

# GRyS

**Group of Next-Generation Networks and Services**

## Líneas de Investigación

- Redes y servicios telemáticos de próxima generación.
- Seguridad en redes y servicios telemáticos.
- Ingeniería avanzada del software para redes y servicios telemáticos.

## Principales temas de investigación

- The Internet of Things.
  - Smart City, Smart Grid.
- Semantic middleware.
  - Ontologies. Semantic annotation.
- Distributed systems.
  - Distributed middleware. Service Oriented Architectures.
- Wireless Sensor and Actuator Networks.
  - Interconnectivity. Interoperability. Agent-based solutions.
- Low capability devices.
  - Sun SPOT, Intel Galileo, Arduino.
- Robotics.

# Composición del grupo

- 8 profesores del área de Ingeniería Telemática
- Investigadores contratados:
  - Doctores.
  - Ingenieros e Informáticos.
- Doctorandos españoles.
- Doctorandos extranjeros.

## Producción científica

- ✓ Publicaciones indexadas: 50
- ✓ Publicaciones no indexadas: 5
- ✓ Libros y capítulos de libro: 5
- ✓ Contribuciones a congresos: 55
- ✓ Conferencias científicas: 16
- ✓ Otras publicaciones: 5

- ✓ Q1: 25
- ✓ Q2: 8
- ✓ Q3: 12
- ✓ Q4: 5

- ✓ Tesis leídas: 4
- ✓ Tesis en proceso: 7



## WoO: Web of Object

- Development, management and operation of object and applications in infrastructures with low capability devices.
- Monitoring and capture of context data.
- Registry and discovery.

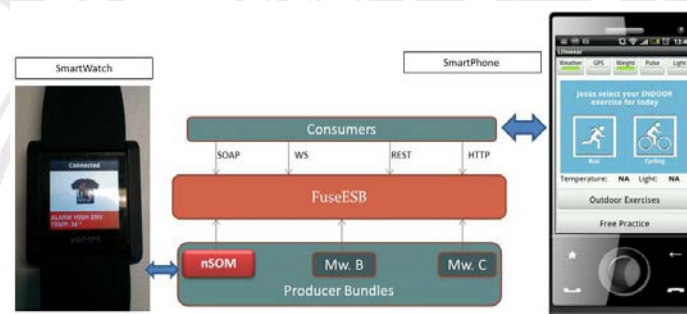
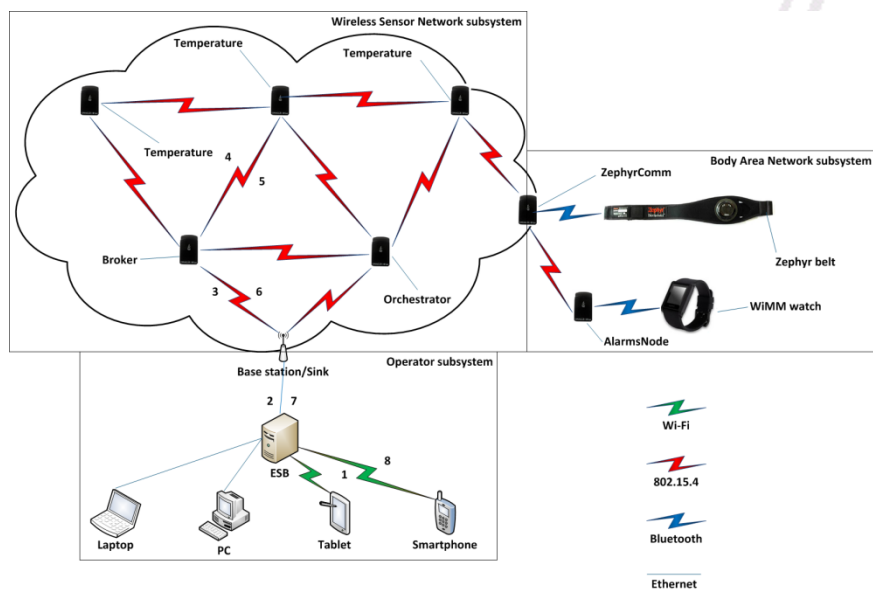


# LifeWear: Mobilized Lifestyle with Wearables



LifeWear project intends to improve the quality of life by using wearable equipment and applications for everyday people.

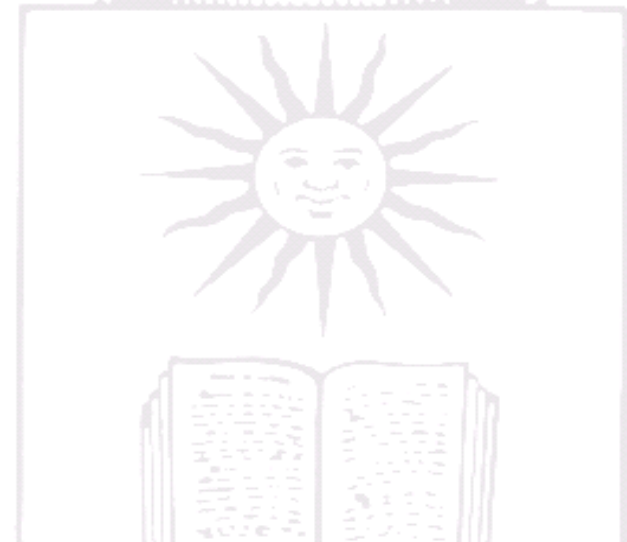
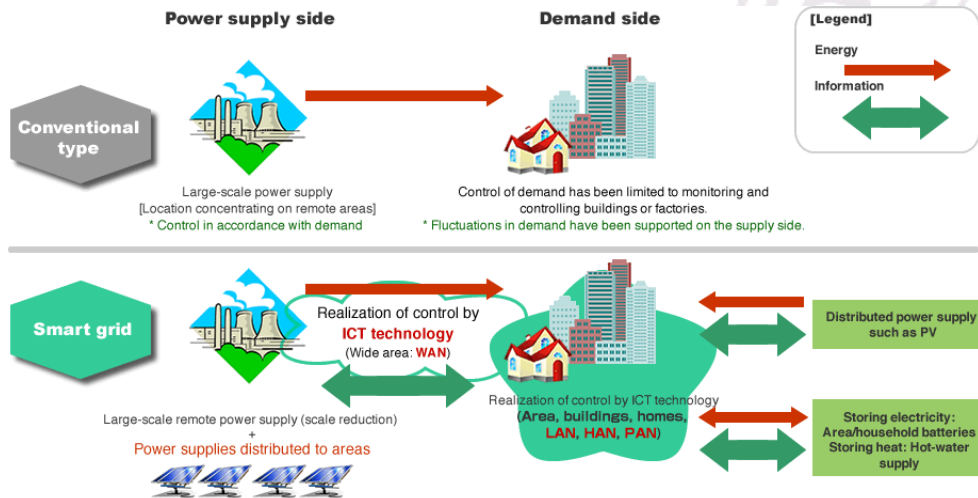
- Interaction with the environment
- Improve mobility in daily life
- Context awareness
- Shared context



- e-GOTHAM research project goal: usage of IT technologies to incorporate renewable energies within the smart grid.

**Implementation of a middleware architecture located between devices and applications with semantic annotation of information.**

- Integration of smart data meters based on Raspberry Pi and Arduino.
- Web services accessed by means of XML messages throughout REST interfaces.

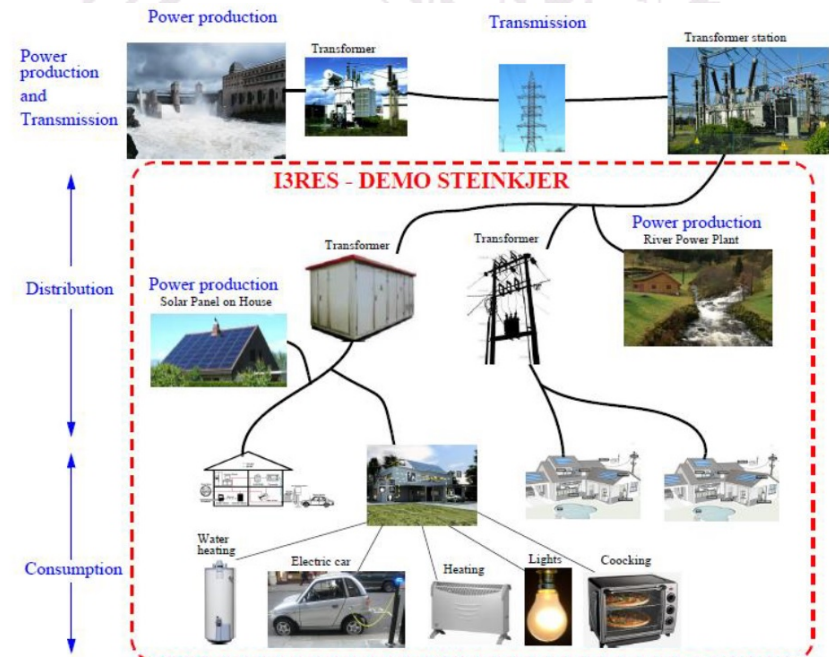
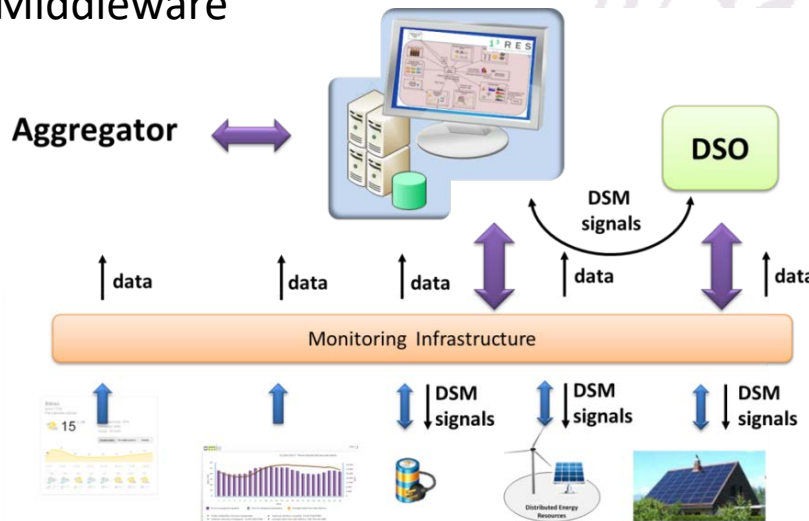




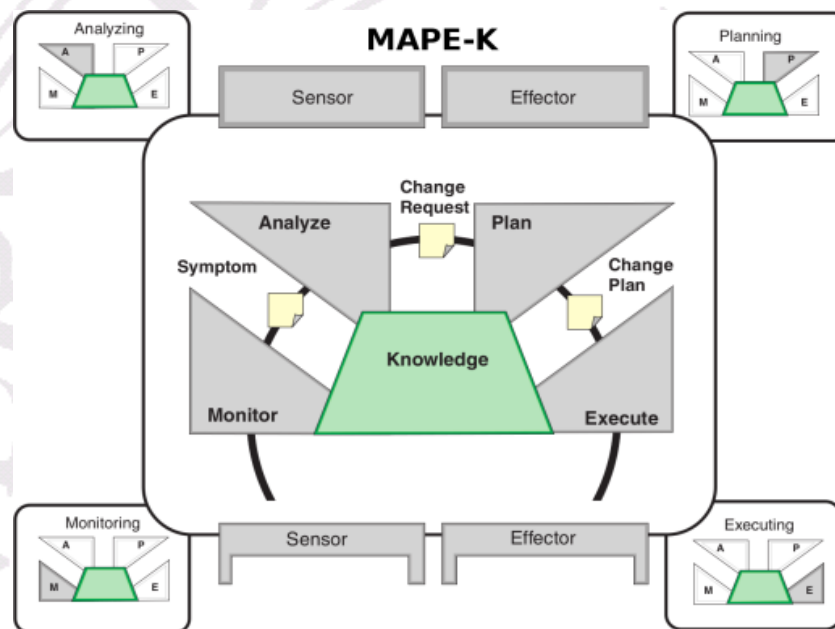
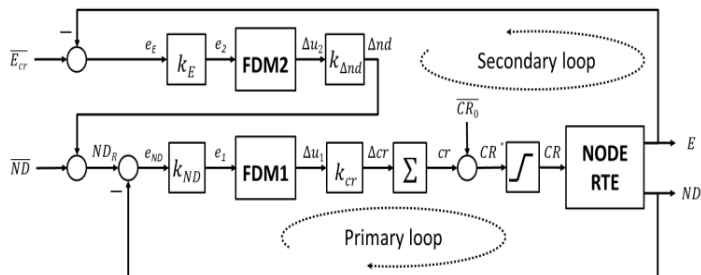
# ICT based Intelligent management of Integrated RES for the Smart Grid optimal operation

**I3RES main goal is to design and to implement a management tool for the distribution grid, with the following features:**

- Monitoring system
- Data mining and intelligent algorithms
- Forecasting and management algorithms
- Middleware



# Design, Monitoring and Operation of Adaptive Networked Systems

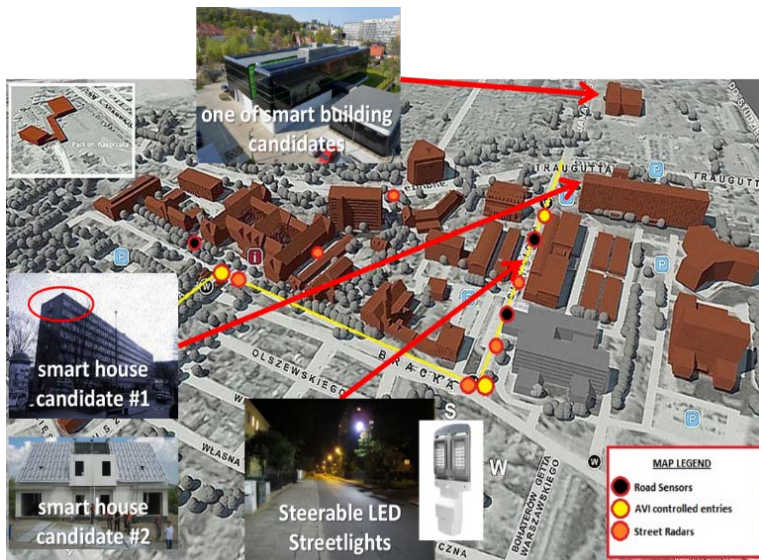
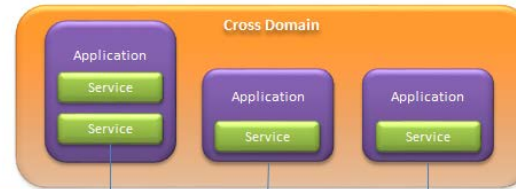
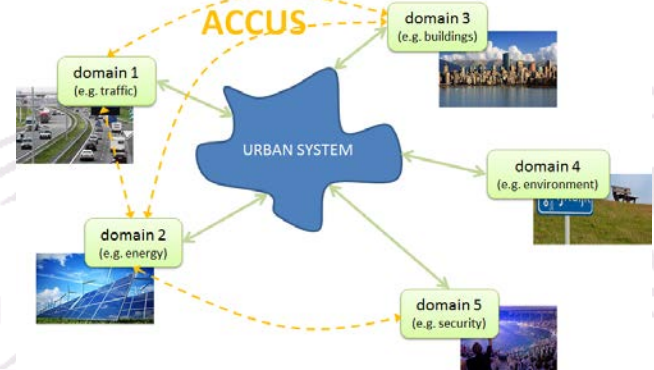


Adaptive Cooperative Control  
in Urban (sub) Systems



- Integration and coordination platform for urban systems
- Adaptive and cooperative control architecture
- Methodologies and tools for creating real-time collaborative applications for systems of systems


# Adaptive Cooperative Control in Urban (sub) Systems





**SWARMS Platform**

**Remote-operation Management Tool**



**Middleware Layer**

**Communication**

Observation,  
data collection  
and information  
flow

Mission  
configuration  
& control

Tele-operator

**Tele-operator**

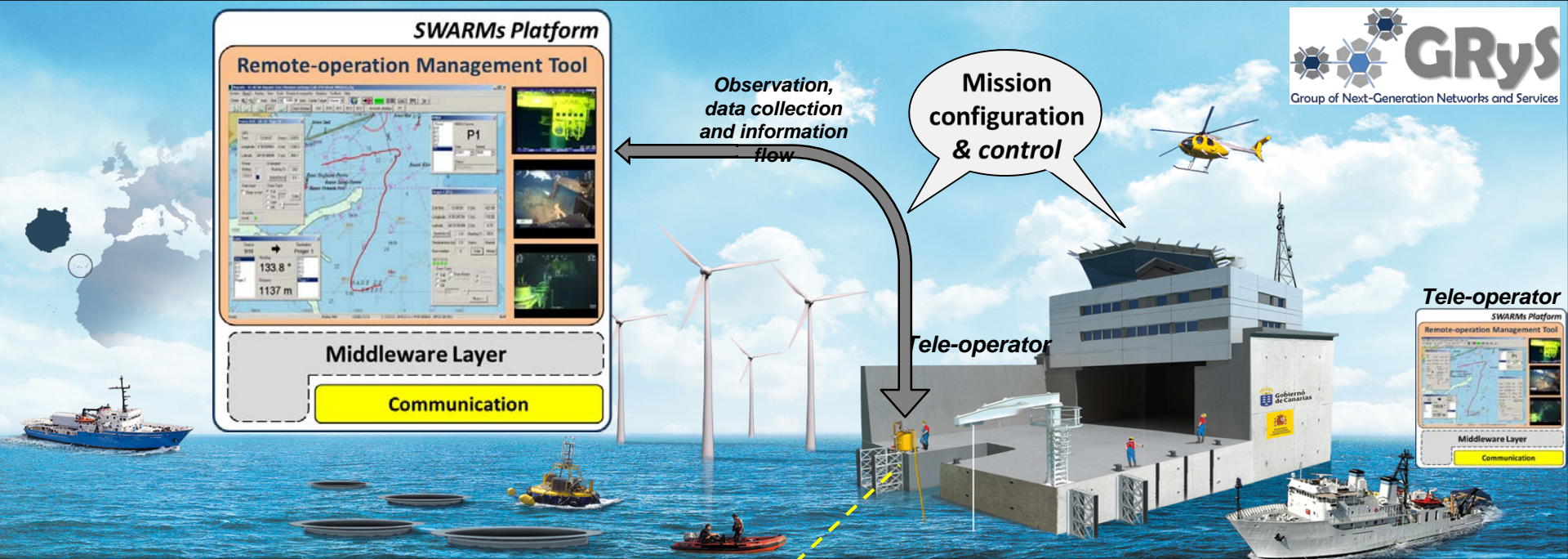
SWARMS Platform

Remote-operation Management Tool



Middleware Layer

Communication

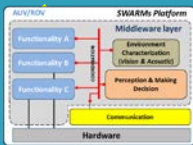
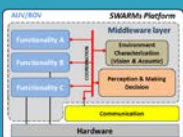
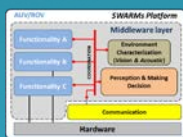


Command,  
Monitoring and  
Configuring info.

Task distribution  
Decisions  
Self-configuration

Coordination

INFORMATION EXCHANGE  
(Network)



**SENSING:**  
Environment Characterization  
(vision & acoustic)



**ACTUATORS:**



Acoustic link



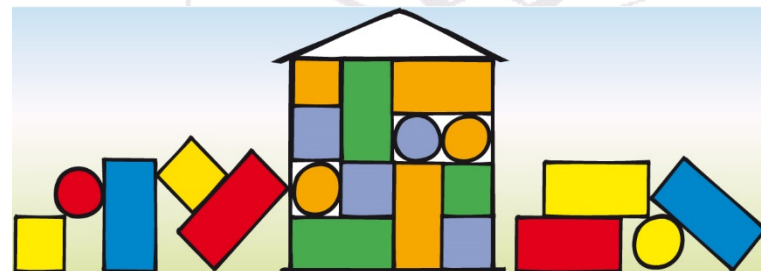
## Otros proyectos

- **DiYSE (Do-it Your Self Smart Experience)**. Proyecto europeo, ITEA2 (ITEA2 Exhibition Award 2010)
- **uSWN (Solving Major Problems in MicroSensorial Wireless Networks)** Proyecto Europeo. FP6 –STREP.
- **ESNA (European Sensor Network Architecture)**, ITEA2 (ITEA Achievement Award 2010)
- **SODA (Service-Oriented Device Architecture)**. PROFIT . Premio Categoría Mejor Proyecto Internacional (Plan Avanza - 2007) y Premio ITEA Achievement Award 2009.
- **CRISAL (Sistema de Gestión, Control y Monitorización de Redes Inalámbricas de Sensores en Entornos de Alta Seguridad)**. Universidad Politécnica de Madrid y Comunidad de Madrid.
- **MIRACLE (Marco de Intermediación entre Aplicaciones y Servicios Distribuidos Heterogéneos en una Red Inalámbrica de Sensores)**. Universidad Politécnica de Madrid y Comunidad de Madrid.
- **PERISEC (Sistemas inalámbricos para seguridad perimetral)**, PROFIT 2005-2008.
- **PROPSI (Protección perimetral mediante redes de sensores inalámbricos)**, PROFIT 2005- 2008.
- **TIC-SPACES (Servicios Telemáticos para la inferencia de conocimiento en escenarios de participación colectiva y e-salud)**. UPM.



## Red Ciudadana Rivas Vaciamadrid

- Herramientas relacionadas con la e-participación.
- Gestión inteligente de espacios y recursos.
- Herramientas de gestión y seguimiento de las peticiones de los ciudadanos.
- Gestión y seguimiento de mobiliario urbano.



# GReS partnerships and collaborations

- GReS is involved in a plethora of projects with Spanish and international partners from educational, research and industrial environments.



THALES

PHILIPS

sense and simplicity



Alcatel-Lucent

SIEMENS

NOKIA



# Grys partnerships and collaborations



# Grys partnerships and collaborations





# GRyS partnerships and collaborations

- GRyS works with many other partners, ranging from Small and Medium sized Enterprises to large industries and research institutions.

- Institut Télécom (France)
- Miksystem (Korea)
- Proficomms (Czech Republic)
- ENEMONT (Italy)
- Ouman Oy (Finland)
- University of Cairo (Egypt)
- Instituto de Telecomunicações (Portugal)
- ENERGA Agregator Sp. z o.o. (Poland)
- Societatea de Inginerie Sisteme SIS SA (Romania)
- Smart Dutch BV (Netherlands)
- Acciona Infraestructuras (Spain)
- Tecnalía Research & Innovation (Spain)
- Plataforma Oceánica de Canarias (Spain)
- HI Iberia Ingeniería y Proyectos SL (Spain)
- Robert Bosch GmbH (Germany)
- Mälardalen University (Sweden)
- VTT (Finland)
- Subsea-Energy Ltd (Finland)
- Geosparc (Belgium)
- Waterford Institute of Technology (Ireland)
- Forthnet S.A. (Greece)
- Pozitim Teknoloji (Turkey)
- INEA (Slovenia)
- Universidad de Alcalá (Spain)
- Università degli Studi del Sannio (Italy)
- EGC&C (Korea)
- Skeleton Technologies (Finland)
- Lansen Technology (Sweden)
- Security Matters BV (Netherlands)
- Fraunhofer IMS (Germany)
- Evologics (Germany)
- ECA Robotics (France)
- Dassault Systemes (France)
- Maritime Robotics (Norway)
- Inventas (Norway)
- Water Linked (Norway)
- DeepVision AB (Sweden)