



PÔLE DE COMPÉTITIVITÉ À VOCATION MONDIALE

LA MER NOUS INSPIRE,
L'INNOVATION NOUS TRANSPORTE

NEREUS workshop on EGNOS & GALILEO Marine and Maritime Applications

Maritime Safety & Security challenges

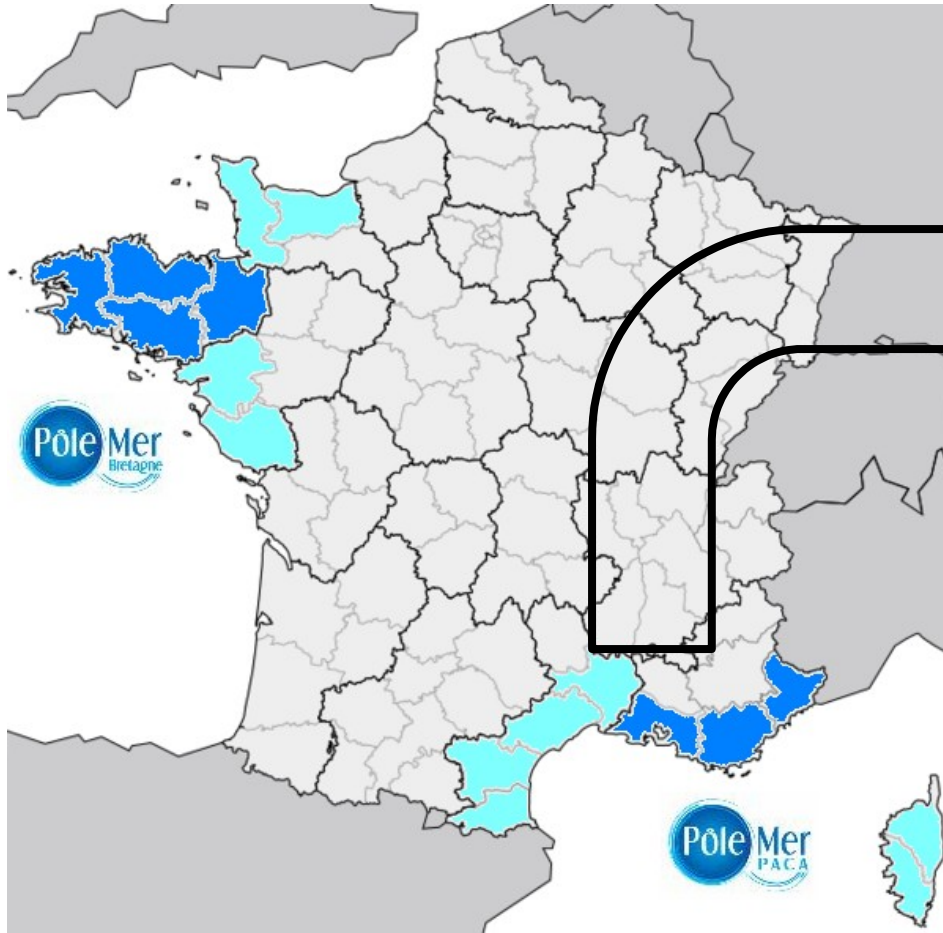


***Naval Systems
& Maritime Security Solutions***

Bernard GARNIER
Technology Consultant

+336 8290 0915

info@bluesolutions.eu - bgaperso@hotmail.com
1035 Chemin de Peidessalle - F06560 Valbonne - France
<http://www.bluesolutions.eu>



- Gathering 10 working groups to impulse collaborative research projects in topics related to **maritime safety & security** and **sustainable development**

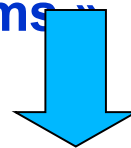
- driver of economic growth, Impulse companies competitiveness and access to markets

- Key figures:

- 176 projects for 411Million € in R&D (136 in progress)
- 207 companies (138 SMEs)
- 83 Research Institutes & universities

A network of 290 members in Provence

- 223 companies (from which 148 SME)
(Around 25 000 employees)
- 75 laboratories, research institutes, universities, management and engineer schools
- ➔ 2000 researchers and more than 2000 students
- 22 « ecosystems »



**Innovation in the field of
maritime safety and
security & sustainable
development**





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The Pôle Perimeter

2 Axis	5 Thematics	10 Federative programs
Security and Safety	Maritime security and safety	Maritime protection
		Environmental Risks Prevention
Sustainable growth	Naval and Nautism	Ship of the Future(greenship)
	Energy ressources	Deep Offshore
		Renewable Marine Energy
	Biological ressources	Sustainable Aquaculture
		Blue Biotechnology
		Water managment in coastal zone
	Environment and Coastal engineering	Ports of the futur
		Marine Environmental Services(DCSMM)



The Pôle Perimeter – in pictures!

PÔLE DE COMPÉTITIVITÉ À VOCATION MONDIALE

Maritime Security and Safety



Marine energy resources

Marine and Submarine Technologies

Environment and Coastal engineering



Complex Information & Communication Systems

Safety & Security



Sustainable development

Biology, Marine Biotechnology, Environnement



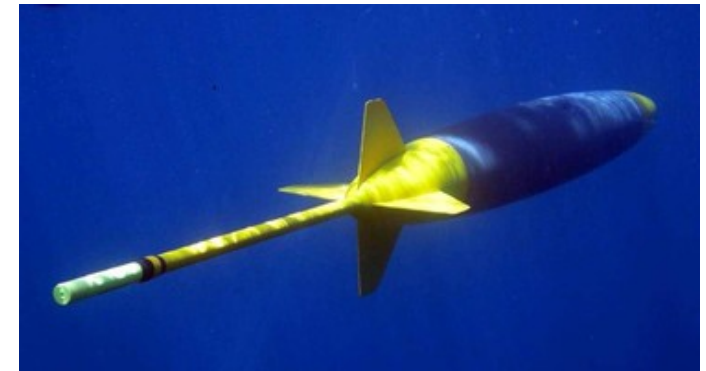
Naval & Nautism

Biological resources

***Some examples of projects
awarded by Pôle Mer PACA,
The Marine Sea Cluster of Provence
& French Riviera***

5 projects granted :

- **DROOM (ANR) : LOV/OOV, Ifremer, Acsa, ACRI**
operational oceanography with use of gliders. 1,55M€
- **SEA EXPLORER (FUI3): submarine glider, propelled by cyclical gravity and ballasting dedicated to survey of submarine environment and measures of physical and biochemical parameters. ACSA, ACRI, LOV, USTV, Ifremer, COM; 4M€**
- **Vasque (Ecoindustrie) : Acsa, Ifremer, 2M€**
- **Ibiscus (ANR): LMG/COM, Obanyuls, Acsa, Micromodule. Identification and quantification of pollutants with optical sensors fitted on gliders. 1,12M€**
- **Squid (FUI) : Acsa, CNRS/INSU, Ifremer, Lheritier. 2,7 M€. modular disposal for submarine intervention**



Water quality problems in coastal areas

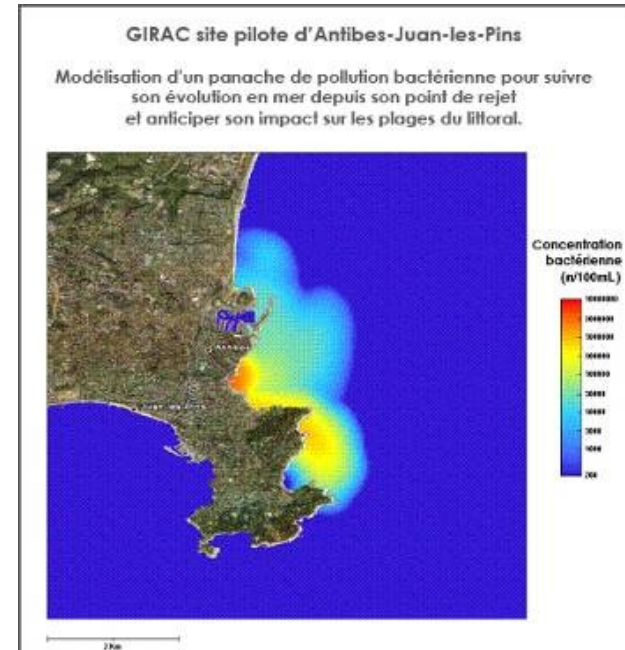
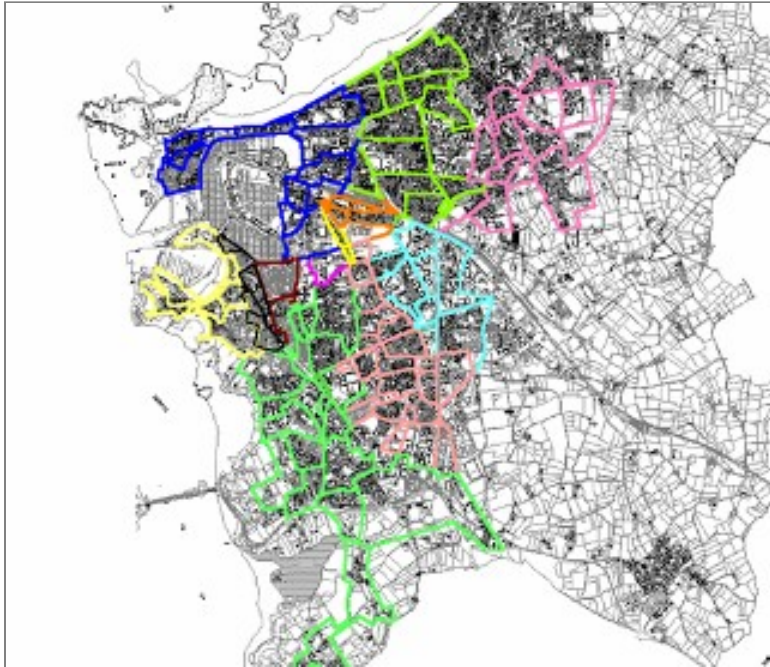
- ↪ **Strong demographic and urban pressure in coastal areas :**
 - **Obligation to treat the integration of these plants located in urban and touristic areas (unpleasant smells, noise pollution, architecture etc.)**
 - **Significant increase in domestic, industrial or storm water pollution**

- ↪ **Rainy weather impact bath water areas :**
 - **Strom water management (treatment, storage, forecast...)**

- ↪ **Touristic zones :**
 - **Obligation to take into account the summer peak. The question is : how to use 100% of the plant's treatment capacity in the off-season?**

- ↪ **New environmental and sanitary demands from local authorities**
 - **The bath water quality monitoring,**
 - **Obligation to collect and treat the monthly rain flow**
 - **Aquatic waste collection**

Example of project: GIRAC



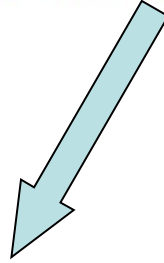
Combining the modeling

- of wastewater and rainwater collection systems
- with the maritime coastal area

Rainy weather impact bath water areas: Storm water management

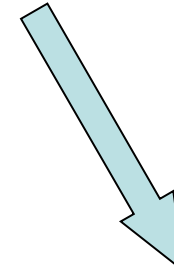
⊗ **Coastal waste waters and sewerage integrated management**

Example of project: GIRAC



Reduce discharge

- Put in place a **monitoring system for the operation**:
 - ✓ Real-time measurements: rain, flow, pollution
 - ✓ Simulation tools for the operator
 - ✓ Operating guidelines
- Improve **decontamination tools**:
 - ✓ Overflow level (existing)
 - ✓ Optimization of investment programs
 - ✓ “On-line” Actiflo



Anticipate and inform

- Allow the operator to anticipate degradation periods:
 - ✓ Local weather forecast
 - ✓ Marine pollution simulation
- Information / local authorities and users:
 - ✓ **Local authority alert system**
 - ✓ Ultimately : a genuine **service** for users

- **Aquamar (Marine Water Quality Information Services)** ,

The objective of AquaMar is to develop and provide downstream services turning Marine Core Service products into WQ services, demanded by end user.

ACRI-ST role :

ACRI-ST is responsible for:

- the service line in support to the Bathing Water Quality Directive) (with Veolia Environment as a user)
- R & D transverse to various themes: geostatistics of bio-geophysical parameters

❖ **Participants**

TAS, ACRI-ST, Brockmann Consult, Planetek, DHI, MUMM, SYKE, PML, STARLAB, NERSC, DMI, DLR, SATOC, ARGANS, WI, FMI

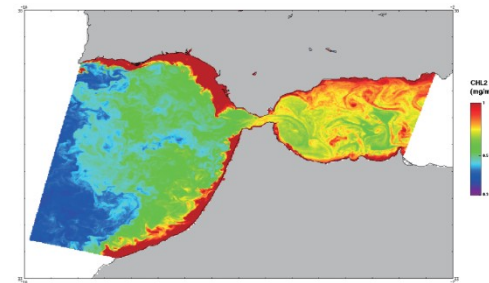
❖ **Funding**

EC FP7

- **OSS2015 (Ocean Strategic Services beyond 2015)**



The OSS2015 project aims at addressing advanced biogeochemical products in the context of the current Marine Core Service (MSC; e.g. MyOcean).



❖ **Participants**

ACRI-ST, GIS-COOC, ARGANS, NURC, Frontier Economics, ULCO, UCC, IFM- GEOMAR, DEU, DOMMRS

❖ **Funding**

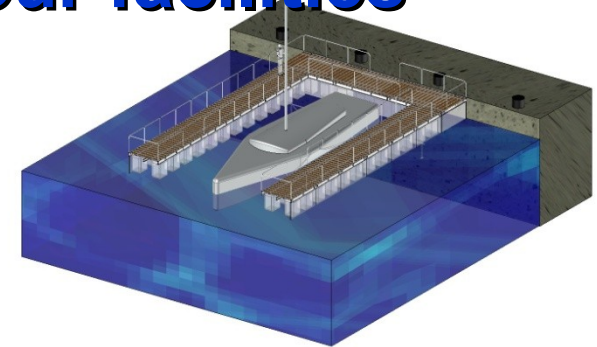
EC FP7

FUTURE Harbours: focus on harbour facilities

NAVYCLEAN,

A self-service ultrasound automatic washing station for floating ship hulls

Reduce total cleaning time with a high quality cleaning, Allow to keep the ship into the water during operation.

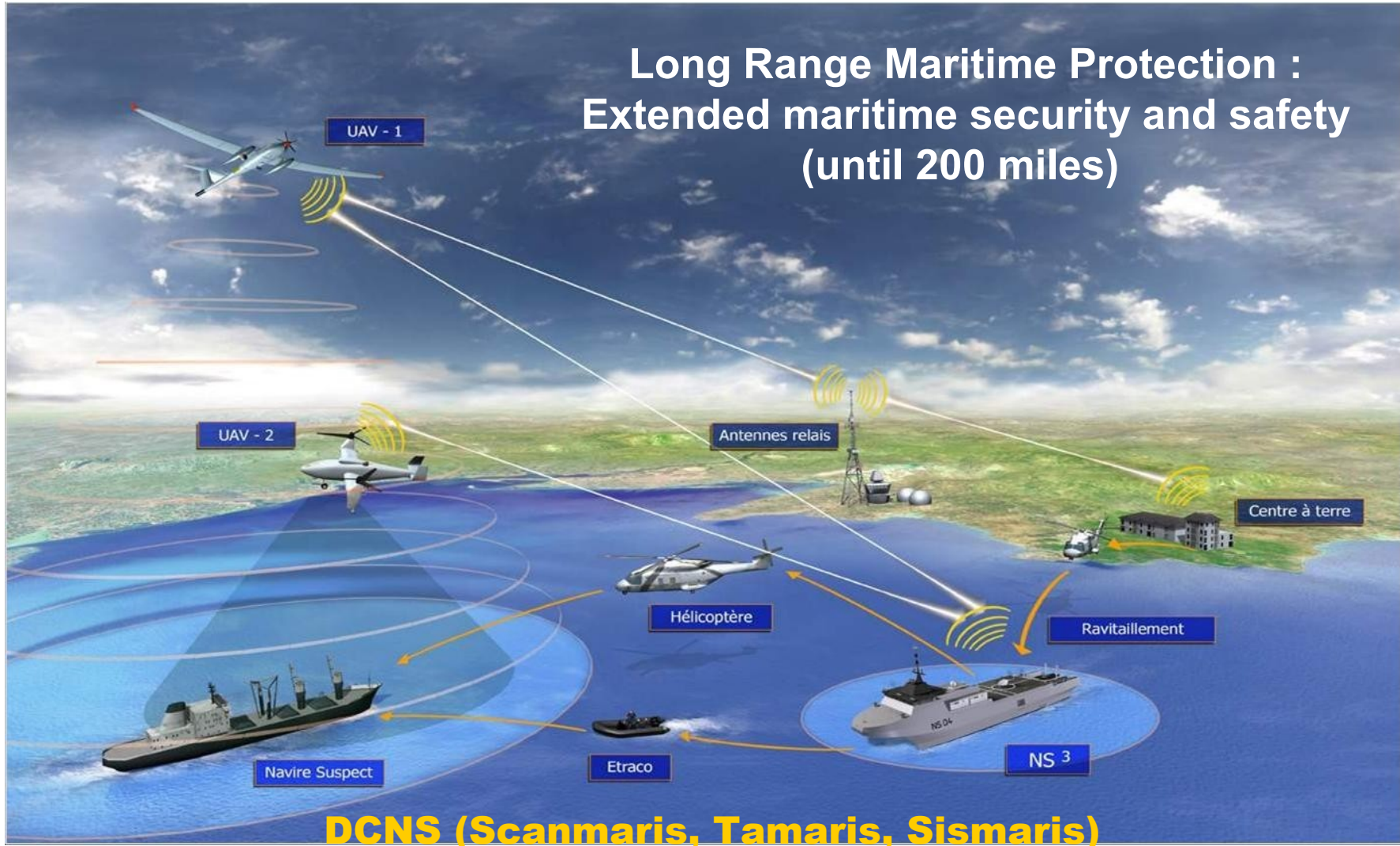


MARINA PASS new RFID solutions : allow automatic management of harbour and to give new yachting services



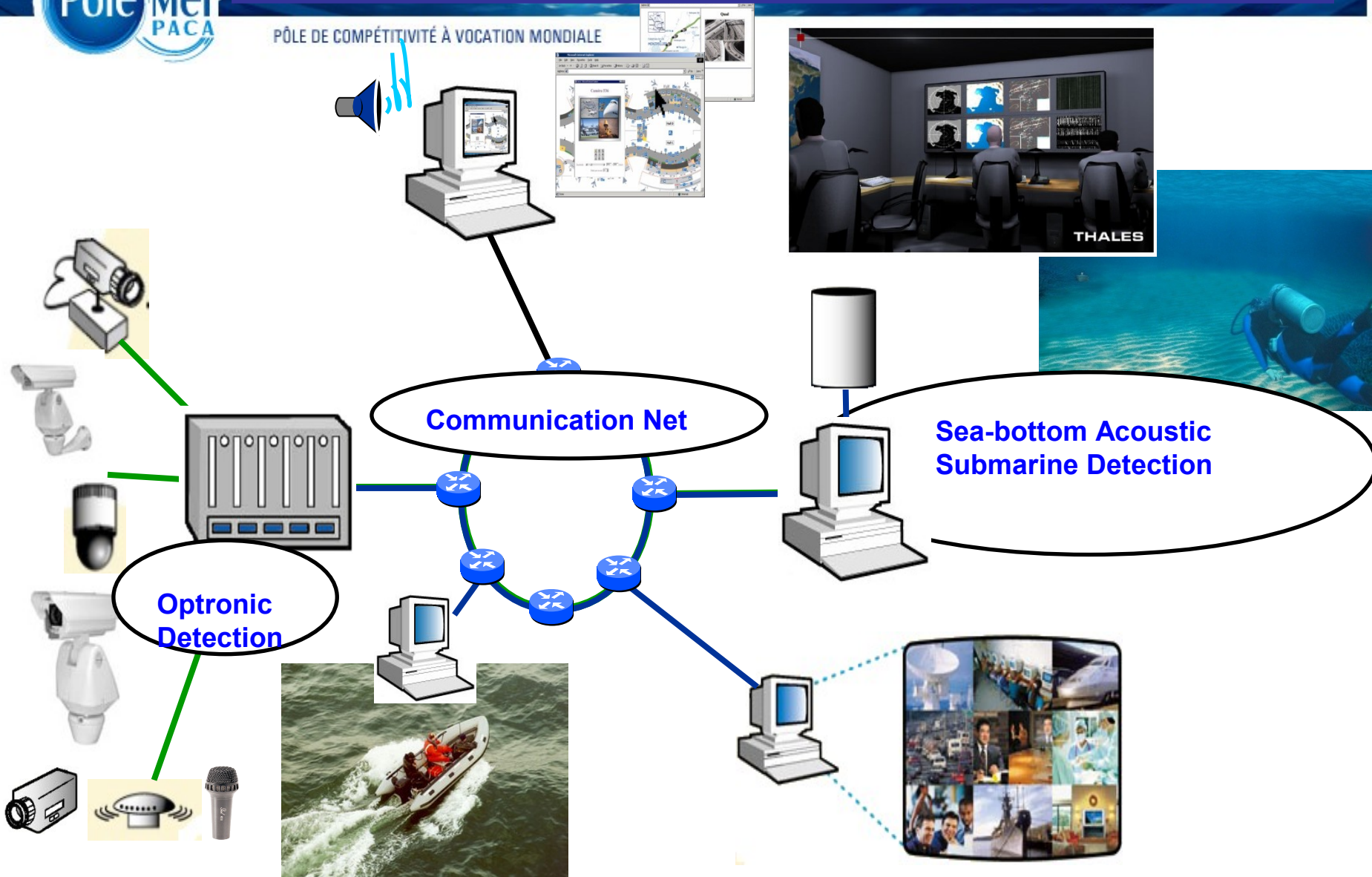
Integrated Maritime Surveillance

Long Range Maritime Protection :
Extended maritime security and safety
(until 200 miles)



DCNS (Scanmaris, Tamaris, Sismaris)

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What to develop EGNOS-Galileo?

Example of challenges of very ACCURATE geo-localisation: what cannot be done yet with GPS?

- **Monitoring the largely uninhabited hinterland**
 - **Accumulation of snowfall to clear areas (deciding controlled avalanches)**
 - **Early detection and warning of landslides to prevent road closures and villages isolation**
 - **Rupture of remote small dams, protection walls etc**
- **Protecting the moored yachts:**
 - **Detecting loose anchoring**
 - **Detecting theft before they leave the harbour**
- **Improved assistance to navigation very close to the coastline**
- **Search and rescue equipment, security devices**
- **Fishing gear tracking (lobster pots, fish cages...)**

What to develop EGNOS-Galileo?

A major clarification expected: upstream data link potential of Galileo when GSM is not an option

- **Only related to safety and security warnings? Or open for other commercial issues??**
 - **Legal conditions**
 - **Technical issues**
 - **Power management issues for remote equipment**

Another important challenge is the trustworthiness of the position

- **Detecting fake position messages when incorporated to AIS, VMS, voyage recorder, black or blue box...**
- **This is distinct from usual definition of “integrity”!**
- **Could be provided by hidden codes/ check-sums etc ? (watermarking)**



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For more information, please contact:

Florian CARRE

Project manager Pôle Mer PACA

Tél : +32 2 545 11 30

carre@polemerpaca.com

<http://www.polemerpaca.com>

Bernard GARNIER

BlueSolutions Consulting SAS

Tél : +33 6 8290 0915

info@bluesolutions.eu