ray)**
- SEC-2012.3.4-6 Enhancing the workflow and functionalities of Automated Border Control (ABC) gates**
- SEC-2012.3.5-1 Development of airborne sensors and data link**
- SEC-2013.3.2-1 Pre-Operational Validation (POV) on land borders**
- SEC-2013.3.2-2 Sensor technology for under foliage detection**
- SEC-2013.3.2-3 Mobile equipment at the land border crossing points**
- SEC-2013.3.4-1 Border checkpoints - hidden human detection**
- SEC-2013.3.4-2 Extended border security - passport breeder document security**
- SEC-2013.3.4-3 Security checks versus risk at borders**



# FP7 R&D Projects related to border security



Europäische

<b>Air borders</b> <b>3.3 M€</b>	<b>ARGUS 3D</b>	<b>AiR Guidance and Surveillance 3D</b>	<b>SELEX ES SPA</b>
<b>Border checks</b> <b>78.2 M€</b>	<b>ABC4EU</b>	<b>ABC GATES FOR EUROPE</b>	<b>INDRA</b>
	<b>ACXIS</b>	<b>Automated Comparison of X-ray Images for cargo Scanning</b>	<b>EMPA</b>
	<b>CONSORTIS</b>	<b>Concealed Objects Stand-Off Real-Time Imaging for Security</b>	<b>VTT</b>
	<b>DOGGIES</b>	<b>Detection of Olfactory traces by orthoGonal Gas identification technologIES</b>	<b>III V LAB GIE</b>
	<b>EFFISEC</b>	<b>Efficient Integrated Security Checkpoints</b>	<b>MORPHO</b>
	<b>FASTPASS</b>	<b>A harmonized, modular reference system for all European automatic border crossing points</b>	<b>Austrian Institute of Technology</b>
	<b>FIDELITY</b>	<b>Fast and trustworthy Identity Delivery and check with ePassports leveraging Traveler privacy</b>	<b>MORPHO</b>
	<b>HANDHOLD</b>	<b>HANDHold - HANDHeld OLfactory Detector</b>	<b>QUEEN'S UNIVERSITY BELFAST</b>
	<b>INGRESS</b>	<b>Innovative Technology for Fingerprint Live Scanners</b>	<b>MORPHO</b>
	<b>ORIGINS</b>	<b>Recommendations for Reliable Breeder Documents Restoring e-Passport Confidence and Leveraging Extended Border Security</b>	<b>MORPHO</b>
	<b>SNIFFLES</b>	<b>Artificial sniffer using linear ion trap technology</b>	<b>TWI LIMITED</b>
	<b>SNOOPY</b>	<b>Sniffer for concealed people discovery</b>	<b>UNIVERSITA' BRESCIA</b>
	<b>TERASCREEN</b>	<b>Multi-frequency multi-mode Terahertz screening for border checks</b>	<b>ALFA IMAGING SA</b>
	<b>BEAT</b>	<b>Biometrics Evaluation and Testing</b>	<b>IDIAP Research Institute</b>
<b>Surveillance</b> <b>10.8 M€</b>	<b>OPARUS</b>	<b>Open Architecture for UAV-based Surveillance System) (topic : SEC-2009.3.4.1 Continuity, coverage, performances, secure datalink</b>	<b>SAGEM DEFENSE SECURITE</b>
	<b>SUNNY</b>	<b>Smart UNmanned aerial vehicle sensor Network for detection of border crossing and illegal entry</b>	<b>BMT GROUP LIMITED</b>
<b>Land border</b> <b>28 M€</b>	<b>EWISA</b>	<b>EARLY WARNING FOR INCREASED SITUATIONAL AWARENESS</b>	<b>Politia de Frontiera Romana</b>
	<b>GLOBE</b>	<b>European Global Border Environment</b>	<b>TELVENT INTERACTIVA, S.A.</b>
	<b>MOBILEPASS</b>	<b>A secure, modular and distributed mobile border control solution for European land border crossing points</b>	<b>Austrian Institute of Technology</b>
	<b>TALOS</b>	<b>Transportable Autonomous patrol for Land bOrder Surveillance</b>	<b>PIAP</b>
<b>Sea borders</b> <b>95 M€</b>	<b>AMASS</b>	<b>Autonomous maritime surveillance system</b>	<b>CARL ZEISS OPTRONICS</b>
	<b>CASSANDRA</b>	<b>Common assessment and analysis of risk in global supply chains</b>	<b>TNO</b>
	<b>CLOSEYE</b>	<b>Collaborative evaLUation Of border Surveillance technologies in maritime Environment bY pre-operational validation of innovativE solutions</b>	<b>MINISTERIO INTERIOR</b>
	<b>CONTAIN</b>	<b>Container Security Advanced Information Networking</b>	<b>FOI</b>
	<b>I2C</b>	<b>Integrated System for Interoperable sensors &amp; Information sources for Common abnormal vessel behaviour detection &amp; Collaborative identification of threat</b>	<b>DCNS</b>
	<b>OPERAMAR</b>	<b>An Interoperable Approach to the European Union MARitime Security Management</b>	<b>THALES</b>
	<b>PERSEUS</b>	<b>Protection of European seas and borders through the intelligent use of surveillance</b>	<b>INDRA</b>
	<b>SEABILLA</b>	<b>Sea Border Surveillance</b>	<b>SELEX ES</b>
	<b>SUPPORT</b>	<b>Security UPgrade for PORTs</b>	<b>BMT</b>
	<b>TRITON</b>	<b>Trusted Vessel Information from Trusted On-board Instrumentation</b>	<b>ISTITUTO SUPERIORE M.BOELLA</b>
	<b>WIMAAS</b>	<b>WIDE MARITIME AREA AIRBORNE SURVEILLANCE</b>	<b>THALES SYSTEMES AEROPORTES</b>



# Land Borders



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# TALOS



*To meet the requirements connected with the diversified nature of the Eastern EU land border.*

*System designed to be adaptable, transportable and cost-efficient.*

*Unmanned patrolling vehicles with a high level of autonomy, controlled from transportable Unmanned Unit Command Centre (UUCC), in place of the fixed infrastructure consisting of fences and static sensors.*

***Semi-autonomous operation of the vehicles for efficient monitoring of large areas without engagement of large human resources.***

***Too complex and expensive.  
Not appropriate for "modus operandi".***

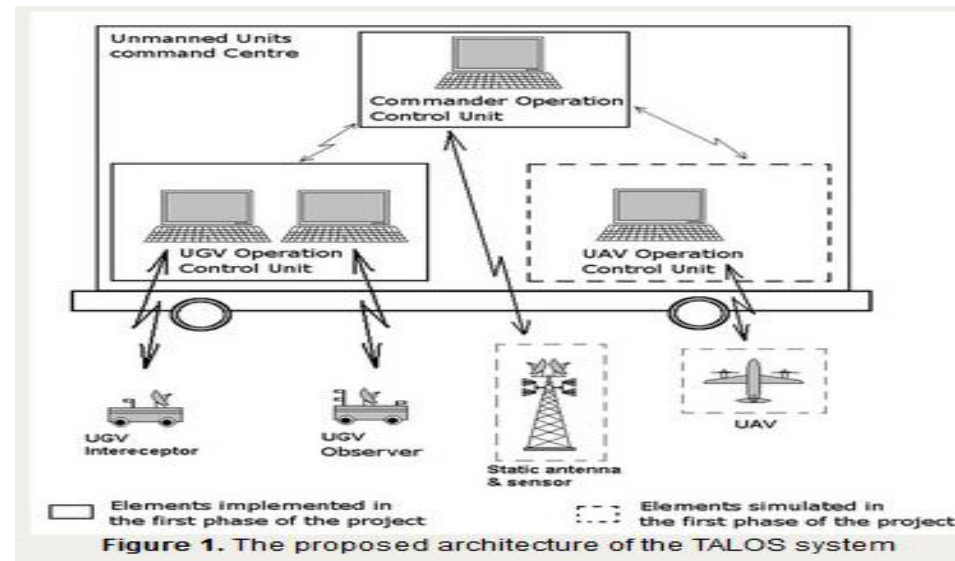
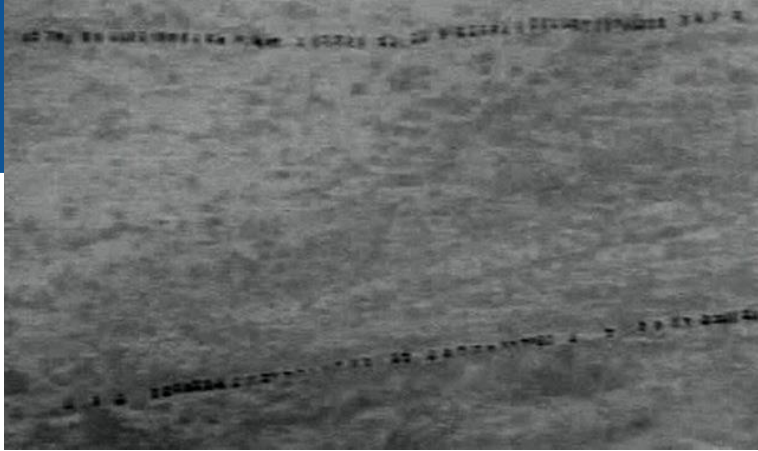


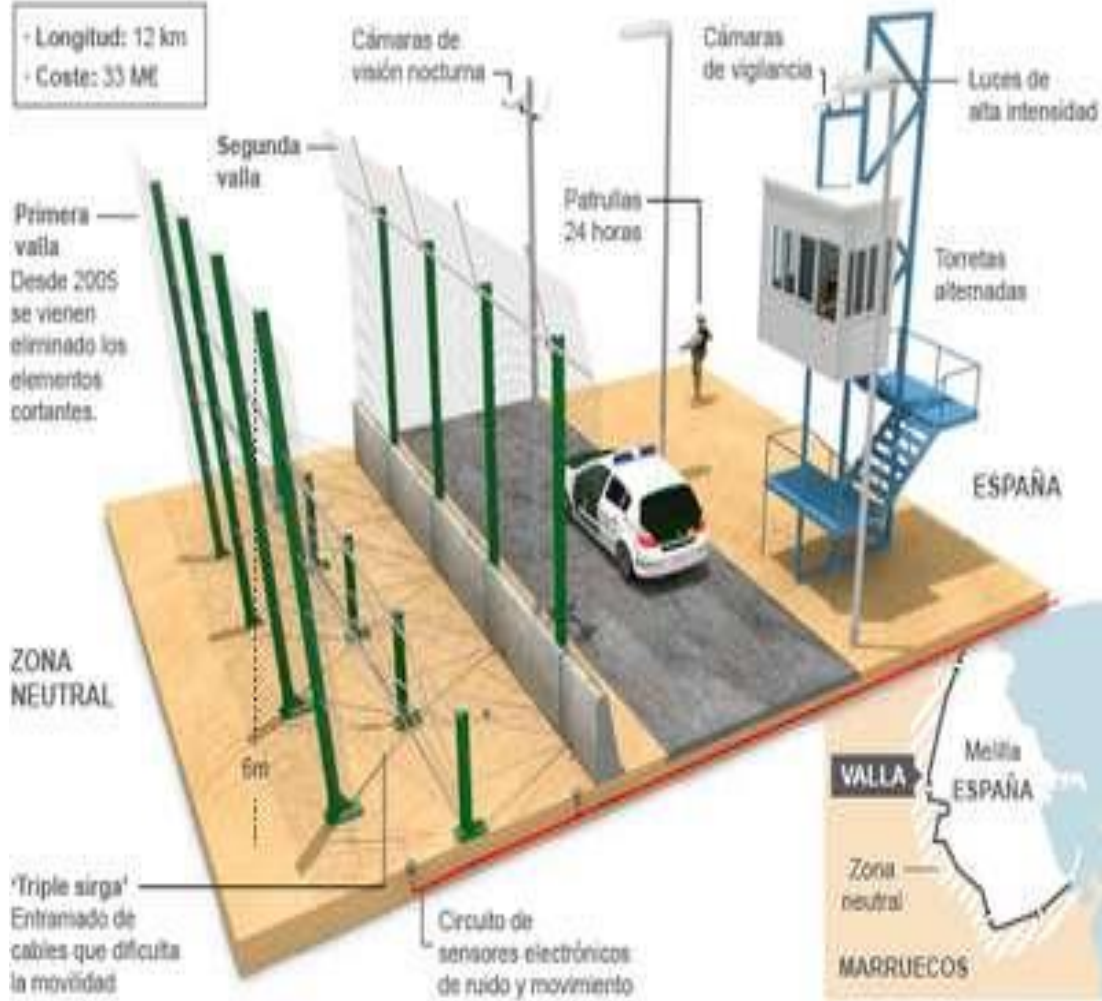
Figure 1. The proposed architecture of the TALOS system



# Land Borders



## Así es la valla de Melilla



FUENTE: Redacción Tema

INFOGRAFÍA: M. Cort



**Coordinated by the Romanian Border Police, other partners being:**

- **The Finnish Border Guard**
- **KEMEA (The Center for Security Studies), Greece**
- **Guardia Civil, Spain**

- \* *To promote further cooperation between (the participating and other) public authorities in charge of the surveillance of selected portions of the external EU land borders,*
- \* *to improve the quality and efficiency of their services (as related to security),*
- \* *through the Pre-Operational Validation (POV) of novel solutions.*

*EWISA concept aligned with the EUROSUR regulation providing an integrated solution at both the Strategic (National Contact Center (NCC)) and Tactical Level (Local Contact Center (LCC)/RCC).*

*The Core of the project is the **development and validation of the Video Analytics** component Centralized in NCC level and Decentralized in LCC/RCC level. Other sensors or sources at the national or regional level are also going to be integrated within the core system. The objective is to increase intelligence in surveillance.*

*In EWISA the functional and technical requirements of a "**network modular video analysis solution**" are being defined. These will refer to existing and future video sensors to be integrated with other supporting sensors, such as laser and radar.*

*The proposed solutions are planned for evaluation in different geographical areas, **on the basis of four scenarios** simulating the majority of environments of external EU borders.*

*<http://www.ewisa-project.eu/index.php/sec-14-bes-2016>*



# Land Borders



- Facial, Fingerprint Capture necessary
- Document Security Features check necessary
- Cars, busses, trains
- Control in the outback, manhunt, Interpol



An example of integrated project -> **EFFISEC**

<https://www.youtube.com/watch?v=KNGdK9ue2u4olish>

# Sea Border



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# Maritime Border Surveillance



## 8 Steps of EUROSUR Roadmap

COM(2008)68final of 13.2.2008

Phase 1: Streamlining & interlinking national border surveillance systems	1) National coordination centres (NCCs) 2) EUROSUR communication network 3) Cooperation with 3 <sup>rd</sup> countries
Phase 2: Common tools for border surveillance at EU level	4) R&D to improve performance 5) Common application of surveillance tools 6) Common Pre-frontier Intelligence Picture
Phase 3: Common Information Sharing Environment (CISE) for the EU maritime domain	7) CISE for internal security purposes 8) CISE (4all)

**SEC-2007-3.2-01 Main port area security system (including containers) - *Integration Project***

**SEC-2007-3.3-02 Surveillance in wide maritime areas through active and passive means**

**SEC-2009.3.2.2: Sea border surveillance system-*Integration Project***

**SEC-2009.3.4.1 Continuity, coverage, performance (incl. UAV), secure data link - *CSA***

**SEC-2010.3.1-1 European-wide integrated maritime border control system – phase II *Demonstration Programme***

**SEC-2012.3.1-1 Increasing trustworthiness of vessel reporting system**

**SEC-2012.3.5-1 Development of airborne sensors and data link – *Integration Project***

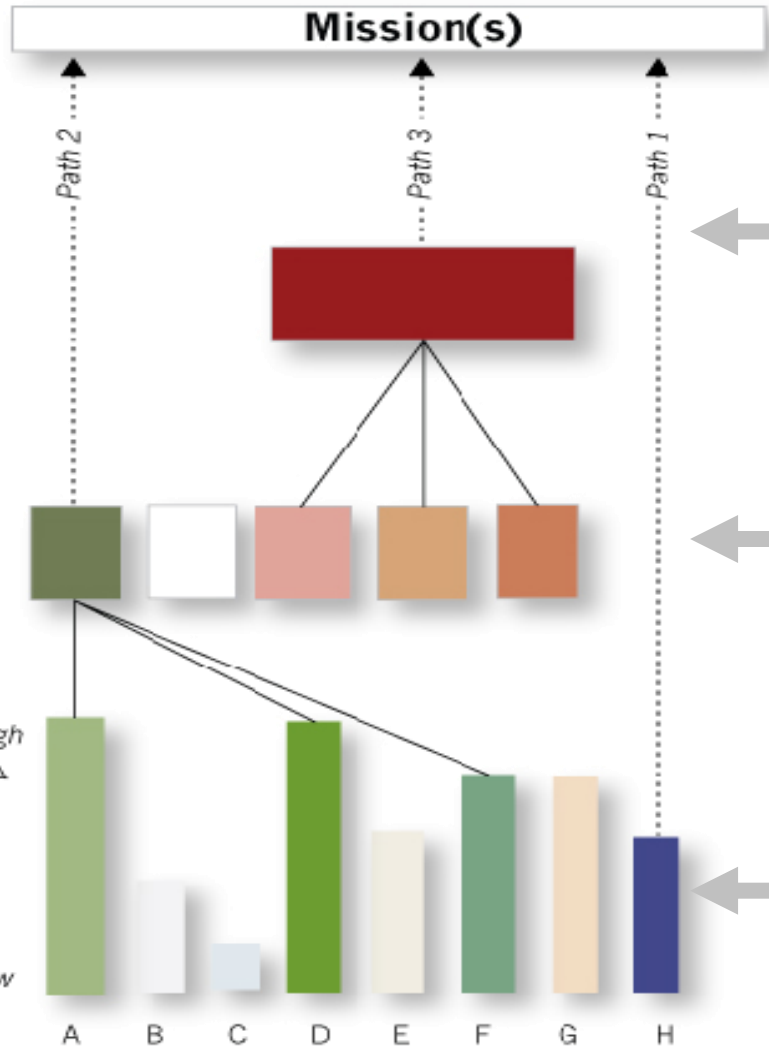
**SEC-2012.3.1-2 Pre-Operational Validation (POV) at EU level of common application of surveillance tools**

**REGULATION (EU) No 1052/2013  
of 22 October 2013**

**establishing the European Border Surveillance System (Eurosir)**



# Research routes in R&D for Maritime (Border) Security



Demonstration programmes

Integrated Projects

Capability projects

## Systems of systems demonstration

- Combination of IP results
- Multi-mission

**- Demonstration Programme PERSEUS (27 M€ EC contr.)**

**Implementation Group**

## System development and validation

- Combination of capabilities
- Mission specific

**SEABILLA (10 M€ EC contr.)**

**I2C (10 M€ EC contr.)**

**SUNNY (10 M€ EC contr.)**

**POV CLOSEYE (9 M€ EC contr.)**

## Capability development

- Technology development

**-> (WIMAAS, AMASS, TRITON)**

**- Road mapping:**

**OPERAMAR → POV CISE**

**OPARUS**



**OPERAMAR** *An InterOPERABLE Approach to the European Union MARitime Security Management*  
Coordinator Thales (.7 M€ EC Contr) [http://cordis.europa.eu/project/rcn/86254\\_en.html](http://cordis.europa.eu/project/rcn/86254_en.html)

**AMASS** *Autonomous Maritime Surveillance System*  
Coordinator Carl Zeiss (3.6 M€ EC Contr) <http://www.amass-project.eu/amassproject/>

**WIMAAS** *Wide Maritime Area Airborne Surveillance*  
Coordinator Thales S.A. (2.8 M€ EC Contr) [http://cordis.europa.eu/project/rcn/88640\\_en.html](http://cordis.europa.eu/project/rcn/88640_en.html)

**I2C** *(Integrated System for Interoperable sensors & Information sources for Common abnormal vessel behaviour detection & Collaborative identification of threat)*  
Coordinator DCNS (9.8 M€ EC Contr) <http://www.i2c.eu/>

**SEABILLA** *(Sea Border Surveillance)*  
Coordinator SELEX S.I. (9.8 M€ EC Contr) <http://www.seabilla.eu/cms/seabilla>

**SUNNY** *(Smart Unattended airborne sensors Network for the detection of vessels used for cross border crime and irregular entry)*  
Coordinator (BMT) (9.6 M€ EC Contr) <http://www.sunnyproject.eu/>

**TRITON** *(Trusted Vessel Information from trusted On-Board Instrumentation)*  
Coordinator ISMB (1.5 M€ EC Contr) <http://tritonproject.eu/>

# PERSEUS Protection of European seas and borders through intelligent use of surveillance

www.perseus-fp7.eu



Design of a system of systems architecture integrating surveillance systems to address complex security missions, focusing on criminal activities and irregular trafficking.

Best practices acquired through real-life exercises.

EC Contr. 27.8 M€

**Consortium:** *INDRA SISTEMAS (ES), AIRBUS SECURITY (FR), DCNS (FR), ENGINEERING (IT), ISDEFE (ES), EADS-CASA (ES), DEMOKRITOS (GR), GUARDIA CIVIL (ES), PRIO (NO), SAAB (SE), SES-ASTRA (LU), AJECO (FI), INTUILAB (FR), METEOSIM (ES), LUXSPACE (LU), SOFRESUD (FR), INOV (PT), SKYTEK (IE), LAUREA (FI), DFRC (CH), BOEING R&T EUROPE (ES), ECORYS (NL), CORK INST. OF TECHNOLOGY (IE), MOI France (FR), FORÇA AÉREA PORTUGUESA (PT), SATWAYS (GR), MINISTRY OF DEFENCE GREECE (GR), MINISTRY OF CITIZENS PROTECTION (GR), CMRE (NATO).*

## PERSEUS campaigns

Technical standards and recommendations defined.

A broad community of end users, of different nature, evaluated the system(s) and validated compliance with requirements.

Higher TRL (up to 7)

Efforts made to link with AMIF and ISF – Border Fund(s)



# Technology readiness levels (TRL)



Where a topic description refers to a TRL, the following definitions apply, unless otherwise specified:

- ✓ TRL 1 – basic principles observed
- ✓ TRL 2 – technology concept formulated
- ✓ TRL 3 – experimental proof of concept
- ✓ TRL 4 – technology validated in lab
- ✓ TRL 5 – technology validated in relevant environment (industrially relevant environment in the case of key enabling technologies)
- ✓ TRL 6 – technology demonstrated in relevant environment (industrially relevant environment in the case of key enabling technologies)
- ✓ TRL 7 – system prototype demonstration in operational environment
- ✓ TRL 8 – system complete and qualified
- ✓ TRL 9 – actual system proven in operational environment (competitive manufacturing in the case of key enabling technologies; or in space)

# PERSEUS (my appreciation)



*A long way towards a system of systems across the Mediterranean: neither industry nor MS authorities are ready.*

*The "Scenario driven approach" proposed resulted in different architectures.*

*PERSEUS produced interesting outcomes:*

- Better vision of expected evolutions, exchanges and issues;*
- Situation largely clarified with EUROSUR, Frontex, CISE, etc... and National Authorities;*
- PERSEUS demonstrated the possible integration of (some) National architectures.*
- Exchanges took place between PT, ES, FR and IT, both at Tactical and Strategic levels;*
- System fully operational, allowed testing it on real situations and target of opportunities.*

## *Lessons:*

***EUROSUR missions** (irregular immigration /cross border crime) (and thus C2 systems) are different.*

*From R&D point of view, topics are of different nature:*

- **Detection of small boats** (real technical issue);*
- Integrations at National level (political);*
- International integration (more political).*







# CLOSEYE

<http://www.closeye.eu/>



EC Contr 8.9 M€

More information at:  
[www.closeye.eu](http://www.closeye.eu)

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Presented by:

## Experiments

### Alboran

#### Lot 1 - Operational Overview



### Central Mediterranean

#### Lot 2 - Operational Overview



## Alboran Scenario-Solution 1



***For the 1<sup>st</sup> time National Authorities (Guardia Civil (ES), GNR (PT), Marina Militare (IT)) jointly plan and procure R&D. Participation of Iceland Coast Guard.***

***Industry called to demonstrate the efficiency and effectiveness of specific solutions in order to fulfil real demands.***

***Assessment of the performance levels of the solutions proposed is being conducted through a series of exercises (technical and operational).***

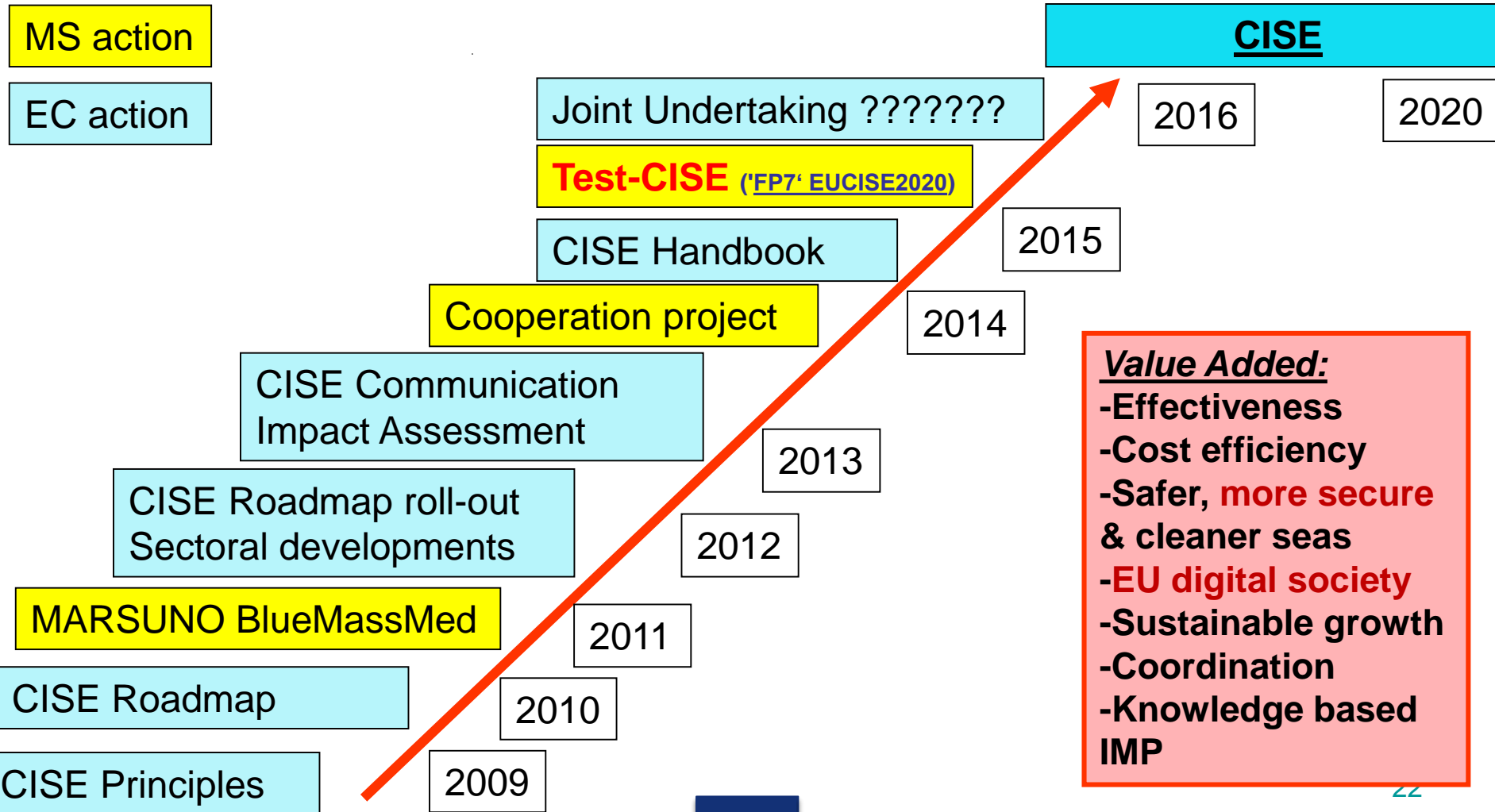
***<https://www.youtube.com/watch?v=TbtvoEXEas0>***



# Cross-sectoral interoperability for better 'Maritime Governance'

## CISE: Common Information Sharing Environment

[http://ec.europa.eu/maritimeaffairs/policy/integrated\\_maritime\\_surveillance/index\\_en.htm](http://ec.europa.eu/maritimeaffairs/policy/integrated_maritime_surveillance/index_en.htm)



- Value Added:**
- Effectiveness
  - Cost efficiency
  - Safer, **more secure** & cleaner seas
  - EU digital society**
  - Sustainable growth
  - Coordination
  - Knowledge based IMP





**Pre-Operational Validation** R&D cooperative project coordinated by ***Agenzia Spaziale Italiana***

***37 beneficiaries, 22 maritime surveillance authorities (and national ministries), 15 countries represented.***

*In the project the surveillance **authorities jointly** define the specifications for the **procurement of the "R&D"** experiment, in which to explore appropriate approaches, develop IT environment and solutions, test them and draw conclusions (in terms of interoperability and fitness for purpose).*

**The vision:** National Authorities and European Agencies to have a standardized common (information sharing) **environment** where maritime data and information can be accessed and sea events, warnings and alarms managed in a seamless, open decentralised and interoperable way.

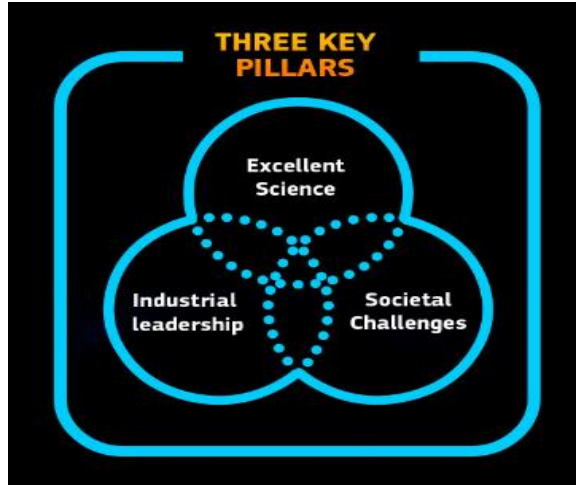
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**2014: adoption of the EU Maritime Security Strategy (EUMSS) and related action plan.**

[http://ec.europa.eu/maritimeaffairs/policy/maritime-security/doc/20141216-action-plan\\_en.pdf](http://ec.europa.eu/maritimeaffairs/policy/maritime-security/doc/20141216-action-plan_en.pdf)

*CISE is embedded in the 2<sup>nd</sup> workstrand:*

- 1. External action**
- 2. Maritime awareness, surveillance and information sharing**
  - 2.1. Further implement the Common Information Sharing Environment (CISE)
    - 2.1.6. Promote the development of projects in the field of maritime information such as the Pre-Operational Validation project of CISE (POV CISE).
- 3. Capability development**
- 4. Risk and crisis management, protection of infrastructures**
- 5. Research, innovation, education and training**



***Supporting Europe's excellent Science base***  
**31.73%      24 441 M€**

***Building Industrial leadership in Europe***  
**22.09%      17 016 M€**

***Tackling Societal Challenges for a better society***  
**38.53%      29 679 M€**

- Health, demographic change and wellbeing 7 472 M€
- Food security, sustainable agriculture and forestry, marine and maritime and inland water research and the Bio economy 3 851 M€
- Secure, clean and efficient energy 5 931 M€
- Smart, green and integrated transport 6 339 M€
- Climate action, environment, resource efficiency and raw materials 3 081 M€
- Science with and for society 462 M€
- Spreading excellence and widening participation 816 M€
- Inclusive, innovative and reflective societies 1 310 M€

**- Secure Societies 1 695 M€**

## OBJECTIVES

1. Fight crime, illegal trafficking and terrorism, including understanding and tackling terrorist ideas and beliefs
2. Protect and improve the **resilience** of critical infrastructures, supply chains and transport modes
3. **Strengthen security through border management**
4. Improve **cyber security**
5. Increase Europe's **resilience** to crises and disasters
6. Ensure **privacy and freedom**, including in the Internet and enhancing the societal legal and ethical understanding of all areas of security, risk and management
7. Enhance standardisation and interoperability of systems, including for emergency purposes
6. Support the Union's **external security** policies including through conflict prevention and peace-building

# 3. Strengthen security through border management (specific programme)



Technologies and capabilities are required to enhance systems, equipment, tools, processes, and methods for rapid identification to improve land, marine and coastal border security and management, including both control and surveillance issues, while exploiting the full potential of the European Border Surveillance System (EUROSUR).

These will be developed and tested considering their effectiveness, compliance with legal and ethical principles, proportionality, social acceptability and the respect of fundamental rights.

Research will also support the improvement of the integrated European border management, including through increased cooperation with candidate, potential candidate and European Neighbourhood Policy countries.

[http://ec.europa.eu/research/participants/data/ref/h2020/legal\\_basis/sp/h2020-sp\\_en.pdf](http://ec.europa.eu/research/participants/data/ref/h2020/legal_basis/sp/h2020-sp_en.pdf)

# Border Security and External Security sub-calls (covering objectives 3 and 6)



*Development of technologies, capabilities and solutions to:*

## **Improve EU border security:**

- *Flow of people: research will support the exploitation of the potential given by the European Border Surveillance System (**EUROSUR** - Regulation No 1052/2013 ) and promote an enhanced use of new technology for border checks in relation to the SMART BORDERS legislative initiative **(policy driver DG HOME)***
- *Flow of goods: research will address, in the context of the EU's customs policy, supply chain security trying to strike the right balance with trade facilitation **(policy driver DG TAXUD)***

**Support the EU External Security Policies in civilian tasks (policy driver EEAS)**



## The European Agenda on Security

COM(2015) 185 final (28 April 2015)

[http://ec.europa.eu/dgs/home-affairs/what-we-do/policies/european-agenda-migration/index\\_en.htm](http://ec.europa.eu/dgs/home-affairs/what-we-do/policies/european-agenda-migration/index_en.htm)

## The European Agenda on Migration

COM(2015) 240 final (13 May 2015)

[http://ec.europa.eu/dgs/home-affairs/what-we-do/policies/european-agenda-migration/background-information/index\\_en.htm](http://ec.europa.eu/dgs/home-affairs/what-we-do/policies/european-agenda-migration/background-information/index_en.htm)

## Securing EU borders

[http://ec.europa.eu/dgs/home-affairs/what-we-do/policies/securing-eu-borders/index\\_en.htm](http://ec.europa.eu/dgs/home-affairs/what-we-do/policies/securing-eu-borders/index_en.htm)

A number of proposed legislative initiatives including the proposals for:

- a **European Border and Coast Guard** (15 December 2015)
- a regulation establishing an **Entry/Exit System (EES)** to register entry and exit data and refusal of entry data of third country nationals crossing the external borders of the Member States of the EU and determining the conditions for access to the EES for law enforcement purposes (6 April 2016 )  
*COM(2016) 194 final*

# Horizon 2020 Border Security topics



**BES-1-2015: Radar systems for the surveillance of coastal and pre-frontier areas and in support of search and rescue operations** **(RANGER)**

**BES-2-2015: Affordable and easily deployable technologies for EU coastal border surveillance with reduced impact on the environment** **(SAFESHORE)**

**BES-3-2015: Light optionally piloted vehicles (and sensors) for maritime surveillance** **(PCP)**

*1 project being negotiated (CIRCUS)*

**BES-4-2015: Detection of low flying aircraft at near shore air space**  
*no projects to be supported*

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**BES-6-2015: Exploring new modalities in biometric based border checks** **(PROTECT)**

**BES-14-2014: Human factors in border control**  
**(BODEGA)** <http://bodega-project.eu/>



# From workprogramme to projects



*Same approach across all Horizon 2020 ... less prescriptive ... risk of oversubscription ....*

*(Global Success Rate 2014 = 9.2% 2015 = 8.0%)*

*.. EC initiative and input from MS in Programme Committee ....*

*Projects to feed knowledge and results of R&D .....*

*.. in average 5-6 yrs from definition of R&D topics to project completion.*

## Towards pan-European solutions to match pan-European needs

- ✓ Contributing to the implementation of EU security policies
- ✓ Boosting the "*Europeanisation*" of *practitioners'* demand for innovative solutions and the industrial offers of innovations
- ✓ Combining cyber and physical aspects of security
- ✓ Increased number of PCPs

*A practitioner is someone who is qualified or registered to practice a particular occupation, profession in the field of security or civil protection.*



## Article 36

### Research and Innovation

1. **The Agency shall proactively monitor and contribute to research and innovation** activities relevant for the control of the external borders....
2. **The Agency shall assist** the Member States and the Commission **in identifying key research themes**....
3. **The Agency shall**, within the Framework Programme for Research and Innovation, in particular the Specific Programme Implementing Horizon 2020, **implement the parts** of the Framework Programme for Research and Innovation **which relate to border security**.

For that purpose, the Agency shall have the following tasks:

- (a) **managing some stages of programme implementation** and some phases in the lifetime of specific projects on the basis of the relevant work programmes adopted by the Commission, where the Commission has empowered the Agency to do so in the instrument of delegation...



- **30 topics.** Total budget: €382 million
  
- **Areas of activity:**
  - Critical Infrastructure Protection
  - Disaster-resilience: safeguarding and securing society
  - Fight against Crime and Terrorism
  - **Border Security and External Security**
  - Digital Security
  
- **Call dates:**

2016: Opening:	15 Mar 2016,	Deadline:	25 Aug 2016
2017: Opening:	01 Mar 2017,	Deadline:	24 Aug 2017

[http://ec.europa.eu/research/participants/data/ref/h2020/wp/2016\\_2017/main/h2020-wp1617-security\\_en.pdf](http://ec.europa.eu/research/participants/data/ref/h2020/wp/2016_2017/main/h2020-wp1617-security_en.pdf)

# Horizon 2020 Secure Societies

## European Info Day and Brokerage Event

5 - 6 April 2016

Sheraton Brussels Hotel  
Place Rogier, 1210, Brussels, Belgium

The event is organized by the Network of Secure Societies National Contact Points – SEREN3, in collaboration with the European Commission. This information day and brokerage event gives details on the calls for proposals H2020-CIP 2016, H2020-SEC 2016 and H2020-DS-2016, published on 15 March 2016 under the societal challenge Secure Societies - Protecting freedom and security of Europe and its citizens.

These calls offers new research funding opportunities to research institutions, universities, industries, SMEs, civil society organizations and any other security stakeholders. Participation to the event is free of charge and the number of participants is limited due to the capacity of the rooms.

### Main Topics

- Critical Infrastructure Protection
- Disaster Resilience: Safeguarding and securing society
- Fight Against Crime and Terrorism
- Border Security and External Security
- General Matters on Security
- Digital Security

### Why to participate

- Information about the calls
- Networking possibilities
- Answers to your questions linked to call areas
- Details on the legal and procedural conditions



### How does it work?

1. Register and publish your collaboration wishes
2. Browse the participant list and book meetings with companies you are interested in
3. A couple of days before the event you receive your meeting schedule

Registration  
closed since 25 Mar 2016

### ORGANISERS



### SCHEDULE

Registration	10 Mar – 25 Mar
Meeting Selection	26 Mar – 3 Apr
Event	6 Apr

### DETAILS

Language	English
Venue	Place Rogier 3 Brussels, Belgium

### BILATERAL MEETINGS

Participants	241
Meetings	189

### PARTICIPANTS

Austria	1
Belgium	56
Cyprus	2
Czech Republic	5
Denmark	3
Estonia	3
Finland	12
France	50
Germany	12
Greece	20
Hungary	4
Iceland	2

<https://www.b2match.eu/seren3brussels2016>

# Call - SECURITY (1)

## Border Security and External Security

*SEC-13-BES-2017: Next generation of information systems to support EU external policies*

*SEC-14-BES-2016: Towards reducing the cost of technologies in land border security applications (Indicative budget 10 M€)*

*SEC-15-BES-2017: Risk-based screening at border crossing*

*SEC-16-BES-2017: Through-foliage detection, including in the outermost regions of the EU*

*SEC-17-BES-2017: Architectures and organizations, big data and data analytics for customs risk management of the international goods supply chain trade movements*

*SEC-18-BES-2017: Acceptance of "no gate crossing point solutions"*

*SEC-19-BES-2016: Data fusion for maritime security applications*

*SEC-20-BES-2016: Border Security: autonomous systems and control systems (SEC 19 + SEC 20 = Indicative budget 24 M€)*



## Scope:

- *EU Border management = enforcement of common policies & implementation of common rules.*
- *Pressure to process large volumes (and smuggling) of people at borders (and at border crossing points).*
- *External land borders of the EU = wide range of challenges*
- *Without investments in technology and information systems, not feasible to manage borders and border crossing points.*
- *Broad variety of heterogeneous IT applications and systems being deployed.*
- *This makes management increasingly complex and (too) costly.*
- *Innovative, cost-efficient technologies needed, or existing ones to become more affordable.*
- *Border authorities in the best position to identify benefits of higher performance / more cost effective solutions.*

## Expected impact:

*Novel technologies, tools and systems demonstrating substantial cost-reduction compared to existing technologies, tools and systems.*





## **Expected Impact: Short/Medium term:**

- \* Novel technologies, tools and systems (higher TRLs) demonstrating very substantial cost-reduction compared to existing technologies, tools and systems.*
- \* Cost-reduction shall be assessed through the comparative testing of technologies, tools and systems in quasi-operational scenarios. Cost vs. benefit analysis must take account of functional needs, conditions of use, maintenance costs, performance and quality, impact on operating procedures, impact on travelers, training requirements for new skills, etc.*



## Technical Aspects

- Research and Innovation Action
- Total budget: €10M
- Indicative EU contribution per proposal: €5M
- Priority to EU external borders sections bearing the heaviest burden (*based on analysis of anticipated flows of people and of smuggling methods, associated risks, bottlenecks in surveillance and/or control*).
- Overlap with EWISA project should be avoided ([www.ewisa.eu](http://www.ewisa.eu))
- Coordination with EDA activities (synergies with EDA funded projects)
- Enhanced SME participation
- Up to TRL 6
- At least 3 border guard authorities from 3 different EU/Schengen MS



## Specific Challenge:

In coherence with the objectives of EUROSUR regulation (No 1052/2013), the EU Maritime Security Strategy Action Plan (EUMSS AP)

[http://ec.europa.eu/maritimeaffairs/policy/maritime-security/doc/20141216-action-plan\\_en.pdf](http://ec.europa.eu/maritimeaffairs/policy/maritime-security/doc/20141216-action-plan_en.pdf) advocates the:

*"strengthening of [...] the information exchange to optimise the surveillance of the EU maritime area and its maritime borders" and "the **improvement of the situational awareness and increase reaction capability at the external borders** of the Member States of the Union for the **purpose of detecting, preventing and combating illegal immigration and cross-border crime, and contributing to ensuring the protection and saving of lives of migrants**".*

Large amounts of "raw" data are available but not necessarily exploitable because they are not accessible at the same time nor interoperable, until they are "fused" and made "understandable" to all systems (*as appropriate for the targeted mission*) supporting information exchange, situational awareness, and decision-making and **reaction capability** at the EU external maritime borders.



**Scope:** Many detection systems available to collect data useful for maritime security, coastal surveillance and beyond. The fusion of these data requires the development of methods and tools that take account of the technical characteristics of existing systems, and the **specific context** of (all) aspects of maritime security.

As regards semantic interoperability, the CISE data model should be used to avoid the duplication of solutions.

[http://ec.europa.eu/maritimeaffairs/policy/integrated\\_maritime\\_surveillance/index\\_en.htm](http://ec.europa.eu/maritimeaffairs/policy/integrated_maritime_surveillance/index_en.htm)

<http://www.eucise2020.eu/>

*"Fusion" may refer to "intelligence correlation to produce higher level (or more accurate) information". It may involve, inter alia:*

- mixing several homogeneous data to produce another data of superior quality;
- pre-processing raw data and associating heterogeneous data, produced by different types of sensors, that refer to the same actual object or event, to produce information of superior quality;
- overlapping surveillance pictures produced by different sources and generate a picture without redundant objects/tracks and allowing to deal with faulty sensors and data;
- combining data acquired at different points in time through sensors (e.g. radars and camera) installed on the same platform or on different ones (underwater or surface vessels, drones or aircraft, satellite systems (including but not exclusively Copernicus, Galileo, and EGNOS);
- combining offline with realtime data.

Data fusion techniques, complementing the existing information systems and sensor platforms, should help focusing the geographical zones to be monitored through the deployment of (border) surveillance capabilities.



## Expected Impact:

\* Description of how to integrate the knowledge on data fusion originating from pre-existing EU-funded R&D cooperative projects;

- Contribution to the further development of EUROSUR and to the implementation of the 2nd work strand of the EUMSS Action Plan dealing with "*Maritime awareness, surveillance and information sharing*";
  - Improved and extended maritime **border** situational awareness;
  - Improved operational support to search-and-rescue activities;
  - Improved **border** surveillance systems in terms of information exchange, situational awareness, and decision-making and reaction capabilities;
  - Solutions better fitting the existing systems and the actual concepts of operations set for missions involving the assets of several Member States maritime **border surveillance, security and search-and-rescue organisations**;
  - Pre-standards to be followed by standardization procedures with the ESO (*where and if appropriate*);
  - Solutions demonstrated in the context of interagency and cross-border cooperation;
  - Solutions interfaced with existing infrastructure (systems, platforms and networks of sensors).

***Type of Action: Innovation Action***



## Technical Aspects

EU-funded R&D cooperative projects and EU Agencies have touched upon the issue.

- Data fusion may bear on, or generate information needing classification.
- Ethical and societal issues need to be properly addressed.
- Proposals need to build on existing results, focus on the remaining gaps and avoid duplication with previous endeavours.

**International cooperation is encouraged**, in particular with research partners involved in ongoing discussions and workshops with the European Commission.

Whereas activities will have an exclusive **focus on civil applications**, coordination with the activities of EDA may be considered with possible synergies being with projects funded by the EDA programmes. The complementarity of such synergies should be described comprehensively. On-going cooperation should be taken into account.

The outcome of the proposal is expected to lead to development up to **TRL 7**.

Indicative EU contribution per proposal: **8 M€**

- ✓ At least 3 border guard authorities from 3 MS/AC
- ✓ At least 3 independent industry organizations from 3 different MS/AC.



## Specific Challenge:

Low levels of situational awareness on the EU borders, high at sea and on unpopulated or scarcely populated land areas, are important factors of cost of border surveillance. This could improve if the different prototypes of *unmanned vehicles* tested today to perform automatically a very limited set of functions and routines could be transformed into autonomous, long-enduring agents able to operate in complex maritime and land environments.

Current border control systems involve a wide range of heterogeneous assets – manned and unmanned – to survey from air, surface (land and sea) and underwater. Similarly the objects of their surveillance may be vessels, land vehicles, aircrafts, and underwater vehicles used, for instance, for smuggling and trafficking.

Only enhanced *command and control systems* using advanced 3D computer graphics technology may allow to represent accurately the position of surveillance assets – including autonomous agents – and external objects in such complex environments.



**Scope (i):** The proposed action should **cover one** of the following sub-topics:

## **Sub-topic: 1. Autonomous surveillance**

Autonomous agents should be **adaptable**: in order to deal, where applicable, with extreme and diverse weather and sea condition, including in the Arctic region; **interconnected**: interoperable and capable of exchanging information among themselves and with the system's ground segment; **tele-operable** from the ground.

They should support missions ranging from surveillance to detection of marine pollution incidents, and including early identification and tracking of illegal activities and illegal communication.

They should *operate* as single units, but *also in homogeneous or heterogeneous **groups*** i.e. mixing aerostats, aerial vehicles with fix, rotary wings (or tilt-rotor), unmanned surface vehicles (USV), unmanned under-surface vehicles (UUSV), unmanned ground vehicles (UGV) with different types of sensor and communication suites on board, customized according to operational and environmental needs and addressing cross-cueing.

Autonomous agents should exchange information at **tactical** level and interface with each other and with command and control systems as they exist, today, at different levels.





**Scope (ii)** : The proposed action should cover one of the following sub-topics:

## **Sub-topic: 2. Enhanced command and control systems for the surveillance of borders in a 3D environment Autonomous surveillance**

Enhanced command and control systems should integrate:

- air surveillance technologies (including radar technologies for the detection of low flying aircrafts);
- coastal and underwater surveillance technologies (including coastal radar, maritime patrol aircraft (MPA), light patrol aircrafts, unmanned aerial vehicles (UAV), Patrol Vessels, UUV, etc.);
- ground surveillance technologies (including UGV);
- satellite-based services;
- maritime information services;
- 3D cartography and bathymetry servers;
- 3D modelling of situational picture based on 3D computers graphics engines;
- augmented reality technologies;
- mobile devices and handsets such as tablets and smartphones.



## Expected Impact:

- Contribution to the further development of the European Border Surveillance System (EUROSUR);*
- Contribution to the provision of more information that may be exchanged across sectors and borders (as through the Common Information Sharing Environment (CISE));*
- New technologies for autonomous surveillance systems;*
- Improved, cost-effective and efficient unmanned platforms for border surveillance systems, and the detection of marine pollution incidents;*
- Adaptation of long-tested technologies to the specific requirements of borders control area;*
- Agents and command and control systems interoperable with existing, multi-country European infrastructure.*



## Technical aspects

- Cover **1 sub-topic**:
  1. *Autonomous surveillance*
  2. *Enhanced command and control systems for the surveillance of borders in a 3D environment Autonomous surveillance*
- Participation of **SMEs** strongly **encouraged**.
- International cooperation encouraged, in particular with research partners involved in ongoing discussions and workshops with the European Commission.
- Outcome of proposal expected to lead to development up to **TRL 6 or 7**.
- Indicative budget: EU contribution of **€ 8million**.

Type of Action: Innovation action.

Practitioners from various disciplines, including Border guard authorities from at least 5 EU/Schengen MS

# LESSONS being learned from previous R&D projects



Proposals should be “substantially” demand driven.

Security Authorities realise that demand based R&D approach can bring them benefits. However for them it is a challenge to translate “needs” into R&D specifications.

- **Big effort** needed to mobilise public side constituency.
- For authorities to be motivated towards international cooperative R&D **support is needed** at the national level (not straightforward to mobilise resources).
- The planning / budgetary logic is different. In addition, the economic crisis made it more **difficult to leverage additional resources at the national level.**



### 7 political drivers relating directly to H2020 objectives:

- Disruptive and Open Innovation
- **Migration**
- **Security: terrorism – radicalisation – cybersecurity**
- Physical meets digital - digitalisation of the researching/learning, working and living environment
- Energy & resource scarcity challenge and fighting climate change
- Implementing the Sustainable Development Goals (SDGs)
- Making the EU a stronger global actor



Political context and drivers to steer forthcoming discussions in developing the Strategic Programming 2018-20.

## **Consultation of H2020 Advisory groups (AG) and other stakeholders**

**Gap analysis** by services and discussion **with Member States** through PC configurations

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**1 June:** AG reports delivered to the services

**June (date TBD):** AG chairs (second meeting)

**17 June:** Stakeholder consultation completed & First draft scoping papers completed (incl. draft focus areas)

**21 June:** R&I DGs meeting

**5 September:** Focus areas identification completed

**14 October:** Final draft scoping papers endorsed by the PC configurations

**Mid Sep to early Nov:** Discussions in the strategic PC (Research Ministries)

**Mid Nov:** Overarching document endorsed by the strategic configuration

# Summary



Intrinsic challenge to deliver *"quick" and "usable"* results

Efforts to proactively involve end-users (practitioners)

DG HOME trying to insert a more strategic vision

Security Research Conference DEN HAAG (NL) June 1-2

<https://www.srie2016.com/>

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*Thank you for your attention!*

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