

Project Acronym: PROTEUS

**Project title: Promoting security and safety by creating a MED cluster on
Maritime Surveillance**

Grant Agreement number: 1MED15_1.1_M12_148

D.3.3.1.

Mapping of existing technologies and applications on integrated maritime surveillance per sector

WP n°:	3
Task n°:	3.3
Author(s):	Fundación Valenciaport
Contributors:	Mar.In.E.M., PPA, CCIAA DL, UAEGEAN, CCSEV, Pôle Mer, Ualg and Liguria
Type:	R = Report, Document
Dissemination level:	Public
Revision:	Final
Due Date:	30/09/2017
Date of submission:	30/11/2017

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

Executive Summary

PROTEUS project work on Maritime Surveillance with the objective to set up a MED cluster on this issue. Previously a map of the main countries and companies has been made and the objective of this task is to perform a map of technologies.

With the collaboration of all the partners, a collection of the main technologies has been made. The majority of the technologies have as country of origin the countries represented in the project, but other technologies from other countries (especially United States and North European countries) have been also collected.

The technologies collected have been divided in six different types (Services, Equipments, Vehicles, Systems, Integrable components and Stand alone tool), and the bigger group have been the systems. By other hand, we have also signalised the sectors that can benefit from each technologies (Border control, Fisheries control, Defence, Maritime safety and security, Customs, Marine environment monitoring and General law enforcement). The sector that takes more profit of these technologies is the Maritime safety and security.

The information collected for each technology could be divided in two kinds. By one side, some concrete data as name, type, country of origin, a link, applicable sector, contact details of owner and stage of development (with technology readiness level) and, by other side, some general information of the technology, with photos, domains of application, keywords and comments.

The information presented in this deliverable will be used for the next steps of the project, identification of the market / business opportunities and the database with Maritime Surveillance technologies and will be available also in the Maritime Surveillance Platform.

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

Contents

1.	Project context.....	5
2.	Introduction.....	6
3.	Methodology	8
4.	Results	10
5.	Services.....	19
a.	France	19
b.	Greece	25
c.	Italy	30
d.	Portugal	31
6.	Equipment.....	32
a.	France	32
b.	Greece	39
c.	Italy	39
d.	Portugal	53
e.	Spain.....	54
7.	Vehicles	58
a.	France	58
b.	Greece	68
c.	Italy	71
d.	Portugal	78
e.	Spain.....	80
8.	Systems.....	81
a.	France	82
b.	Greece	91
c.	Italy	98
d.	Portugal	107
e.	Spain.....	108
9.	Integrable components.....	115
a.	France	115
b.	Greece	120
c.	Italy	121
d.	Portugal	125

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

10.	Stand alone tools.....	126
a.	France	126
b.	Greece	135
c.	Italy	137
d.	Spain.....	138
11.	Technologies outside project area.....	139
a.	Equipment	139
b.	Vehicles	149
c.	Systems.....	153
d.	Integrable components	163
12.	Conclusions	168

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

1. Project context

PROTEUS project aims at exploiting the growth potential of the emerging Maritime Surveillance industry of the MED countries (especially the countries represented in the project) that can play a crucial role in the socio-economic development of the MED area. The main objective of the project is to address through the establishment of a MED MS Cluster, fostering innovation and R&D capacities, knowledge and technology transfer focusing on maritime security and safety mechanisms in MED area.

This document is part of the task number 3 of the Work Package 3 that focus on the available technologies, applications and market aspects, concerning the main sectors of Maritime Surveillance. This document presents the most important technologies that are applied in sectors like defence, maritime security and safety and marine environment and the next step will analyse the market and the examination of business opportunities that could create linkages among Maritime Surveillance and other industries.

Previously to this task, the project partners have mapped the current state situation, making some regional and national analysis, identifying some specific Maritime Surveillance sectors, which are more interesting for the countries represented in the partnership, main actors, common challenges and threats. The prerequisites for the operation of a Maritime Surveillance cluster have been identified, collecting also information of best practices in other geographical areas.

After this task, the project will proceed with the elaboration of two Methodological tools, one addressing the development of the National Nodes and one for the launching of the MED Maritime Surveillance Cluster. In the next Work Package, the MED Cluster will be established and a Maritime Surveillance platform will be developed.

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

2. Introduction

This deliverable wants to collect existing technologies and applications on integrated Maritime Surveillance. By one side, we have collected technologies developed in the countries represented in the partnership and in other countries of the MED area, of Europe and of the World. The countries origin of the technologies have been:

- Of partnership
 - Cyprus
 - France
 - Greece
 - Italy
 - Portugal
 - Spain
- Of MED area
 - Israel
 - Malta
- Of Europe
 - Israel
 - Malta
 - Norway
 - Sweden
 - Germany
 - The United Kingdom
- Of the World
 - The United States

By other hand, we have collected technologies applied in the seven more interesting sectors for the countries of the project:

- Border control
- Fisheries control
- Defence
- Maritime Safety and Security
- Customs
- Marine Environmental Monitoring
- General Law Enforcement

Finally, we have collected technologies of six different types:

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

- Services
- Equipments
- Vehicles
- Systems
- Integrable components
- Stand alone tools

This activity has been supported by the deliverable 3.2.1 and will support, first the other activities of this task about the identification of the market opportunities and, after, the design and development of the Maritime Surveillance Platform.

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

3. Methodology

The methodology followed in this task has been divided in three steps:

- Analysis of the information to be collected for each technology and preparation of a template where to shape this information
- Distribution of the collection between all the partners
- Preparation of the final document

The first step defined the information to be collected:

- Name of the technology
- Type of technology
- Country of origin
- Link with information
- Sector where to applied the technology
- Contact details of the owner
- Brief description (with picture if possible)
- Stage of development (with readiness level)
- Domains of application
- Keywords
- Comments on the technology

The different kind of types and sector have already been presented in the previous chapter point.

As all the partners have participated in the collection of information, it would seem necessary to prepare a template in order to have the information of all the technologies in a same format. As the deliverable 3.3.3 is a database with the information collected, it was preferable to use format already thinking in a database. This was the reason to avoid a text format (as Word) and to choose an Excel file.

As the previous task 3.2.1 has consisted, among other, in the mapping of involved actors in Maritime Surveillance in each country represented in the project, the search of technologies has been based on this first map, but has not been limited to it. Then, around 50% of the technologies collected have its origin in this first map. In the other half, there are some technologies from countries represented in the project, but also from other countries, as we have already commented.

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

Template used to collect information



Project co-financed by the European
Regional Development Fund



Activity 3.3 Technology and Market Analysis

Mapping of existing technologies and applications on integrated maritime surveillance per sector

Form for the collection of data

Title of the Technology:							
Type:							
Country of Origin:							
Link:							
Applicable MS Sector(s):							
Contact Details of Owner:							

Brief Description/ Photos/ Related Material

--	--	--	--	--	--	--	--

Stage of Development:	
Technology Readiness Level (TRL 1-9):	
Domains of Applications:	
Keywords:	

Comments on the Technology

--	--	--	--	--	--	--	--

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

4. Results

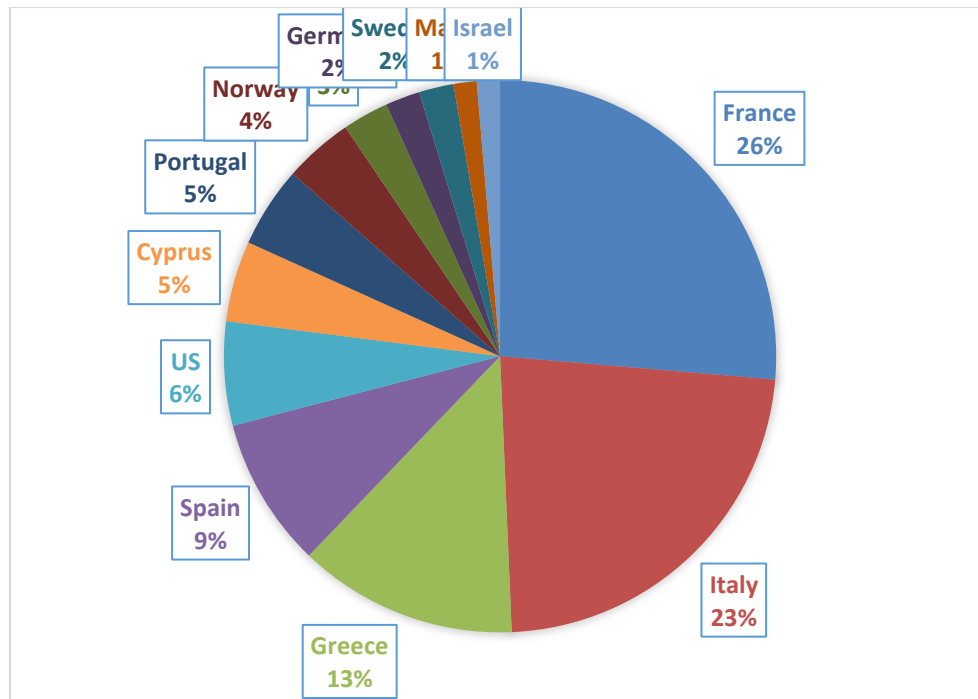
A brief analysis of the technologies collected throw in the following results:

- The distribution of technologies by countries is the following:

France:	39
Italy:	34
Greece:	19
Spain:	13
US:	9
Cyprus:	7
Portugal:	7
Norway	6
UK	4
Germany	3
Sweden	3
Malta:	2
Israel:	2
TOTAL	148

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

Distribution of technologies by country

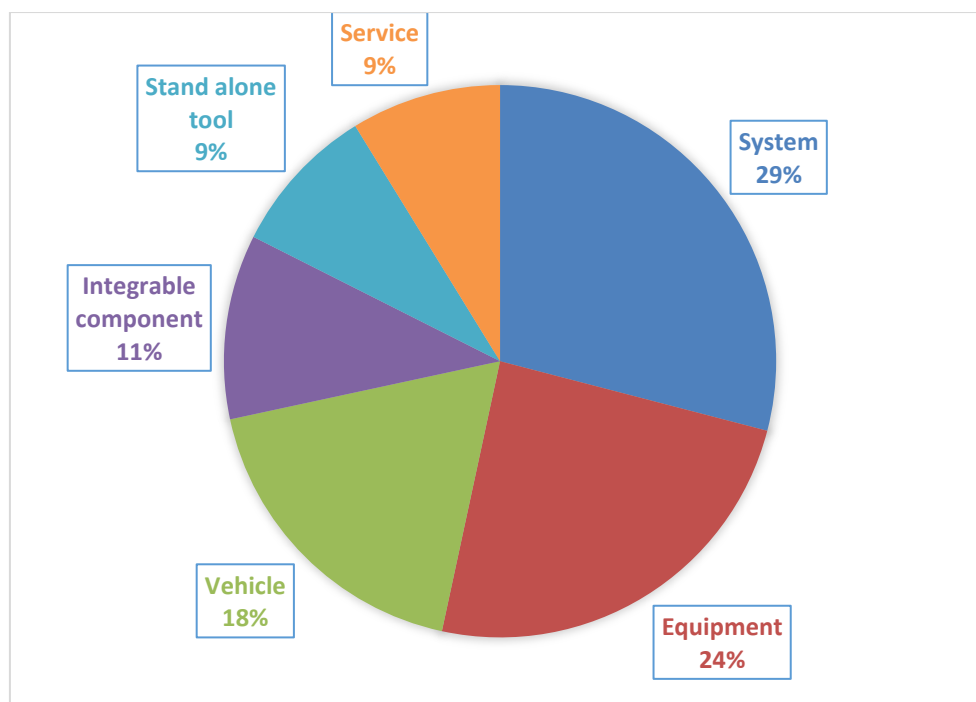


- The distribution of technologies by types is the following:

Systems.....	43
Equipments.....	36
Vehicles.....	27
Integrable components	16
Stand alone tools	13
Services.....	13
TOTAL.....	148

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

Distribution of technologies by type

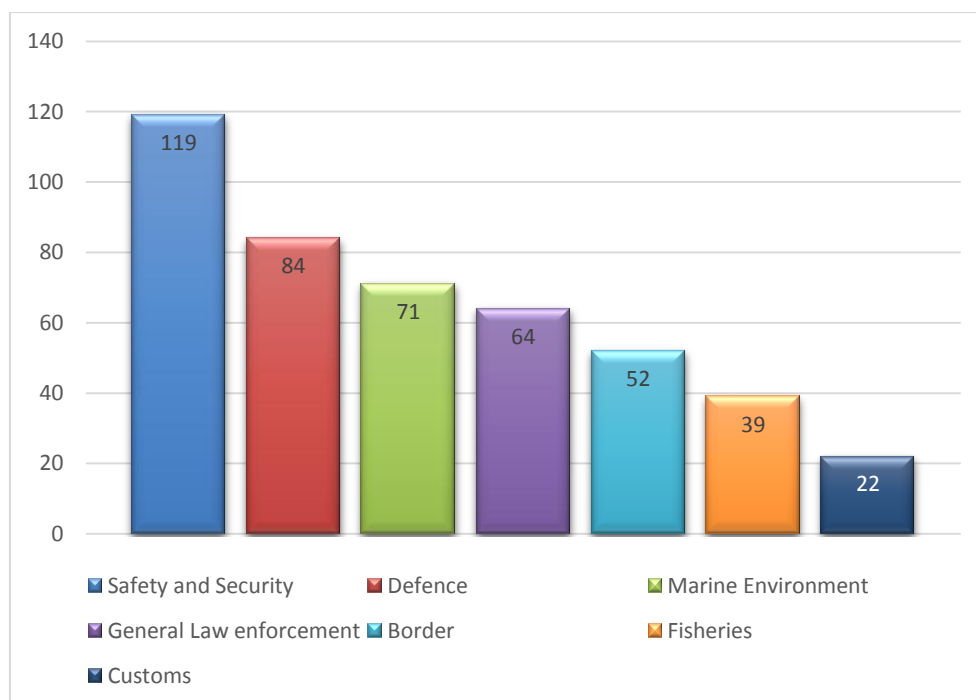


- The distribution of technologies by sectors is the following:

Maritime Safety and Security	119
Defence.....	84
Marine Environmental Monitoring	71
General Law Enforcement.....	64
Border control	52
Fisheries control	39
Customs	22

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

Distribution of technologies by sectors



In the tables below, we can find the list of technologies collected and the different sectors where they applied, first the technologies from countries participating in the project and after the rest. The colour indicates the type of technology:

Services	
Equipments	
Vehicles	
Systems	
Integrable components	
Stand alone tools	

Technologies from project countries

	Border control	Fisheries control	Defence	Maritime safety and security	Customs	Marine environment Monitoring	General law enforcement
1.- Argonautis				√			
2.- Cyprus Subsea Consulting and Services						√	
3.- CEFREM						√	√

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

	Border control	Fisheries control	Defence	Maritime safety and security	Customs	Marine environment Monitoring	General law enforcement
4.- Pole Transport				√	√		√
5.- CEREGE						√	
6.- Cyber Defence Courses and Training			√				√
7.- Hellenic Aerospace Industry's Training Center			√				
8.- Security Training			√	√			√
9.- Greek Maritime Security-Antipiracy courses			√	√			
10.- Rheticus Marine		√				√	
11.- Maritime Security Services				√			
12.- Environmental Monitoring Services						√	
13.- Oil Spill Detection Services						√	√
14.- Camera	√	√	√	√		√	√
15.- Examilcam	√		√	√			√
16.- SeaCHIRP				√		√	
17.- Data Buoy		√		√		√	
18.- Suprafix – SUB 150	√		√	√			
19.- Multi Purpose Launcher 30	√		√	√			√
20.- Deep Sea Versatile Data Logger				√		√	
21.- Se@NNet			√	√			
22.- Hydrophone 0330						√	
23.- EARS						√	
24.- Rete Nazionale AIS		√		√		√	√
25.- Vessel Traffic Service (VTS)		√		√		√	√
26.- MAREΣ- Mediterranean AIS Regional Exchange System		√		√	√	√	√
27.- UMA – Underwater Modular Arm			√			√	
28.- ATC-A100 – Test Equipment for Naval Systems			√				
29.- ETS-A100 – Test Equipment for Underwater Defence systems			√				
30.- Self-mooring buoys		√		√		√	
31.- Data Transmission Buoy			√	√		√	
32.- ELIT-SEA Static Frequency Converters for Shipboard Operation				√			
33.- Satellite antenna VFlat ku/ka-band			√	√		√	
34.- X-Ray scanner			√	√	√		
35.- DigitalHyd SR-1		√		√		√	
36.- Dual Accelerometer Vector Sensor						√	
37.- High-Frequency Active Sonar DDS-03			√	√		√	
38.- SAR – Smart Acoustic Recorder			√	√		√	
39.- TTI-DTLINK-KU-1415			√	√		√	√
40.- ASARP	√			√			

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

	Border control	Fisheries control	Defence	Maritime safety and security	Customs	Marine environment Monitoring	General law enforcement
41.- ROV OIS 306		√		√		√	√
42.- SeaExplorer			√	√		√	√
43.- Intelligence Autonomous Underwater Vehicle A9-S	√		√	√			√
44.- DVBot		√		√		√	√
45.- RSV		√		√		√	√
46.- CAT-Surveyor		√		√		√	√
47.- VHS 27 Very High Speed Patrol boat	√	√		√			
48.- Unmanned Aircraft systems	√	√	√	√	√	√	√
49.- ASV 200	√		√	√			√
50.- HCUAV RX-1 – Hellenic Civil Unmanned Air Vehicle	√	√	√	√	√	√	√
51.- CUMULUS UAV			√	√			
52.- Aratos Remotely Piloted Aircraft Systems (RPAS)	√		√	√			√
53.- Folaga AUV			√			√	
54.- X-300 AUV			√			√	
55.- Unmanned Aerial Vehicle (UAV)	√		√	√			√
56.- FlyFast 2.0	√	√	√	√	√	√	√
57.- FlySmart	√	√	√	√	√	√	√
58.- RPAS-Drones	√	√	√	√	√	√	√
59.- LAUV		√		√		√	√
60.- AR5	√	√	√	√		√	√
61.- Bleeper - PRO/AT		√				√	√
62.- Fulmar	√		√	√	√	√	√
63.- MEOLUT	√		√	√			√
64.- Integrated Coastal Surveillance System	√			√			
65.- MariaBox						√	
66.- Area Security System	√		√		√		√
67.- Sargos	√			√	√		√
68.- Integrated Alarm Monitoring Control System			√	√			
69.- SYLENA Decoy Launching System	√		√	√			
70.- Autoprotection Management System	√		√	√			
71.- POLARIS®				√			
72.- Maritime Surveillance solution (MARSS)				√			
73.- Hyperspectral Camera CASI 550 – Compact Airborne Spectrographic Imager						√	
74.- Laros Platform				√			
75.- GUARDIAN ship protection system			√	√			
76.- M2IMS – Maritime Mission	√	√	√	√	√		√

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

	Border control	Fisheries control	Defence	Maritime safety and security	Customs	Marine environment Monitoring	General law enforcement
Integration & Management System							
77.- Integrated Maritime Surveillance Platform	√	√	√	√	√	√	√
78.- Man overboard				√			
79.- NADIR Radar	√		√	√			
80.- ZENITH			√	√			
81.- Marine Information System				√			
82.- Embedded Real Time Systems			√	√			
83.- ARS (Augmented Reality System)			√	√			
84.- Remote Sensing			√	√			
85.- TDS System			√	√			√
86.- BARNY SENTINEL Underwater Platforms						√	
87.- RAG-A200 – Gamma Radiation probe network			√				
88.- Oversee Environmental Monitoring and Protection						√	√
89.- Ngaro Coastguard	√		√	√	√		√
90.- P2006T MRI Surveillance System	√		√	√		√	√
91.- Shiplocus	√	√		√			√
92.- SVAP			√	√		√	√
93.- HORUS	√		√	√			
94.- Argos – Surveillance Optronic System			√	√			
95.- Argos V 5000			√	√			
96.- Constellation-SDI		√		√		√	√
97.- KINGKLIP – Hull Mounted Sonar	√		√	√			
98.- C-CAP Wi 55	√		√	√			√
99.- Naïade Environment		√		√		√	√
100.- STYRIS			√	√		√	
101.- ATTISAT FL500, Flat Satellite Antenna	√		√	√			
102.- BB150 Ku-Band				√			
103.- BBIG30 Ku/Ka-Usat Airborne				√			
104.- Applications and Data Processing – DRONE APP	√		√	√			√
105.- BB50 Ka-Band / Telenor THOR-7				√			
106.- Offshore Abyssal OS		√		√		√	√
107.- CYCOFOS				√		√	
108.- Electronic Navigation Chart S57			√	√		√	
109.- Operational evaluation			√	√		√	
110.- Underwater Vision Profiler		√				√	√
111.- Stradivarius	√		√	√	√		√
112.- SmartFind AIS Class A Transponder	√		√	√			√

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

	Border control	Fisheries control	Defence	Maritime safety and security	Customs	Marine environment Monitoring	General law enforcement
113.- SAVaS	√		√	√			√
114.- ASV Software Suite	√		√	√		√	√
115.- ADVANSYS Mission Management Systems for XXV		√	√	√		√	
116.- Safe-on-board				√			
117.- MarineTraffic	√		√	√			√
118.- Ship EDF-EM Risk Management				√			
119.- Atlas of Species		√				√	√

Technologies from other countries

	Border control	Fisheries control	Defence	Maritime safety and security	Customs	Marine environment Monitoring	General law enforcement
1.- M-Series Underwater Acoustic Modems				√		√	
2.- iSea, Gyro-stabilized EO / IR Camera Payloads	√		√	√	√	√	√
3.- DSIT's Shield				√			
4.- AIS shipping traffic density analysis system				√		√	√
5.- VTMIS				√		√	√
6.- High resolution interferometric synthetic aperture sonar						√	
7.- R5 Supreme W-AIS				√		√	
8.- SHARPEYE	√		√				
9.- Underwater Acoustic Modem Micro				√		√	
10.- ARENA	√		√				
11.- 27m FAST PATROL	√	√		√	√	√	√
12.- SUPER MOHAWK	√		√	√	√	√	√
13.- SEAVUE	√		√	√	√		√
14.- 50 USV	√		√	√	√	√	√
15.- MEOS II N	√	√	√				√
16.- Cerberus Mod2				√			
17.- K-IMS		√		√			
18.- Vissim – Closed Circuit Television System	√	√	√	√	√	√	√
19.- MARITIMEINSIGHT				√		√	
20.- SENTINEL		√	√	√			
21.- Camera model 92	√		√	√			
22.- Multi-Sensor Surveillance System	√		√	√			

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

	Border control	Fisheries control	Defence	Maritime safety and security	Customs	Marine environment Monitoring	General law enforcement
23.- SMART TETHER			√	√			√
24.- PREDATOR		√					
25.- SCANVIEW		√	√	√			
26.- Antenna AC17M4-AIS	√	√	√	√			√
27.- SR01-Heading Repeaters			√	√			
28.- Triple Display Console	√		√	√	√	√	
29.- RADII		√	√	√			

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

5. Services

a. Cyprus

1.- Argonautis

Link:	http://argonautis-maritime.com/training/						
Applicable MS Sector(s):	Maritime Safety and Security						
Contact Details of Owner:	Argonautis Lima Carna Building, 2nd Floor 67, Franklin Roosevelt Avenue 3011 Limassol Tel.: +357 25558220 info@argonautis-maritime.com						
Brief Description/ Photos/ Related Material							
ARGONAUTIS regularly organizes courses in maritime security together with "International Academy for Security" (IAS). IAS, certified experts provide training on general security matters. Training programs include e.g. courses for special security competence and knowledge, tactical training, basic seafarers knowledge and on first-aid. Prepare personnel for any potentially dangerous situation. IAS offer evidence-based training on piracy awareness, BMP-4 measures, ship hardening, and hostage situations.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Training						
Keywords:	tactical training, security onboard ship						
Comments on the Technology							
Company is approved by Department of Merchant Shipping (Cyprus Flag) as a Private Ship Security Company. Also Argonautis offer the following services: Vessel Protection, Risk Assessment, Reports & Documentation, Personnel Training / Instruction, 24/7 Operationscell, Consulting							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

2.- Cyprus Subsea Consulting and Services

Link:	http://cyprus-subsea.com/?page_id=350						
Applicable MS Sector(s):	Marine Environment Monitoring						
Contact Details of Owner:	Cyprus Subsea Consulting and Services 36B Paragogikotitas Lakatamia						
Brief Description/ Photos/ Related Material							
Cyprus Subsea Consulting speciality is marine robotics and autonomous systems, such as gliders, AUVs, ROVs, moorings, and landers as well as operational forecasting and observing systems. They provide training on the operation of specialized marine equipment, both sensor and platforms. Examples include gliders, drifters, floats, CTDs, ADCPs, and numerous sensors.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Training						
Keywords:	Gliders, AUVs, ROVs, Marine Equipment, Sensors						
Comments on the Technology							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

b. France

3.- CEFREM

Link:	http://cefrem.univ-perp.fr/						
Applicable MS Sector(s):	Marine Environment Monitoring	General Law Enforcement					
Contact Details of Owner:	UMR 5110 CNRS - UPVD 52, Avenue Paul Alduy 66860 Perpignan Phone: +33 (0)4 68 66 20 90 cefrem@univ-perp.fr						
Brief Description/ Photos/ Related Material							
CEFREM of the University of Perpignan is a unit of research associated with the CNRS (UMR 5110). He has long been interested in the coastal environment, which brings him closer socio-economic problems related to the uses of this medium. Its activity of Research is focused on the theme of transfers of material and energy to the coastal system interfaces. CEFREM provides a complete course of teachings of the University of Perpignan with the license the Earth Sciences and the Environment and the Marine and Aquatic environments Geoscience Master and on the other hand, the Biology Ecology License and the Integrated Biology Master.							
Stage of Development:	Already on the market						
Technology Readiness Level (TRL 1-9):	TRL 9						
Domains of Applications:	Training and R&D						
Keywords:	Coastal Environment, coastal system interfaces, Biology						
Comments on the Technology							
CEFREM develops also R&D projects as: - DEBi2Micro: Diversity and Evolution of microbial Biofilms in the face of the multi-pollutions by emerging micropollutants in the Mediterranean - MERMEX: Marine Ecosystem Response in the Mediterranean Experiment - SUNRISE - ANR Réseaux: Sedimentary flow, turbidity and integrity of funds for the strategy for the marine environment - ANR MATUGLI: Autonomous measures in coastal turbidity using GLiders							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

4.- Pole Transport

Link:	https://pole-transports-facdedroit.univ-amu.fr/fr						
Applicable MS Sector(s):	Maritime Safety and Security	Customs	General Law Enforcement				
Contact Details of Owner:	Pôle Transports - CDMT-IFURTA - Aix-Marseille _Université - Faculté de Droit et de Science Politique 3 Avenue Robert Schuman 13628 Aix-en-Provence Phone: +33 (0)4 42 17 28 62 lia.silva@univ-amu.fr						
Brief Description/ Photos/ Related Material							
The Pole transport of the University of Aix-Marseille was specifically intended to facilitate, promote and develop the professional academic training and to contribute to applied research in law and management of maritime, air and land transport in close relationships with the professionals of the different branches of the transport. It is based on the long and solid experience acquired by its two major components: - the Maritime Law Center and transport, created in 1974, specialised in maritime and land transport; - the Institute for university training and of Air Transport Research (IFURTA), created in 1976, specialized in law and management airline.							
Stage of Development:	Already on the market						
Technology Readiness Level (TRL 1-9):	TRL 9						
Domains of Applications:	Training and R&D						
Keywords:	Law, transport, maritime, air, land						
Comments on the Technology							
The studies that could be followed are: - Master 2 Law and Management of Aerial Transport - Diploma of academic higher studies in Management of Aerial Transport - Diploma of academic higher studies in Aerial and Spatial Insurances - Master 2 Law of Land Transports - Master 2 Law of Maritime Transport - License in Management and Law of Maritime Transport							



PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

5.- CEREGE

Link:	http://www.cerege.fr/en						
Applicable MS Sector(s):	Marine Environment Monitoring						
Contact Details of Owner:	Europôle Méditerranéen de l'Arbois Avenue Louis PHILIBERT - BP 80 13545 AIX EN PROVENCE Phone: +33 (0)4 42 97 15 05						
Brief Description/ Photos/ Related Material							
CEREGE, Centre for research and teaching of Geosciences of the environment, brings together approximately 130 permanent staff (45 professors, 40 researchers and 45 engineers, technicians or administrative) and 110 non-permanent staff including 60 PhD students. It is a mixed unit of research (UM 34) whose guardianship are the University Aix-Marseille (AMU), the CNRS (UMR7330), IRD (UMR 161), and the COLLEGE DE France. The INRA is a partner, in the form of unit of Service under contract (USC 1410). Its premises are located on the science park environment Arbois Mediterranean, Petit Plateau of Arbois (Aix-en-Provence, Les miles) and on the Center St Charles in Marseille. By its theoretical, methodological and technological the CEREGE is a place of strong interdisciplinarity.							
Stage of Development:	Already on the market						
Technology Readiness Level (TRL 1-9):	TRL 9						
Domains of Applications:	Training and R&D						
Keywords:	Geology, Climate, Water, Pollutants, Risks						
Comments on the Technology							
The main themes and objects of the CEREGE studies are: • Planetary and Earth internal; • Geodynamics and Earth nourishment (geoarchaeology); • Dynamics and climate Cycles; • Environmental variability and impacts on ecosystems; • Systems and sedimentary reservoirs; • Dynamics and tracing of Hydrosystems; • Functioning of soils (natural and anthropised); • Nanomaterials, waste and pollutants							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

6.- Cyber Defence Courses and Training

Link:	www.groupedci.com						
Applicable MS Sector(s):	Defence	General Law Enforcement					
Contact Details of Owner:	2, Place de Rio de Janeiro - CS 80056 - 75381 Paris Cedex 08 France Tél : 01 44 95 26 00 - Fax : 01 44 95 29 34						
Brief Description/ Photos/ Related Material							
DCI's CyberDefence Management Institute (CDMI) offers academic or personalised training courses, as well as exercises and operational training. The CDMI possesses top class human and technical resources. A full IT platform ensures that participants benefit from a realistic environment and scenarios. Operational training is based on research and development work and includes the latest advances in military operating modes: chain of command, technical chain, planning and conducting operations.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Training						
Keywords:	Cyberdefence, Information system & E-security, Cyber security Architect, C2, Computer Emergency Response Team, Intrusion Detection System						
Comments on the Technology							
Available courses : Information system & E-security, Cyber training workshops, Cyber Protection Officer, Cyber security Expert, Cyber security Architect, Cyber security and detection expert, Master in Cyber defense, Specialised master Cyber defence operations and crisis management							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

c. Greece

7.- Hellenic Aerospace Industry's Training Center

Link:	http://www.haicorp.com/en/products-en/training-en						
Applicable MS Sector(s):	Defence						
Contact Details of Owner:	ATHENS HEAD OFFICE Athens Tower, 2-4 Mesogion Ave., GR115 27, Athens Main Switchboard: +30-210-77.99.622, Fax: +30-210-77.97.670 PLANT P.O. Box 23, GR 320 09, Schimatari, Greece Main Switchboard: +30-22620-5.2000 - Fax: +30-22620-5.2170 Email Training Center : training@haicorp.com						
Brief Description/ Photos/ Related Material							
The Hellenic Aerospace Industry's Training Center employs a cadre of full time highly experienced instructors and the training programs offered are designed to be integrated, versatile, applicable and auditable. The training programs are either full scope or modular courses both aimed at helping the trainees expand their abilities in a wide range of aviation industry disciplines or in management and logistics. All programs are approved by the Hellenic Civil Aviation Authority (HCAA) and are conducted in a balanced combination of classroom and on-the-job-training, in both fully equipped laboratories and complete utilization of the company's industrial environment.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Training						
Keywords:	Systems Maintenance, Avionics, Computer Apps etc						
Comments on the Technology							
Offered Programmes Aircraft Engines Maintenance, Accessories Maintenance, Electrical Maintenance, Avionics Maintenance, Corrosion Control & Finishing, Maintenance Management, Quality Control/Quality Assurance, Structural Repairs, Electronic Systems Maintenance, PMEL (Precision Measurement Equipment Laboratory), Computer Applications, NDI (Non-Distructive Inspection), Aeronautical Soldering Techniques, Ground Support Equipment Maintenance, JAR 145, Human Factors							



PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

8.- Security Training

Link:	http://www.armour.gr/training.php						
Applicable MS Sector(s):	Maritime Safety and Security	Defence	General Law Enforcement				
Contact Details of Owner:	155 Syngrou Avenue, 17121 Nea Smirni, Athens - Greece T: +30 210 9312391, 2, 3, F: +30 210 9312387 E: info@poseidongroup.eu						
Brief Description/ Photos/ Related Material							
Tough and soft skills, gained within practical exercises and guidelines, can make a difference. Relevant training and preparation for personnel prior to deployment aids fulfilling the fundamental duty of care. Its staff, with decades of experience training in law enforcement and military special units, provides comprehensive basic and advanced training and coaching solutions for any situation anywhere in the world. Their training and coaching skills are mainly focused on security sector reform, but nation-building support for emerging Interior and Defense Ministries in underdeveloped countries recovering from conflict or political instability. They collaborate intimately with clients, international donor countries and local government organizations to assess risks and implement the right mix of professional services and advanced technologies.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Training						
Keywords:	Security Training, Maritime Security, Defence						
Comments on the Technology							
Training on Maritime Security: Pirates' modus operandi, Case Studies, Risk Assessment prior voyage, International rules and regulations, Advanced procedures, Maritime Security Operations, Ship Security Officer (SSO), Port Facility Security Officer (PFSO), STCW 95, First Aid / Basic and Combat, Weapons Management & Handling, Psychometric Evaluation, On board tactical Training							

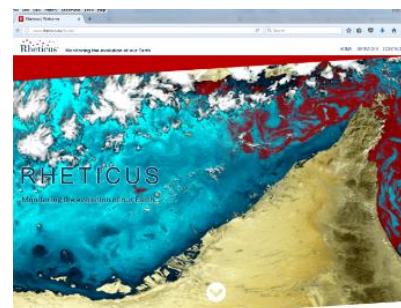
PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

9.- Greek Maritime Security-Antipiracy Courses

Link:	http://www.gmso.gr/about-us						
Applicable MS Sector(s):	Maritime Safety and Security	Defence					
Contact Details of Owner:	45-47, Voulis Str., Athens, 105 57, Greece, Tel +30 210-3316480 E-mail: info@gmso.gr						
Brief Description/ Photos/ Related Material							
Greek Maritime Security Operations is a premiere high risk maritime security company, consulting firm and training agency working under the Israeli standards within security industry. We provide high risk security services in a safe, discreet and, confidential manner to all of our Clients in the private or governmental sectors. Our professionally trained instructors have provided trainings, preparation of security assessments, and development of security plan and analysis of the security systems required for ships.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Training						
Keywords:	Maritime Security, Antipiracy						
Comments on the Technology							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

10.- Rheticus Marine

Link:	http://www.planetek.gr/products/all_products/rheticus_marine						
Applicable MS Sector(s):	Marine Environment Monitoring	Fisheries Control					
Contact Details of Owner:	PLANETEK Hellas 44 Kifisias Avenue (Monumental Plaza, Building C 2nd floor), 15125 Marousi, Athens, Greece. Phone: +30 2152157390 Fax: +30 2152157398 E-mail: info@planetek.gr						
Brief Description/ Photos/ Related Material							
Rheticus® Marine is an automatic cloud-based geo-information service designed to deliver fresh and accurate satellite-based data and information for the monitoring of coastal seawater quality and marine resources. It is targeted to: - National and local authorities in charge of continuous monitoring of water quality (turbidity, chlorophyll and sea temperature) for reporting needs based on EU Marine Strategy - Fishing companies to monitor the level of water productivity Users of the service are National and local public administrations as regions, fishing companies, aquaculture and plants operating near the coast (desalination, waste water treatments, etc.).							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Coastal water quality, Reporting for the EU Marine Strategy, Level of water productivity, Algal bloom monitoring						
Keywords:	marine monitoring						
Comments on the Technology							
By using satellite Open data – such as the ones from AQUA/MODIS and Sentinel-3 missions –, Rheticus® Marine is able to provide information compliant with the indicators required by the EU Water and Marine Strategy Directives. Features and benefits Timely information is provided automatically at affordable prices Maps, reports and indices are actionable and available 24/7 from different platforms and devices Saves time and resources normally dedicated to data search and processing and information production Data and results are standardized and comparable over time							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

11.- Maritime Security Services

Link:	http://www.armor.gr/maritimesecurity.php						
Applicable MS Sector(s):	Maritime Safety and Security						
Contact Details of Owner:	155 Syngrou Avenue, 17121 Nea Smirni, Athens - Greece T: +30 210 9312391, 2, 3, F: +30 210 9312387 E: info@poseidongroup.eu						
Brief Description/ Photos/ Related Material							
- Vessel protection in arms and/or unarmed if required - Vessel security assessment & consulting - Legal consulting - Incident & emergency management with 24hr global vessel tracking service - Crew security training - Security Services to all kind of vessels, including Fishing ships, Yachts/Mega/Super Yachts and Cruising Vessels							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:							
Keywords:	Maritime Security Services						
Comments on the Technology							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

d. Italy

12.- Environmental Monitoring Services

Link:	http://www.ambientesc.it/en/activities/environmental-monitoring/						
Applicable MS Sector(s):	Marine Environment Monitoring						
Contact Details of Owner:	CARRARA headquarter Tel. 0585.855624 international@ambientesc.it						
Brief Description/ Photos/ Related Material							
Thanks to the internal structure of ambiente, divided into Engineering& Consulting and Laboratories, we are able to offer a complete Environmental Monitoring service, from the definition of the indicators systems, to the drafting of environmental and sustainability reports, from the provision of environmental impact studies to support of the client in the environmental assessment procedures. We have consolidated national and international experience in sampling, collection, analysis and assessment of environmental data, and in providing information relative to the quality of resources.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Services on Environmental Monitoring						
Keywords:							
Comments on the Technology							
Water: internal, discharge, transitional, coastal marine Marine sediments Biodiversity Ecosystems and bioethical components etc							



PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

e. Portugal

13.- Oil Spill Detection Services

Link:	http://www.edisoft.pt/solutions/#/5/13/						
Applicable MS Sector(s):	Marine Environment Monitoring	General Law Enforcement					
Contact Details of Owner:	Edisoft Rua Calvet Magalhaes, 245 2770-153 Paço de Arcos Phone: +351 212 945 900 edisoft@edisoft.pt						
Brief Description/ Photos/ Related Material							
As a specialist in processing data from synthetic aperture radars, Edisoft provides operational services for environmental monitoring and oil spill and vessel detection, and is one of the service providers for the European Maritime Safety Agency's CleanSeaNet programme. Operational service for hydrocarbons pollution detection in the North Atlantic, as well as potential polluter, through Synthetic Aperture Radar (SAR) image processing acquired through Santa Maria Azores station. The station of Santa Maria accompanies the trajectories of several remote satellite observations round the clock, collecting data for monitoring oil spills and other operational services.							
Stage of Development:	Already on the market						
Technology Readiness Level (TRL 1-9):	TRL 9						
Domains of Applications:	Oil detection, Space launchers, Earth observation, CleanSeaNet						
Keywords:	Synthetic Aperture Radar, tracking, data						
Comments on the Technology							
The ground stations on Santa Maria Island in the Azores, more than 1,000 km west of mainland Europe, are ideally located for space programmes and are the only facilities of their kind in Portugal. They are managed and operated by Edisoft and currently support three functions: • Tracking station, part of the ESTRACK (European Space Tracking Network) and Arianespace networks, the station is used to monitor space launchers including Ariane 5, Vega and Soyuz; • Earth observation station, receiving data from observation satellites including Radarsat 2 in order to produce operational Earth observation products for services such as CleanSeaNet, the European satellite-based oil spill detection service; • Galileo Sensor Station, monitoring signal quality, clock timings and positioning of the Galileo satellites orbiting Earth.							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

6. Equipment

a. France

14.- Camera

Link:	www.c-s.fr						
Applicable MS Sector(s):	Border control	Fisheries Control	Defence	Maritime Safety and Security	Customs	General Law Enforcement	
Contact Details of Owner:	CS Communication & Systèmes 22, avenue Galilée 92350 Le Plessis-Robinson Tél : +33 1 41 28 40 00 - Fax : +33 1 41 28 40 40 e-mail : sales@c-s.fr						
Brief Description/ Photos/ Related Material							
SEASCOPE 360 dome is a new generation of telemonitoring solution providing ultra-high definition (35 Mpixels) video or pictures suitable for drones. Engineering with civil technology, this device offers the best price/performance ratio as well as a modular and extensible structure. Seascope 360 dome perfectly matches the needs of sensitive locations, maritime safety, panoramic and hemispherical view for terrestrial robots, UAV, USV and AUV.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Drones, vehicles						
Keywords:	Advanced Image Processing, Wide-angle, Embedded video processing, Drone, Long-range targets detection						
Comments on the Technology							
MAIN CHARACTERISTICS Performance Limite for Detection/identification - Person : 1,5Km/500m - Parachute : 5km/1km - Boat : 10km/3km - Patrol Vessel : 55km/13,5km							
Mount : M12x0,50	Focal : 2,30mm		IR Filter : 400 nm - 670 nm		Resolution : Multi-Mpixels/5 Mpixels		

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

15.- Examilcam

Link:	http://www.exavision.com/defense_categorie_cameras-de-surveillance-nuit_4_produit_gamme-examilcam_13.html						
Applicable MS Sector(s):	Defence	Border control	Maritime Safety and Security	General Law Enforcement			
Contact Details of Owner:	Exavision ZAC Trajectoire 8, Avenue Ernest BOFFA 30540 Milhaud (Nimes) Phone: +33 (0)4 66 74 66 00 contact@exavision.com						
Brief Description/ Photos/ Related Material							
The Examilcam is a black & white camera with an extra sensitive militarized hardened - 30 °C to + 70 °C. The need in light of this new camera with a 1/2 "CCD is extremely low. A new innovative technology of electronic circuits to low noise allows to raise the level of the signal prior to digitization and increases the sensitivity of 400%. Thanks to this feature, the camera is intended for monitoring of objects, rooms or process little or no enlightened, it is ideal for demanding CCTV facilities, for long-distance observation applications and for applications low light level when the integration time is reduced. Thanks to the automatic control of the iris, it fits 24/24, day and night, in all light conditions. In addition, the Dynamic Range Enhancement function ensures clear visibility of the images to low contrast in a difficult environment, as for example fog, steam or rain.							
Stage of Development:	Already on the market						
Technology Readiness Level (TRL 1-9):	TRL 9						
Domains of Applications:	Surveillance, night, CCTV, all light conditions						
Keywords:	Camera, night, black&white, monitor, visibility						
Comments on the Technology							
The EXAMILCAM avoids a long exposure of the image, avoids the blur caused by movement, significant thermal noise and can be used in situations in which it is normally found cameras to amplification images and ultra-sensitive TV cameras. This CCD camera is very small, light, particularly robust and fits discreetly in all facilities (en built-in-frame option waterproof IP 67 or IP 68, with sweep to the nitrogen of the subwoofer, window heating,...). It can be fed with a variable voltage between 9 - 36V for a low consumption. Remote via RS 232 for several functions management is still available (freely configurable backlight compensation, has, AGC, Gamma, horizontal mirror, display window and more).							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

16.- SeaCHIRP

Link:	http://www.soacsy.fr/en/features-en.html						
Applicable MS Sector(s):	Maritime Safety and Security	Marine Environment Monitoring					
Contact Details of Owner:	Soacsy 1, rue Nicolas Copernic BP 62074 13646 Arles Cedex Phone: +33 (0)4 90 49 06 91 sales@soacsy.com						
Brief Description/ Photos/ Related Material							
SeaCHIRP is a superior sub bottom profiler for shallow water combining super wide band Chirp technology with Synthetic Aperture Sonar and seismic inversion processing. This new technology offers unparalleled images and technical measurements of buried objects (pipes, cables, UXO, etc.) as well as accurate estimates of geoacoustic and geotechnical parameters of sediment layers, at depths of up to several dozen meters. Its robust design and outstanding performance make it a multipurpose tool for many different sectors with a large range of uses. Chirp technology consists of emitting and processing Chirps, or frequency modulated signals. These wideband, long duration, high energy signals enable us to penetrate further into the seabed than other sub-bottom profilers which emit short pulses. The SeaCHIRP is specially designed to get high side echo rejection ($\pm 10^\circ$) while maintaining good performance at sea, allowing for high survey speed (recommended speed 4 kn).							
Stage of Development:	Already on the market						
Technology Readiness Level (TRL 1-9):	TRL 9						
Domains of Applications:	Seismic prevention, environment, safety						
Keywords:	Images, measurement, acoustic, geotechnical						
Comments on the Technology							
SeaCHIRP's modular structure allows for efficient transportation and operation. All of the machines are ruggedized and designed to work at high humidity rates and extreme temperatures. The amplifier is stored in a case made of polyethylene rotationally molded plastic with 2,5" wheels and an industrial pull handle. The acquisition box is transported in a Pelican Storm Case which is watertight and equipped with wheels and a telescopic handle. The Chirp emitter is protected by a robust stainless steel case. The streamlined hydrophone array SeaWING is made of marine aluminium with a protective polyurethane cover. Each component weighs less than 32 kg for easy and low cost transportation and installation anywhere in the world.							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

17.- Data Buoy

Link:	www.mobilis-sa.com						
Applicable MS Sector(s):	Marine Environment Monitoring	Fisheries Control	Maritime Safety and Security				
Contact Details of Owner:	MOBILIS 370, rue Jean de Guiramand 13792 Aix en Provence Cedex 3 Tél: +33 (0) 4 42 37 15 00 Fax: +33 (0) 4 42 37 15 01 Mail: mobilis@mobilis-sa.com						
Brief Description/ Photos/ Related Material							
Mobilis offers a complete range of acquisition data buoys (data buoys or smart buoy): The Mobilis platforms are known to be the perfect support to accommodate all the necessary instrumentation for measurements at sea; wind or solar generator, measuring instruments, sensors, modems, data transmission, technical compartments. The larger models are safely accessible and can be visited inside.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Buoy						
Keywords:	DATA BUOY, Sensors platform, Measure at sea						
Comments on the Technology							
MAIN CHARACTERISTICS							
Data transmission mode : AIS/Iridium/Radio/GPRS/GOES/GOE/GSM							
Diameter : 1200 mm to 3600mm		Overall height : 1800 mm to 10000 mm		Weight : 200 kg to 4,5t		Depth : 5 m to 1500m	

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

18.- Suprafix – SUB 150

Link:	http://www.suprameca.com/products-and-applications/sea/20-the-underwater-fixing-tool-sub150						
Applicable MS Sector(s):	Defence	Border control	Maritime Safety and Security				
Contact Details of Owner:	Suprameca SAS 654, Chemin du Seigneur 83190 Ollioules Phone: +33 (0)4 94 41 01 85 contact@suprameca.com						
Brief Description/ Photos/ Related Material							
The SUPRAPHIX is a new high efficiency underwater fixing tool mainly intended for underwater diving works for both the Oil & Gas Industries and the Civil Engineering Industries. It allows the quick and reliable fastening of threaded studs and drive pins to carry out permanent anchorings and assemblies on metal structures but also on reinforced concrete structures. Thanks to its very robust design, it can be used up to 150m deep. It can directly be reloaded under water without need for going up to the surface. Its power is important and easily adjustable. With this, it can cover a wide range of possible applications. Thanks to its particular neat ergonomic design, its compactness, its lightness and its autonomy, the SUPRAPHIX is the ideal tool for any rapid intervention in any underwater environment.							
Stage of Development:	Already on the market						
Technology Readiness Level (TRL 1-9):	TRL 9						
Domains of Applications:	Repair, installation, underwater						
Keywords:	Fixing tool, underwater, metal structures						
Comments on the Technology							
The SUPRAPHIX - SUB150 can be used in many ways, for example for: - Emergency repair of ship hulls, - Installation of sacrificial anodes for underwater cathodic protection, - Installation of underwater cables and conduits, - Strengthening of marine structures in steel or concrete, - Marine salvage and wreck removal, - Maintenance of dams in deep water (100m). The main benefits and advantages are: - Important time-saver compared to the traditional methods of welding and chemical sealing, - Very easy implementation, - Lightweight, compact and easy to handle, - Always ready for use, - Reliable and reproducible performances independent from the operator's skills.							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

19.- Multi Purpose Launcher 30

Link:	http://www.aerosurveillance.com/launcher.php						
Applicable MS Sector(s):	Defence	Maritime Safety and Security	Border control	General Law Enforcement			
Contact Details of Owner:	Aero Surveillance SAS 59 Impasse Louis Blériot 84140 Montfavet Phone: +33 (0)4 90 88 23 65 info@aerosurveillance.com						
Brief Description/ Photos/ Related Material							
The MPL 30 system can be adapted on the Unmanned Aircraft Systems produced by Aero Surveillance (VTOL line ASV 100 or ASV 150) to launch multiple types of effectors and/or amunitions such as tear gas grenades, hygroscopic torches, explosives and many others. Key applications include law enforcement, crowd and riot control, avalanche triggering and meteorological conditions modifications just to name a few. The system can be deployed from a few hundred meters of altitude, provide real-time imagery of the situation while being positioned at the best possible location to launch supported ammunicions.							
Stage of Development:	Already on the market						
Technology Readiness Level (TRL 1-9):	TRL 9						
Domains of Applications:	Real time imagery, launch supported ammunicions						
Keywords:	Grenades, Torches, Explosives						
Comments on the Technology							
The main specifications of this system are: - Two holding structures attached to the aircraft skids with two modular plates capable of carrying up to nine (9) CM6-type tear gas grenades per plate (or other types of ammunicions) - A total of up to 18 tear gas grenades can be carried - A Secure Airborne Launch Controller integrated with a remotely controlled day/night gyro-stabilized gimbal equipped with a EO/IR dual camera sensor and optionally with a Laser Range Finder - FlyViewTM integrated GCS software suite for Remote Control Command and Mission Display - Specific software module Control-Command for MPL 30 TG							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

20.- Deep Sea Versatile Data Logger

Link:	http://www.osean.fr/pdf/OSEAN_Deep_Sea_acoustic_recorder_V0.pdf						
Applicable MS Sector(s):	Maritime Safety and Security	Marine Environment Monitoring					
Contact Details of Owner:	Osean S.A.S. ZAE La Bayette 83220 Le Pradet Phone: +33 (0)4 94 03 65 84 contact.web@osean.fr						
Brief Description/ Photos/ Related Material							
The OSEAN versatile data logger is a high quality data, ultra low power and cost effective underwater acoustic aquisition system used for applications that require underwater sound recording. The key features are: - High quality data - Configurable power saving mode - Versatile and configurable system - Recording and streaming data mode Embedded signal processing - Intuitive user Web server interface - Max Depth 3000m / 6000m							
Stage of Development:	Already on the market						
Technology Readiness Level (TRL 1-9):	TRL 9						
Domains of Applications:	Surveillance, inspection						
Keywords:	Acoustic, aquisition, sound, noise						
Comments on the Technology							
The main technical specifications of the Data Logger are: - 2 hydrophone channel input - High pass filter Active Butterworth 2nd order, 100Hz / 1kHz / 3kHz - Low pass filter Passive Butterworth 10nd order, Bypass / 20kHz / 50kHz - Gain of +0dB to +70dB by 10dB steps - Noise level < -160dBV/√Hz - 1 µSD card slot for memory and 8 SD card slots for extended memory - Acoustic data format of Wave, 32bits and non acoustic data format of ASCII - 6 kg weight in air and 1,5 kg weight in seawater - Maximum depth of 3.000 meters, with 6.000 meters in option - Operation temperature between -5°C and +40°C							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

b. Greece

21.- Se@NNet

Link:	https://www.intracomdefense.com/post/411						
Applicable MS Sector(s):	Maritime Safety and Security	Defence					
Contact Details of Owner:	INTRACOM Defense Electronics (INTRACOM S.A. DEFENSE ELECTRONIC SYSTEMS) 21 km Markopoulou Ave., Koropi Athens, GR-19400 Tel.: (+30) 210-6678000, Fax: (+30) 210-6678001						
Brief Description/ Photos/ Related Material							
Se@NNet is an advanced IP based tactical communications network for secure, multimedia information transfer, interconnecting deployed vessels at all levels of command. It supports a variety of integration platforms, varying from small up to large sized vessels, according to unit operational requirements. The scalable Se@NNet SDR communication suite addresses the requirements of modern C4I systems for voice, nets, data transfer and sensor integration, providing wireless network connectivity from patrol boats to fast attack crafts, frigates and corvettes. The long range secure connectivity between the ships enhances situational awareness, improves the speed of command and leads to significantly increased mission effectiveness. Se@NNet communication stations implement a wireless Wide Area Network (WAN) among ships and shore stations enabling secure information sharing. Embedded encryption and Transmission Security (TRANSEC) mechanisms ensure the security and the reliability of the communications in the highly dense electromagnetic environment where military vessels operate.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	vessels, C4I systems						
Keywords:	tactical communications network, wireless vessel interconnections						
Comments on the Technology							



PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

c. Italy

22.- Hydrophone 0330

Link:	http://www.colmaritalia.it/files/acustica-subaquea/colmar-dg0330-for-km-3_37926.pdf					
Applicable MS Sector(s):	Marine Environment Monitoring					
Contact Details of Owner:	CO.L.MAR. S.r.l. Centro Sviluppo Tecnologico / Via delle Pianazze, 74 - 19136 La Spezia tel: +39 0187 982590 / fax: +39 0187 943461 P.I.: 00742150113 - Capitale sociale € 100.000 i.v. e-mail: colmar@colmaritalia.it					
Brief Description/ Photos/ Related Material						
Hydrofone placed in KM3NeT, a neutrino telescope with a volume of several cubic kilometres at the bottom of the Mediterranean Sea for the European deep-sea research.						
Stage of Development:	Already on the Market					
Technology Readiness Level (TRL 1-9):	9					
Domains of Applications:	Hydrophone					
Keywords:						
Comments on the Technology						
It consists of a spherical piezo-ceramic element, read-out by an analogue board splitting the signal in two lines with different gains (+46 dB and +26 dB respectively). The two streams are sampled by a stereo 24 bit commercial ADC (analog to Digital Converter) and converted into AES protocol using a DIT (Digital Interface Transmitter). All the electronics is encapsulated in a hard epoxy resin molded to the cable and to the ceramic head with an additional polyurethane molding layer. An external stainless steel jacket is used for clamping the hydrophone. The power consumption is less than 100 mA at 12 V. The hydrophone is designed to accept power supply in a wider range from +9 VDC to +18 VDC.						

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

23.- EARS

Link:	http://www.colmaritalia.it/acustica-subacquea/prodotti-standard/environmental-acoustic-recording-system.html					
Applicable MS Sector(s):	Marine Environment Monitoring					
Contact Details of Owner:	CO.L.MAR. S.r.l. Centro Sviluppo Tecnologico / Via delle Pianazze, 74 19136 La Spezia tel: +39 0187 982590 / fax: +39 0187 943461 e-mail: colmar@colmaritalia.it					
Brief Description/ Photos/ Related Material						
E.A.R.S. Is a device designed for the intelligent monitoring of acoustic noise at sea. Allows continuous monitoring by recording only the actual signs of interest while avoiding accumulation of data unnecessary. It consists of a fixed acoustic station that captures the data and transmits them via a ground cable, where a unit receiver examines the received signal, decides whether there is an abnormality that can be attributed to presence of boats, fishes, dolphins etc., and in the event of a positive, permanent registration of the aforesaid Signal in the form of ".wav" files.						
Stage of Development:	Already on the Market					
Technology Readiness Level (TRL 1-9):	9					
Domains of Applications:	Hydrophone					
Keywords:						
Comments on the Technology						
Applications: Ambient Noise Measurement, Environmental monitoring, Detection						

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

24.- Rete Nazionale AIS

Link:	http://www.guardiacostiera.gov.it/mezzi-e-tecnologie/Pages/rete-ais-nazionale.aspx						
Applicable MS Sector(s):	Marine Environment Monitoring	Maritime Safety and Security	General Law Enforcement	Fisheries Control			
Contact Details of Owner:	Comando Generale del Corpo delle Capitanerie di Porto - Guardia Costiera Phone: 06.5908.4798						
Brief Description/ Photos/ Related Material							
The General Command as "National Competent Authority", has handled the realization of a complex "national net" for the receipt of AIS information (Automatic Identification System) transmitted by ships. The net is composed by on 63 basic stations to guarantee the complete coverage of the national coastal profile and the whole area Search and Rescue (SAR) of Italian competence. On this way, the Italian Vessel Traffic Service centres don't have their own stations AIS, but they use some services guaranteed by " AIS national net".							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	AIS System, VTMS System						
Keywords:	AIS System, Italian Vessel Traffic Service, coverage of the national coastal profile						
Comments on the Technology							
With the Resolution IMO MSC 139 (76), in force from 1st July 2003, has been founded ADRIREP, an obligatory system for ships in navigation or those that call at the ports of the Adriatic Sea. The primary aim of the system is to allow coastal States (Italy, Montenegro, Croazia and Slovenia) to acquire information on the maritime traffic in real time, by underlining ships with dangerous loads that constitute, in case of accident, a potential threat to the ecosystem of a closed sea as the Adriatic. Nowadays, the management of ADRIREP managed through a software integrated in the National AIS System, allowing the editing of the reports through the aid of a function of partial auto-compilation similar to the AIS/LRIT Systems transmitted by the ships. Meanwhile, the system allows to share all data and information produced through the access to a common database accessible to the competent authorities of every sector, both Italian and foreigners. The ADRIREP tool has been elaborated within the project "Easyconnecting" of the IPA Adriatic Cross-border Cooperation Programme 2007-2013.							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

25.- Vessel Traffic Service (VTS)

Link:	http://www.guardiacostiera.gov.it/mezzi-e-tecnologie/Pages/Monitoraggio%20del%20traffico%20navale.aspx						
Applicable MS Sector(s):	Marine Environment Monitoring	Maritime Safety and Security	General Law Enforcement	Fisheries Control			
Contact Details of Owner:	Comando Generale del Corpo delle Capitanerie di Porto - Guardia Costiera Phone: 06.5908.4798						
Brief Description/ Photos/ Related Material							
The VTS (Vessel Traffic Service) provides assistance to the maritime traffic, being projected with the purpose to increase the safety and the efficiency of the maritime traffic and to protect the environment. The Office of the Infrastructures and the Transports with the Comando Generale del Corpo delle Capitanerie di Porto - Guardia Costiera is the competent authority in subject of VTS. There are two different typologies of the VTS System: the Port VTS, which deals with services about ships traffic in entry/gone out of a port and the Coastal VTS about services that are mainly focused on the maritime traffic in transit in a determined maritime area.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	VTS System						
Keywords:	maritime traffic, Port VTS, Coastal VTS						
Comments on the Technology							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

26.- MAREΣ - Mediterranean AIS Regional Exchange System

Link:	http://www.guardiacostiera.gov.it/mezzi-e-tecnologie/Pages/rete-ais-nazionale.aspx						
Applicable MS Sector(s):	Marine Environment Monitoring	Maritime Safety and Security	General Law Enforcement	Fisheries Control	Customs		
Contact Details of Owner:							
Brief Description/ Photos/ Related Material							
The General Command has realized a regional system for the exchange of AIS information among States Members of the European Union. Operational from the 1st January of 2009, this system, also allows the interchange of information on the maritime traffic among the National Competent Authority of Portugal, Spain, Gibilterra, France, Italy, Malta, Slovenia, Croazia, Montenegro, Greece, Cyprus, Romania and Bulgaria. The European Directive 2002/59 about the "Monitoring of maritime traffic" compels every Member State of the Union to exchange AIS data in order to enhance the complete maritime scenario. In this area of interest, EMSA (European Maritime Safety Agency) has encouraged the development of a regional system capable of integrating this data. In agreement with EMSA, the Italian Coast Guard has implemented this system for the exchange of information with other States.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	AIS System, VTMISS System						
Keywords:	exchange of AIS information, monitoring of maritime traffic, Italian Coast Guard, EMSA						
Comments on the Technology							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

27.- UMA – Underwater Modular Arm

Link:	http://www.graaltech.com/uma-manipulator						
Applicable MS Sector(s):	Marine Environment Monitoring	Defence					
Contact Details of Owner:	Graal Tech S.r.l. Via Ruffini 9R Genova, 16128 Italy info@graaltech.it Tel: +39-010-8597680						
Brief Description/ Photos/ Related Material							
As the name suggests, UMA is an underwater robotic manipulator, designed by adopting a modular approach. Its composing elements, the basic modules, are made of Ergal, a special aluminium alloy exhibiting favorable properties in terms of high fatigue strenght, light weight and easy machinability. All the robot motions are generated by brushless motors that are driven by servo boards located inside the structure. The presence of an embedded distributed control layer strongly facilitate all the operations of insertion, removal, substitution of basic modules. The intrinsic flexibility descending from the modular design and the easy integration of the manipulator on board of supporting vehicles make UMA a versatile robotic platform, capable of executing a wide range of manipulation tasks within applications in the fields of O&G, Defense & Security, Oceanography and Environmental Monitoring.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	robotics						
Keywords:	robotics						
Comments on the Technology							
Modular Approach Embedded Distributed Control Easy integration							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

28.- ATC-A100 – Test Equipment for Naval Systems

Link:	http://www.skytechnologies.it/eng/home.htm						
Applicable MS Sector(s):	Defence						
Contact Details of Owner:	CST Centro Sviluppo Tecnologico Via delle Pianazze, 74, 19136 La Spezia- Italy tel.: +39 0187 984100 e-mail:skytech@skytechnologies.it						
Brief Description/ Photos/ Related Material							
The ATC-A100 is a universal, programmable test equipment designed to interface and test synchro-based servo-systems. The Unit provides the following features: complete set of programmable, isolated output commands and input signals; generation of 2 synchro output couples (coarse and fine) with programmable fine ratio; real-time display of 2 synchro input (coarse); real-time generation of AC error signal for in-loop installation; USB 2.0 interface for remote control; optional interface for external tracking input; Light and compact for easy transportation.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:							
Keywords:							
Comments on the Technology							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

29.- ETS-A100 – Test Equipment for Underwater Defence Systems

Link:	http://www.skytechnologies.it/eng/home.htm						
Applicable MS Sector(s):	Defence						
Contact Details of Owner:	CST Centro Sviluppo Tecnologico Via delle Pianazze, 74, 19136 La Spezia- Italy tel.: +39 0187 984100 e-mail:skytech@skytechnologies.it						
Brief Description/ Photos/ Related Material							
The ETS-A100 is a complete test equipment for Underwater Units. The equipment provides: - test of single sub-sections by simulation of external interfaces - generation of test signals and stimuli to simulate a real mission environment - fully automated operation, minimal intervention required from the User - text-based sequences, easy to generate, modify and check - automated generation of Test Reports - ideal for environmental tests and troubleshooting							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	underwater units test						
Keywords:							
Comments on the Technology							

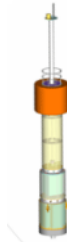
PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

30.- Self-mooring buoys

Link:	http://www.sielcotech.it/eng/Products/Buoy/SelfBuoys.php						
Applicable MS Sector(s):	Maritime Safety and Security	Marine Environment Monitoring	Fisheries Control				
Contact Details of Owner:	SIELCO SRL Via Greti di Durasca 19020 FOLLO (SP) - Italy Tel: +39 0187558775 Email: sielco@sielcotech.com						
Brief Description/ Photos/ Related Material							
SIELCO designs and manufactures buoys able to automatically moor on bottom depths from 5 m to 500 m. The buoys consist of: - A surface unit fitted with a GPS system, a conditioning electronics and an RX/TX radio link for receiving commands and transmitting to the ground station or to an assistant vessel data collected by the bottom unit sensors. - A bottom unit, with the sensors, fitted with an acoustic releaser - An expendable ballast. The buoy is released at sea by means of a crane with the above three units connected all together. The buoy is released from the crane with a single manoeuvre and it automatically releases the bottom unit and the ballast. The buoy has a very short radius of watch circle (i.e. on a bottom depth of 300 m about 15 m of radius) and it automatically selects the length of the mooring cable according to the bottom depth. The buoy is able to survive up to sea state 5.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Buoy						
Keywords:	measure at sea, sensor						
Comments on the Technology							
Main characteristics: Weight 110Kg Max length 2,5 m Endurance 10 h SI.EL.CO. designs and manufactures this type of buoys on customer specific requirements changing dimensions and weights accordingly.							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

31.- Data Transmission buoy

Link:	http://www.sielcotech.it/eng/Products/Buoy/BuoysData.php						
Applicable MS Sector(s):	Maritime Safety and Security	Defence	Marine Environment Monitoring				
Contact Details of Owner:	SIELCO SRL Via Greti di Durasca 19020 FOLLO (SP) - Italy Tel: +39 0187558775 Email: sielco@sielcotech.com						
Brief Description/ Photos/ Related Material							
SIELCO designs and manufactures spar buoys to be utilised for transmission of data received, by means of cable or optic fibres, from electroacoustic sensors. (Hydrophones, hydrophone arrays, magnetometers, current-meters). The buoys are designed and manufactured on the basis of the specific customer requirements.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	boy						
Keywords:	Data Transmission Buoy						
Comments on the Technology							
Weight and Dimension Range: Length from 3 m to 6 m (overall) Diameter from 400 mm to 800 mm Weight from 800 Kg to 1400 Kg Antenna Lifting: hydraulic and/or electro-mechanical							

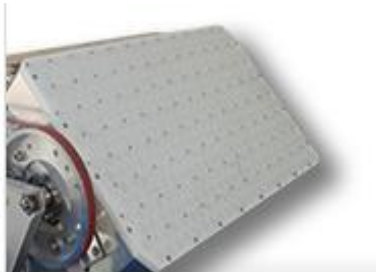
PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

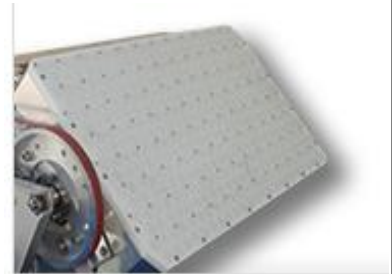
32.- ELIT-SEA Static Frequency Converters for Shipboard Operation

Link:	http://www.elit-ups.com/eng/natanti.html						
Applicable MS Sector(s):	Maritime Safety and Security						
Contact Details of Owner:	ELIT Srl, Via Croce Rossa, 11, I-29122 Piacenza Tel. ++39-(0)523497119						
Brief Description/ Photos/ Related Material							
ELIT-SEA Static Frequency Converters are designed to feed the optimum electrical power system to vessel's equipment. ELIT-SEA is available in two configuration: at the harbour (DOCK series) and on board (NAVY series). The first one, DOCK series, has a fixed input voltage (the harbour's voltage) and a setttable output voltage in order to supply power to vessels that are not compatible with the locally available dockside power; the second type, NAVY series, has an input setttable voltage and a fixed output voltage to feed and clean on board power from a dockside connection, anywhere in the world. Static frequency converters, ELIT-SEA series, are outcome of a long experience static frequency converter both civil and military field (receiving the NATO code for the quality of his supplies), of UPS and of static Constant Current Regulators for series lighting.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	frequency converters						
Keywords:							
Comments on the Technology							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

33.- Satellite antenna VFlat ku/ka-band

Link:	http://www.skytech-research.com/products.php						
Applicable MS Sector(s):	Defence	Maritime Safety and Security	Marine Environment Monitoring				
Contact Details of Owner:	Skytech Italia Srl Via di Grottarossa 1148 00189 Rome Phone: +39 06 64 01 44 97						
Brief Description/ Photos/ Related Material							
The VFlat Ku/Ka Dual Band Phased Array Antenna for satellite broadband internet. The low profile, superior tracking and high agility make this antenna ideal for fast patrol boats or vehicles, and allow for hidden installations inside custom roll bars. An invisible antenna can replace bulky and visible domes. The best-in-class flat panel phased array technologies are combined into a single chassis with two independent, mechanically steered panels. It benefits from a reliable switching technology, allowing quick and automated commuting among available satellites globally. An intuitive screen app manages network preferences, coverage areas and security features.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	satellite antenna						
Keywords:							
Comments on the Technology							
Maximum height: 30 cm Radome diameter: 70 cm Weight: 27 kg Phased array of horn elements							



PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

34.- X-Ray scanner

Link:	http://www.gilardoni.it/en_sec_off.asp						
Applicable MS Sector(s):	Defence	Maritime Security	Customs				
Contact Details of Owner:	Gilardoni SpA Via Arturo Gilardoni 1, 23826 Mandello del Lario Lecco (Italia) Telephone: +39 0341705111						
Brief Description/ Photos/ Related Material							
X-Ray scanners use multi-energy technology for carry on and hold luggage security inspection in airports as well as other security applications such as public and government buildings, customs facilities, rail stations, post offices and any facility that is a potential terrorist target.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Security systems						
Keywords:							
Comments on the Technology							
X Ray products: -Hand luggage -Hold luggage -Cargo and Pallets -Mobile system -Liquid Explosive Detection Systems (LEDS) The most recent research has led to development of equipment with sophisticated software for automatic detection of liquid explosives according to the European requirements for LEDS (Liquid Explosive Detection Systems), check point EDS and ready to apply for the coming European standards.							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

d. Portugal

35.- DigitalHyd SR-1

Link:	http://www.marsensing.com/en/Products/digitalHyd_SR-1						
Applicable MS Sector(s):	Fisheries Control	Maritime Safety and Security	Marine Environment Monitoring				
Contact Details of Owner:	MarSensing Lda. Campus de Gambelas - Pavilhao B1 PT-8005-139 Faro Phone: +351 913 729 660 contact@marsensing.com						
Brief Description/ Photos/ Related Material							
The digitalHyd SR-1 is an autonomous recording device designed for user-friendly operation in underwater acoustic signal acquisition activities. Its compact construction and functionalities allows for the implementation of efficient measurement strategies, thus, avoiding the requirement of large operational human and material resources for deployment and recovery. This device features a wide range of configurations, including selectable sampling frequencies and amplitude resolution, programmable sensitivity, start-up times and file duration, among others. The received acoustic data is stored on a removable memory card, in WAV format, which stores also all configuration parameters for usage during data analysis. The device is configured through a USB interface with access compatibility from various types of operating systems.							
Stage of Development:	Already on the market						
Technology Readiness Level (TRL 1-9):	TRL 9						
Domains of Applications:	Subsea environment, inspection, acoustic research						
Keywords:	Acoustic signal, samplig frequencies, sensitivity, data, memory card						
Comments on the Technology							
The digitalHyd SR-1 is powered by a rechargeable lithium-ion battery and is able to remain on for up to 12 hours of continuous acquisition, or various days in stand-by. Battery and memory card are field replaceable, to allow for quick redeployments of the hydrophone. Optional battery extension packs are available on demand, for expanding the SR-1 to the user required autonomy. The main specifications are: - Sample frequency between 52,734 kHz and 105,469 kHz (selectable) - Sample resolution 16 or 24 bits - Usable acoustic band: 1 Hz to 25.8 kHz / a Hz to 51.6 kHz - Operation depth up to 100 meters - Weight of 0.18 kg (in water) and 0.77 kg (in air) - Operation temperature range between 0 °C and 40 °C.							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

36.- Dual Accelerometer Vector Sensor

Title of the Technology:	Dual Accelerometer Vector Sensor						
Type:	Equipment						
Country of Origin:	PT						
Link:	http://www.siplab.fct.ualg.pt/equipment.shtml						
Applicable MS Sector(s):	Marine Environment Monitoring						
Contact Details of Owner:	CINTAL-Centro Tecnológico do Algarve Campus de Gambelas 800-5-139 Faro Phone: +351289244422 cintal@ualg.pt						
Brief Description/ Photos/ Related Material							
Multipurpose system for underwater acoustic applications. The core of the system is an acoustic sensor composed by a hydrophone and 2 tri-axial accelerometers. DAVS includes motion sensors for system positioning. Real-time capability to detect and select underwater sound sources in 3D. Capability of autonomous operation or cabled operation for online monitoring. Originally developed for seismic applications. Also tested in harbour protection and AUVs self-localization.							
Stage of Development:	Available for Demonstration						
Technology Readiness Level (TRL 1-9):	5						
Domains of Applications:	Underwater vehicles and anchored						
Keywords:	Underwater, security, surveillance, detection, seismic						
Comments on the Technology							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

e. Spain

37.- High-Frequency Active Sonar DDS-03

Link:	https://www.electronica-submarina.com/security/dds-03-intruder-detection-sonar/?lang=en						
Applicable MS Sector(s):	Defence	Maritime Safety and Security	Marine Environment Monitoring				
Contact Details of Owner:	ELECTRÓNICA SUBMARINA (SAES) Ctra. de la Carraca S/N 111000 – San Fernando – Cádiz Phone: +34 956801048						
Brief Description/ Photos/ Related Material							
The high-frequency active sonar DDS-3, has been specifically designed for the detection of underwater threats such as divers and manned and unmanned underwater vehicles (SDV, ROV or UUV), offering protection and surveillance to counter the threat of underwater attacks against harbours, critical facilities, ships, offshore platforms, coastal power plants, shipwrecks and environmentally protected areas.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Sonar						
Keywords:	Sonar, high-frequency, intruder detection, underwater threats, underwater attacks, civil ships, cruises, protected areas						
Comments on the Technology							
The Intruder and Diver Detection Sonar, DDS-03, is also available for civil ships as superyachts and cruises. Main Characteristic: - High detection range. - Automatic detection, classification and tracking. - Automatic alarms with minimal false alarms. - System Coverage selectable 90º/180º/270º/360º. - Allow establish perimeters with suppressed alarms. - Emission of CW & FM pulses. Adjustable Levels. - High range and bearing accuracy. - Tactical Plots (position of the threats and velocity) - Global Electronic Cartography							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

38.- SAR – Smart Acoustic Recorder

Link:	https://www.electronica-submarina.com/security/sar-acoustic-smart-recorder/?lang=en						
Applicable MS Sector(s):	Defence	Maritime Safety and Security	Marine Environment Monitoring				
Contact Details of Owner:	ELECTRÓNICA SUBMARINA (SAES) Ctra. de la Carraca S/N 111000 – San Fernando – Cádiz Phone: +34 956801048						
Brief Description/ Photos/ Related Material							
SAR – Smart Acoustic Recorder is a multi-purpose autonomous Hydrophone to long time recordings that allows two configurations: - Recording assisted mode. In this mode, the unit is connected via cable to a control unit. It allows monitoring and acoustic recordings in real time. - Stand-alone recording mode. In this mode, the unit is equipped with batteries and external memories, so once the ships is anchored and SAR is programed, acoustic recordings are made continuously without operator assistance. The recordings are retrieved from unit via cable through a control unit where they are stored, monitored and analyzed.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Sensors, Acoustic, Hydrophone						
Keywords:	Autonomous hydrophone, real time, civil and military industry, low cost, deep waters, environment, noise measurement						
Comments on the Technology							
SAR is a low cost dual device, designed and constructed to be used both in the civil industry (oceanographic institutes, universities, business sector R & D, etc.) and in the military sector. Main Characteristic: - Programmable. At the factory as well as by user. - Reduced dimensions and weight. It can be deployed and collected by a person without the need of external auxiliary means such as as divers, cranes or special vessels. - External power supply or batteries. - SAR is designed to operate in deep waters, allowing the noise measurement generated by mammals. - Minimum maintenance. - Easy to operate. - Low Cost. - SAR device can operate in a standalone configuration or integrated in an underwater monitoring system.							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

39.- TTI-DTLINK-KU-1415

Link:	http://www.ttinorte.es/en/?page_id=450						
Applicable MS Sector(s):	Defence	Maritime Safety and Security	Marine Environment Monitoring	General Law Enforcement			
Contact Details of Owner:	TTI Parque Científico y Tecnológico de Cantabria C/ Albert Einstein nº 14 39011 Santander Phone: +34 942 266 172 comercial@ttinorte.es						
Brief Description/ Photos/ Related Material							
TTI-DTLINK-KU-1415 is a Ku band Transceiver that fulfills all the applicable regulations for avionic purposes. Its compact dimensions with regard to its output power and external enclosure make the Ku band Transceiver suitable to be integrated in an ARINC600 rack. It offers maximum reliability thanks to the fact that it provides full information of the system health due to its remote monitoring and control system, and also because there is no forced air cooling, i.e. air intakes allow heat dissipation through external air flow. It supports On-The-Move data rates of 10 Mbps from UAV to Ground (Downlink) and 0.2 Mbps (Uplink) with a very competitive cost. TTI-DTLINK-KU-1415 includes an omni-directional circular array antenna designed according to the interoperable data link conditions described in the STANAG-7085 regulation.							
Stage of Development:	Already on the market						
Technology Readiness Level (TRL 1-9):	TRL 9						
Domains of Applications:	Surveillance, maritime traffic control						
Keywords:	System health, monitoring and control system, on-the-move data rates						
Comments on the Technology							
The main technical specifications of this transceiver are: - Omni-directional Circular Array Antenna - Antenna TX EIRP 47dBW and antenna Cross Polarization > 26 dB - Frequency band of the transmission between 14.4 and 14.83 GHz - Noise Figure < 10 dB and gain of 40 dB - Frequency band of the reception between 15.15 and 15.35 GHz - Noise Figure of 2 dB and gain > 66 dBm - RF Terminal weight < 5.45 Kg - Operational temperature between -15°C and +65°C							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

7. Vehicles

a. Cyprus

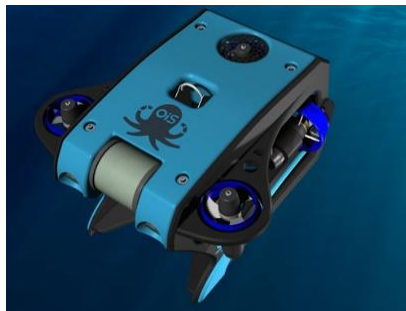
40.- ASARP – Airborn Search and Rescue Platform

Link:	http://www.ggdedalos.com/index.php/products/asarp						
Applicable MS Sector(s):	Maritime Safety and Security	Border control					
Contact Details of Owner:	Dedalos 26, Yiangou Michaelide Nicosia, 1048 Tel.: +357 96473171						
Brief Description/ Photos/ Related Material							
GGDs ASARP is a low cost amphibian UAV specifically designed for low speed and stability in extreme weather conditions. It is designed to be able to take off from a rail ramp, on truck, trolley or ship and it can land on land, water or be captured by a net. This flexibility in take off and landing conditions, coupled with its stability in extreme weather conditions is making it ideal for search and rescue missions. Its low cost makes it affordable and accessible to search and rescue teams, and companies providing services to SAR teams. It could also be applied as a safety measure on large ships							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Coastal Surveillance						
Keywords:	SAR, Coastal Surveillance, UAV						
Comments on the Technology							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

b. France

41.- ROV OIS 306

Link:	http://www.oceaninnovationsystem.com/#Produit						
Applicable MS Sector(s):	Fisheries Control	Maritime Safety and Security	Marine Environment Monitoring	General Law Enforcement			
Contact Details of Owner:	Ocean Innovation System CAP ALPHA - 9, Avenue de l'Europe 34830 Clapiers Phone: +33 (0)9 54 87 35 73 contact@oisfrance.com						
Brief Description/ Photos/ Related Material							
OiS is developing a new concept of exploration and intervention robot submarine, totally innovative. The principle is a library of modules independent, intelligent and autonomous. The association of these subsets to obtain a bespoke robotic system, suitable for a large number of underwater exploration needs. The advantage is that the modules are standard, scalable and 'plug & play '. Costs are reduced, from the creation of the system up to its maintenance. The modules are constantly being updated and improved, and new ones are regularly designed, thus ensuring the constant evolution of the robot, and integrating permanent recent technical innovations. The robot disposes of one fiber optic connection, adaptive electrical supply, 51 kg of vertical thrust, maximum versatility, powerful control law and easy maintenance and upgradability.							
Stage of Development:	Already on the market						
Technology Readiness Level (TRL 1-9):	TRL 9						
Domains of Applications:	Surveillance, inspection						
Keywords:	Camera, submarine, robotic, modules						
Comments on the Technology							
The main features of the ROV are: - Less than 100 kg - 3 horizontal vectorised thrusters and 3 vertical thrusters - Communication via fiber optic - Movements in all three dimensions and rotation in two dimensions - Speed of 3 knots forward - Immersion depth of 300 meters - 1 Full HD navigation camera and 1 rearward, black and white, high-sensibility camera - Lighting by LED spotlight (18.000 lm)							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

42.- SeaExplorer

Link:	https://www.alseamar-alcen.com/products/underwater-glider/seaexplorer						
Applicable MS Sector(s):	Defence	Maritime Safety and Security	Marine Environment Monitoring	General Law Enforcement			
Contact Details of Owner:	Alseamar 9 Europarc Sainte-Victoire 13590 Meyreuil Phone: +33 (0)4 42 61 64 80 alseamar13@alseamar-alcen.com						
Brief Description/ Photos/ Related Material							
The SEAEXPLORER underwater glider is a powerful autonomous sensing platform designed to collect water column data profiles with very wide spatio-temporal coverage (thousands of km and weeks to months of endurance). Driven by buoyancy changes, the vehicle silently glides up and down the water column while collecting physical, chemical, biological and/or acoustic data depending on the fitted sensors. The SEAEXPLORER glider is a very cost-effective solution for data collection as it reduces reliance on large vessels with high daily running costs: no surface supervision boat is required during the mission. The SEAEXPLORER is easy to operate and can be deployed and recovered by reduced crews in coastal waters using small boats. An integrated hardware/software suite allows constant supervision & mission control from any place in the world by using a server 24/7 available for vehicles calls.							
Stage of Development:	Already on the market						
Technology Readiness Level (TRL 1-9):	TRL 9						
Domains of Applications:	Surveillance, acoustic monitoring, search and rescue						
Keywords:	Water column, data collection, supervision						
Comments on the Technology							
The key features of the SEAEXPLORER are: • Large-scale (thousands of km) & enduring (weeks to months) observing system, covering the entire water column • Fleet management application for collecting data and piloting vehicles • Autonomous vehicle & near real-time data transmission: onshore piloting using satellite telemetry • Very cost-effectived at a collection device: easy to operate, no surface supervising boat required • Capacity to operate in shallow water with propeller And the key benefits are: • Stealthness: Minimum visual impact at the surface, very low acoustic signature in depth • Economical & Low-Logistics: Rechargeable Battery = Substantial [Budget + Time] savings (No energy pack replacement/No vehicle opening/No re-ballasting) Interchangeable payload sections							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

- Enhanced Performances: Large ballasting volume: highspeed & maneuverability Large payload sections Shallow and deepwater operations

43.- Intelligence Autonomous Underwater Vehicle A9-S

Link:	http://eca-media.ecagroup.com/player/pdf?key=849bc2d8812b83b0f398aad38b4a9f6c						
Applicable MS Sector(s):	Defence	Maritime Safety and Security	Border control	General Law Enforcement			
Contact Details of Owner:	ECA S.A. Z.I. Toulon est 262, rue des frères Lumière 83130 La Garde Phone: +33 (0)4 94 08 90 00 ecagroup@ecagroup.com						
Brief Description/ Photos/ Related Material							
Easy to deploy, A9 AUV is an appreciated partner by clearance divers and swimmers in Intelligence, Surveillance and Reconnaissance (ISR) operations. It is able to reach its target in total autonomy and to ensure an information collection mission or testing of safety chain. A9-S is the configuration of ECA Group A9 man portable Autonomous Underwater Vehicle, AUV, dedicated to seabed imagery. The vehicle stability and its navigation accuracy offer the best operating conditions for getting the highest quality side scan sonar images. In addition, the sonar integrated on the AUV is one of the best available solution on the market. Triton SSS perspective suite can then be used to create sidescan mosaics of the highest quality.							
Stage of Development:	Already on the market						
Technology Readiness Level (TRL 1-9):	TRL 9						
Domains of Applications:	Critical infrastructure protection, search and rescue, surveillance and protection						
Keywords:	Intelligence, reconnaissance, information collection, sonar						
Comments on the Technology							
The main features of this vehicle are: - Operated from all types of platforms - Accurate Inertial Navigation System							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

- No need of external acoustic positioning system
- User-friendly mission management system
- Ideal for all types of shallow water area (channels, inlets, and harbors)
- Low turning radius

And the main operational performances are:

- Endurance: up to 20hours (With 2 Energy sections)
- Max speed: up to 5 knots
- Nominal speed: 3 knots
- Operational depths: 3-200m

44.- DVBot

Link:	http://ciscree.fr/produit/dvbot-de-ciscree/						
Applicable MS Sector(s):	Maritime Safety and Security	Marine Environment Monitoring	Fisheries Control	General Law Enforcement			
Contact Details of Owner:	Ciscree 901, Avenue Alphonse Lavallee ZI Toulon EST 83088 Toulon Cedex 9 Phone: +33 (0)4 94 65 23 59 contact@ciscree.fr						
Brief Description/ Photos/ Related Material							
The DVBot by Ciscree is an affordable, manoeuvring, stable, multi-functions, plug&fly, compact, single-operator and user-friendly Mini ROV solution. The standard version include a vehicle, surface control unit (including AC/DC converter, a 15" Color LCD daylight readable monitor, an OSD overlay, Data and video exits, and control joysticks) and 300m of neutrally buoyant umbilical, shipping cases. The depth rating is 300 msw / 1000 ft, the weight in air 22 kg (standard configuration) and the weight in water neutral (standard configuration) Payload 1.5 kg. For larger payload, additional buoyancy can be provided (standard configuration).							
Stage of Development:	Already on the market						
Technology Readiness Level (TRL 1-9):	TRL 9						
Domains of Applications:	Science, Oil and gas, monitor						
Keywords:	Vehicle, camera, maneuvering, stable, user-friendly						
Comments on the Technology							
The main features of the standard version are: – 4 vectored horizontal thruster – 2 vertical thrusters – TILT Dome low light camera							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

- 2 dimmable power LED spot lights
- Heading, depth & temperature sensors
- Auto-Depth function
- Auto-Heading function
- Auto-Altitude function (with Altimeter option)
- 2 payload bulkhead connectors
- Low light bullet camera (including Bracket for front or rear camera position)

45.- RSV

Link:	http://en.marinetech.fr/Marine-survey-USV#a380						
Applicable MS Sector(s):	Fisheries Control	Maritime Safety and Security	Marine Environment Monitoring	General Law Enforcement			
Contact Details of Owner:	Marine Tech SAS 64, Rue de la Garde ZAC la Millonne 83140 Six-Fours les Plages Phone: +33 (0)9 54 82 10 52 contact@marinetech.fr						
Brief Description/ Photos/ Related Material							
Based on expertise gained from operations in different countries, MARINE TECH experts decided to use this feedback to design an efficient, reliable and robust USV solution (Unmanned Surface Vehicle) to achieve marine survey works, until today aimed for conventional ships: the RSV. The RSV is able to carry out hydro-oceanographic missions in inland waters (river, lake, dam), in port, shallow or offshore areas and any other mission requiring the deployment of remote sensors. Marine Tech offers: - Fabrication and distribution of marine drone RSV (Remote Survey Vehicle), a multi-sensors radio controlled platform for offshore survey. - Training of operators. - Maintenance and project assistance. - RSV rental, with or without sensor.							
							
Stage of Development:	Already on the market						
Technology Readiness Level (TRL 1-9):	TRL 9						
Domains of Applications:	Surveillance, Bathymetry, salinity, detection of objects, inspection						
Keywords:	Remote control, echosounder, data transfer, GPS, camera, sensor						
Comments on the Technology							
Developed as an autonomous platform in the USV class, our Remote Survey Vehicle (RSV) can							



PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

operate several oceanographic equipments at the same time, while avoiding classical means (ship and crew).

It is a size optimized support and user friendly.

Navigation system, communication, data storage and sensor control unit are fixed in waterproof boxes.

The RSV is designed to work both in the open sea (1.5 m swell and 25 knots of wind) as well as in coastal areas or in difficult areas (shallow waters, oil fields, etc.).

Equipped with a high performance motion sensor system, every movement of the RSV is corrected in 3D.

Real-time data control and visualization is a real advantage in matter of time saving or data processing.

46.- CAT-Surveyor

Link:	http://www.subsea-tech.com/html/index.php/en/component/k2/item/10-cat-surveyor						
Applicable MS Sector(s):	Fisheries Control	Maritime Safety and Security	Marine Environment Monitoring	General Law Enforcement			
Contact Details of Owner:	Subsea Tech 167, Plage de L'Estaque 13016 Marseille Phone: +33 (0)4 91 51 76 71 contact@subsea-tech.com						
Brief Description/ Photos/ Related Material							
Subsea Tech designs and manufactures remotely operated catamarans, specially designed to meet the required performances for each application. They are primarily used in ports surveillance, investigations in turbid environments and hydrographic surveys. CAT-Surveyor is a small USV for surveys in harbor, coastal and inland waters such as civil works and infrastructure inspections (dams, bridges, quays, dikes, gates...), bathymetry, ADCP, sea bottom surveillance and environmental monitoring. The system is based on a catamaran type vehicle fitted with an embedded PC allowing an easy integration of different sensors such as acoustic cameras, sonars, echosounders. A unique feature of CAT-Surveyor is its capability to embark a mini-ROV for visual inspection or target identification. It can be piloted remotely thanks to a long range WIFI link with the shore control. Alternatively, its automatic navigation system allows running preprogrammed missions.							
Stage of Development:	Already on the market						
Technology Readiness Level (TRL 1-9):	TRL 9						
Domains of Applications:	Surveillance, investigations, hydrographic surveys, environmental monitoring						
Keywords:	Civil works, bathymetry, acoustic camera, sonar, echosounder						
Comments on the Technology							
The CAT-Surveyor disposes of an open architecture and a high speed PC to PC communication.							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

Thanks to these elements, all kinds of sensor running under Windows can be easily integrated to the vehicle. The shore control PC allows real time visualization and control of navigation and all onboard sensors. The main technical specifications are:

- Remote control through Wifi 5GHz (back-up radio link 2,4GHz)
- Dimensions of 3 meters (length) and 1,6 meters (width)
- Weight of 270 kg (without payload)
- Maximum speed 5 knots
- Draft 36 cm without payload
- Portable PC + joystick box + auto navigation modes as operator interface
- Wifi 5GHz, range >5km; radio link 2,4GHz
- HD color cameras, compass, DGPS (RTK optional) as navigation sensors
- Video/sonar images display on control PC

47.- VHS 27 Very High Speed Patrol boat

Link:	http://www.aavessels.com/concept/						
Applicable MS Sector(s):	Border control	Fisheries Control	Maritime Safety and Security				
Contact Details of Owner:	Advanced Aerodynamic Vessels, SAS 13 rue de la Brigantine 17000 La Rochelle Phone: +33 (0)6 72 57 64 17 info@aavessels.com						
Brief Description/ Photos/ Related Material							
The VHS 27 is a new generation of interceptor that goes twice as fast as conventional patrol boats its size, with only half the fuel consumption. It allows to search and patrol in unpredictable and erratic patterns, ensuring that its presence in the area being swept create and effective deterrent. A single VHS 27 carries out surveillance operations over an impressively large area: one interceptor achieves the same results as three conventional patrol boats. The VHS 27 has a unique ability to pursue and overtake any fast pirate boat, it can both strike a sharp blow far for its operational base, like to combat aircraft, and undertake rapid evasive action in an overwhelmingly hostile situation.							
Stage of Development:	Available for Demonstration						
Technology Readiness Level (TRL 1-9):	8						
Domains of Applications:	Border protection, anti-piracy, fishery patrols, pollution control						
Keywords:	Patrol, large area, unpredictable patterns, deterrent						
Comments on the Technology							
Some technical specifications are:							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

- LWL of 21,5 meters
- LOA of 25 meters
- Loaded displacement of 55 tonnes
- BOA of 18 meters
- Draft of 1 meter
- Maximum passenger capacity of 10 pax
- Cruising speed of 60 knots
- Range (60 knots) of 750 nautical miles
- Fuel rate (60 knots) of 12 liters per nautical mile
- 2 engines of 1.630 kW

48.- Unmanned aircraft systems

Link:	http://www.ecagroup.com/en/solutions/mini-uav-istar						
Applicable MS Sector(s):	Border control	Fisheries Control	Defence	Maritime Safety and Security	Customs	Marine Environment Monitoring	General Law Enforcement
Contact Details of Owner:	ECA ROBOTICS Domaine technologique de Saclay 4 rue René Razel - 91400 Saclay - France Phone: +33 1 69 35 68 00 - Fax: +33 1 69 85 36 92 E-mail: eca-robotics-paris@ecagroup.com						
Brief Description/ Photos/ Related Material							
The UAV IT180 was designed to meet military needs and to be operated despite extremely harsh weather conditions: rain, snow, heat, wind. Very stable, it can resist to wind gusts up to 60km/h. The UAV IT180 is very easy to operate and its deployment takes less than 8 minutes. Used by the French Army since 2012, the IT180 is a combat proven UAV. With its high Detection, Recognition and Identification (DRI) capabilities, it is ideally suited to ISTAR missions and site protection. Its high performances allow also its use for civil protection.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Drones						
Keywords:	ADVANCED IMAGE PROCESSING, drone, Electronic Image Stabilization, Detection of moving targets, Tracking targets on operator's decision						
Comments on the Technology							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

MAIN CHARACTERISTICS

Endurance..... Up to 30 min
 Max Payload..... 3 kg
 Fly in..... 70km/h
 Wind resistance..... Up to 60km/h

Transmission range up to 10km with a tracking antenna, Gyro-stabilized EO/IR video camera, Digital still camera, Magnetometer, Anti-drone kit, LiDAR, Other payloads upon request

49.- ASV 200

Link:	http://www.aerosurveillance.com/VTOL.php						
Applicable MS Sector(s):	Defence	Maritime Safety and Security	Border control	General Law Enforcement			
Contact Details of Owner:	Aero Surveillance SAS 59 Impasse Louis Blériot 84140 Montfavet Phone: +33 (0)4 90 88 23 65 info@aerosurveillance.com						
Brief Description/ Photos/ Related Material							
The ASV 200 is an unmanned aircraft which main characteristics are: - Vertical Take off - High altitude operations - Portable or mobile ground control station - Rugged transportation system - Fully autonomous operation - Easy to use and maintain - Modular POD with advanced electronic multi-sensor surveillance system - Open and modular system architecture							
							
Stage of Development:	Already on the market						
Technology Readiness Level (TRL 1-9):	TRL 9						
Domains of Applications:	Convoy protection, UXO detection, power line infrastructure inspection, disaster damage assessment						
Keywords:	Unmanned, high altitude, surveillance						
Comments on the Technology							
The main specifications of the ASV 200 are: - Maximum take off weight (MTOW): 91 kg - Engine: 30 Hp (Gasoline or Heavy fuel)							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

- Length: 3,2 meters
- Height: 1,15 meters
- Main rotor: 2,8 meters
- Max speed: 180 km/h
- Endurance: up to 7 hours
- Operational altitude: up to 6.000 meters
- Payload: up to 40 kg

c. Greece

50.- HCUAV RX-1 – Hellenic Civil Unmanned Air Vehicle

Link:	http://www.hcuav.gr						
Applicable MS Sector(s):	Border control	Fisheries Control	Defence	Maritime Safety and Security	Customs	Marine Environment Monitoring	General Law Enforcement
Contact Details of Owner:	Coordinator : Aristotle University of Thessaloniki, 54124 - Thessaloniki Phone : 2310 996411, Fax : 2310 996002 Email : hcuav.syn@gmail.com						
Brief Description/ Photos/ Related Material							
The HCUAV RX-1 is 4 meters long, takes off at a speed of 2.8 meters per second and can develop a speed of 190 km per hour. With a range of 150 km and autonomy 11 hours, it can fly day and night and transmit real-time, relevant and detailed information, from a 2 km height. The project took 36 months to complete and it was designed and built from scratch. The drone can support civil protection services and public safety by monitoring land and sea borders, protect vital infrastructure, support rescue investigations, supervision of woodland to timely extinguish fires, soil sampling, water and air pollutants, monitoring roads and provide aerial photography of areas of interest.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	drone						
Keywords:	drones, UAVs, monitoring land and sea, rescue support, aerial photography						
Comments on the Technology							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

The Democritus University of Thrace designed the robotic vision, environment perception and signal processing. Spacesonic, a company from Farkadona, Trikala, undertook the construction of the airborne vehicle; Intracom Defense Electronics developed and installed communication systems, mobile earth stations and intelligent software systems; MLS installed the GPS system and supplied the maps.

51.- CUMULUS UAV

Link:	http://www.armour.gr/cumulus.php#						
Applicable MS Sector(s):	Maritime Safety and Security	Defence					
Contact Details of Owner:	INTERNATIONAL ARMOUR Co. DEFENSE & SAFETY 125 Menelaus Street 17676 Kallithea - Athens T: +30 210 9577743, F: +30 211 2219310 E: info@armour.gr						
Brief Description/ Photos/ Related Material							
CULUMUS is an extremely easy-to-use and highly autonomous fixed wing drone built in first class materials for scouting, mapping and surveying. The aircraft is made from the best Carbon fiber and Kevlar, which makes it the most robust UAV on the market. The Cumulus is a completely autonomous system. Once the mission planning is completed the aircraft is hand launched and will carry out the mission and return to base where it lands vertically (deep stall) with high precision							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	drones						
Keywords:	drones, mapping of terrains and objects, Search & Rescue						
Comments on the Technology							
MAIN BENEFITS: - Ruggedized, - Versatile payload, - Deployment time <5 min, - Top speed 108 km/h (30 m/s),							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

- Flight Time 2:30h
- Hand launched,
- Deep-stall landing within 10×10 m,
- Product liability

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

52.- Aratos Remotely Piloted Aircraft Systems (RPAS)

Link:	http://aratosrpas.com/AratosRPAS.pdf						
Applicable MS Sector(s):	Border control	Defence	Maritime Safety and Security	General Law Enforcement			
Contact Details of Owner:	ARATOS TECHNOLOGIES S.A. Patras, Athens Tel: +30 210 9424630, Fax: +30 210 9424095 info@aratos.gr						
Brief Description/ Photos/ Related Material							
Aratos RPASs are the chosen solution for many international enterprises and organizations, as they offer more capabilities, with better performance, lower cost and more respect to the environment. Aratos RPASs are designed to process sensor data in real-time in order to send actionable intelligence data and to optimize the use of often limited and expensive data link bandwidth. Aratos RPASs being compatible with a wide range of third-party systems can be quickly adapted to interface and operate with a variety of sub-systems. Aratos RPAS is a breakthrough product in terms of performance, reliability and cost efficiency. The aircraft fits under 55 lbs. regulation requirements, equipped with parachute recovery system and the state of art avionics, powerplant and software. It is capable of operating from unimproved terrain, day and night for over 20 hours.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Real-time process sensor data, Handling of alarms, Data Visualization, Data Integration and Interoperability, Unified Emergency Responses						
Keywords:	RPAS						
Comments on the Technology							
Advantages: - Over 20 hours endurance with the advanced fuel injected engine. - Gyro-stabilized day/night payloads. - Fully autonomous catapult take off, flight and parachute recovery. - Up to 100 km range digital link for video and command/control. - AES encrypted option available. - Portable control station. - User friendly software interface. - Operational at extreme conditions. - Autonomous launching from an unimproved terrain. - Manportable design. - Launcher is capable of operating at 10.000 ft altitude.							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

d. Italy

53.- Folaga AUV

Link:	http://www.graaltech.com/folaga-features						
Applicable MS Sector(s):	Marine Environment Monitoring	Defence					
Contact Details of Owner:	Grael Tech S.r.l. Via Ruffini 9R Genova, 16128 Italy info@graaltech.it Tel: +39-010-8597680						
Brief Description/ Photos/ Related Material							
Folaga is a torpedo-shaped Autonomous Underwater Vehicle (AUV) that can carry multiple kinds of sensors. It is made up of a pair of fiber-glass cylinders connected to two terminating wet sections where the steering jet-pumps and the main thruster are located. Originally designed for just collecting few environmental parameters, the current version, with its renewed design, results well suited for a wider spectrum of applications. Its payload modularity and the presence of an open control system make Folaga a unique and versatile platform. Further the great maneuverability together with the possibility of multiple navigation modes, enables the execution of a variety of missions in the fields of O&G, Defense & Security, Oceanography and Environmental Monitoring.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	collecting parameters underwater						
Keywords:							
Comments on the Technology							
Payload Modularity Open Control System Enhanced Maneuvrability							



PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

54.- X-300 AUV

Link:	http://www.graaltech.com/x-300						
Applicable MS Sector(s):	Defence	Marine Environment Monitoring					
Contact Details of Owner:	Gaal Tech S.r.l. Via Ruffini 9R Genova, 16128 Italy info@graaltech.it Tel: +39-010-8597680						
Brief Description/ Photos/ Related Material							
X-300 is a torpedo-shaped Autonomous Underwater Vehicle (AUV) capable of executing a wide variety of missions in the fields of O&G, Defense & Security, Oceanography and Environmental Monitoring. It is made up of a pair of carbon fiber cylinders connected to two terminating wet sections where steering and propelling thrusters are located, together with a bladder enabling variations of the vehicle buoyancy. Generated from the Folaga experience, X-300 has the same payload modularity and open control system as Folaga, and exhibits the same maneuverability and the capability of multiple navigation modes, but is characterized by improved performance in terms of achievable speed, maximum operative depth and mission endurance. 							
Stage of Development:	Field Tested/Evaluation						
Technology Readiness Level (TRL 1-9):	5						
Domains of Applications:							
Keywords:							
Comments on the Technology							



PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

55.- Unmanned Aerial Vehicle (UAV)

Link:	https://www.idscorporation.com/drones/ids-drones/item/123-ia-17-manta.html						
Applicable MS Sector(s):	Border control	Defence	Maritime Safety and Security	General Law Enforcement			
Contact Details of Owner:	IDS Ingegneria Dei Sistemi S.p.A Headquarters: Via Enrica Calabresi, 24 56121 - PISA Phone: + 39 050 3124 1 E-mail: ids@idscorporation.com						
Brief Description/ Photos/ Related Material							
The IA-17 Manta is a small fixed wing Unmanned Aerial Vehicle (UAV) whose flying wing configuration has been designed in order to provide the best performance when employed for patrol, surveillance, aerial observation and reconnaissance missions. Applications: - Inspection of electrical distribution networks, power lines and power stations - Visual assessment of infrastructure - Mining-concerns and general environmental monitoring - Non-invasive diagnostics - Inspections of hazardous areas - Photogrammetry and aerial mapping - Scientific investigations				 IA-17 Manta			
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Inspections of hazardous areas, Photogrammetry and aerial mapping, Scientific investigations						
Keywords:	UAV						
Comments on the Technology							
Propulsion is provided by a 2-stroke gasoline engine and the lift and control surfaces are optimized to achieve maximum endurance and a high cruising speed. A parachute allows vertical landing on the ground or water (the platform can float). The modular construction of the platform offers the capability to easily install different sensor payloads allowing it to be employed in the optimum configuration according to expected scenario conditions.							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

56.- FlyFast 2.0

Link:	http://www.flytop.it/prodotto/woo-single-2/						
Applicable MS Sector(s):	Border control	Fisheries Control	Defence	Maritime Safety and Security	Customs	Marine Environment Monitoring	General Law Enforcement
Contact Details of Owner:	Amministr. e laboratorio, Via Giulio Pittarelli, 169 00166 Roma Tel: +39 06 39.74.93.97 +39 06 66.18.28.80						
Brief Description/ Photos/ Related Material							
FlyFast 2.0 is the new entry in the house FlyTop SpA It is a Aircraft in Piloting Remote (APR) with harmless characteristics according to the ENAC Regulations "Means Aircraft Piloting Remote" - Edition 2 of 07.16.2015, Amendment 1 of 21 December 2015. It is a means particularly suited to carry out missions critics of classified areas, thanks to its small size, its harmless characteristics, its ease of use, excellent stability and ability to capture high-resolution images. FlyFast 2.0 is not addressed only to those who need to perform aero-photogrammetric surveys, but also to those involved in cadastral surveys in urban areas, in precision, in surveys of archaeological sites, monitoring of passers networks critical areas (oil pipelines, gas pipelines, etc.), moreover its use is appropriate for the active organizations in the prevention and management of emergencies.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	drones						
Keywords:							
Comments on the Technology							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

57.- FlySmart

Link:	http://www.flytop.it/prodotto/flytop-flysmart/						
Applicable MS Sector(s):	Border control	Fisheries Control	Defence	Maritime Safety and Security	Customs	Marine Environment Monitoring	General Law Enforcement
Contact Details of Owner:	Amministr. e laboratorio, Via Giulio Pittarelli, 169 00166 Roma Tel: +39 06 39.74.93.97 +39 06 66.18.28.80						
Brief Description/ Photos/ Related Material							
The multicopter FlySmart system is the entry-level FlyTop SpA fleet Lightweight and simple to use (manual or automatic), is the ideal solution to carry out rocky ridges reliefs, cliffs, or quarries, perform structural or thermal pads on palaces and constructions, inspect bridges and overpasses, documenting archaeological sites, conduct environmental monitoring and provide support during disasters and emergency situations. FlySmart is also well suited to integrate the journalistic activities and video and television investigation. All while maintaining operational costs by shrinking budgets. FlySmart is completely collapsible: is transported on the field already mounted and assembled and is equipped with its own transport suitcase. The APR is constituted by one of its carbon frame of the highest quality and can mount a 24Mpx camera or a compact camera. FlySmart needs only one operator that interfaces with the medium via a PC or tablet.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	drones						
Keywords:							
Comments on the Technology							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

58.- RPAS-Drones

Link:	http://www.dermap.com/en/act-drones-satellites/drone-data-processing.html						
Applicable MS Sector(s):	Defence	Border control	Fisheries Control	Maritime Safety and Security	Marine Environment Monitoring	Customs	General Law Enforcement
Contact Details of Owner:	Parco Scientifico e Tecnologico "Luigi Danieli" Via J. Linussio, 51, 33100 Udine, Italia Tel: +39 0432 629 911 - 752 info@dermap.com						
Brief Description/ Photos/ Related Material							
Complete solutions RPAS (Remotely Piloted Aircraft Systems) Flight planning Acquisition Services (UAS-drones, cameras and other sensors) Systems assembled, tested and ready to fly Pilot's license and UAV flying school							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Real-time process sensor data,Handling of alarms, Data Visualization, Data Integration and Interoperability, Unified Emergency Reponses						
Keywords:	RPAS						
Comments on the Technology							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

e. Portugal

59.- LAUV

Link:	http://www.oceanscan-mst.com/light-autonomous-underwater-vehicle/						
Applicable MS Sector(s):	Fisheries Control	Maritime Safety and Security	Marine Environment Monitoring	General Law Enforcement			
Contact Details of Owner:	OceanScan - Marine Systems & Technology, Lda Av. Liberdade, Polo Mar UPTec 4450-718 Leça da Palmeira, Matosinhos Phone: +351 220 301 576 info@oceanscan-mst.com						
Brief Description/ Photos/ Related Material							
The LAUV is a Lightweight (one-man-portable) Autonomous Underwater Vehicle that has been deployed worldwide accumulating thousands of hours of real-world operation.It's an affordable, innovative, highly operational and effective surveying tool. The LAUV is a platform able to carry different sonar and sensors combinations. The LAUV modular and flexible design makes possible to configure a system during production according to the end user needs. Some of these options are: Doppler velocity Log to improve navigation accuracy, tactical grade inertial measurement unit to reduce the LAUV position drift during dives, satellite communication module to receive and send messages worldwide, underwater acoustic modem to exchange messages underwater, side scan sonar, multi-beam echo sounder, forward looking sonar to identify obstacles in front of the LAUV. The LAUV can combine also several sensors to gather data from the water column.							
Stage of Development:	Already on the market						
Technology Readiness Level (TRL 1-9):	TRL 9						
Domains of Applications:	Subsea environment, surveillance, search and rescue						
Keywords:	Sensor combinations, navigation, satellite communication, autonomous, underwater						
Comments on the Technology							
Some of the main characteristics of the LAUV are: - The fins and antennas mast are flexible - The weight of the LAUV can be easily adjusted for fresh and saltwater operations - Typically the LAUV is equipped with enough power for a regular day of operation (8 hours). Nevertheless, with a fast charging time, the LAUV is ready for a new operation in less than 2 hours - The LAUV on-board and off-board software is based on the open source toolchain developed by LSTS from Porto University - Fast access to collected data is guaranteed via an external USB pen mounted on the LAUV nose - When on surface the LAUV can be accessed via the Manta gateway extended range Wi-Fi radio.							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

60.- AR5

Link:	http://airray.tekever.com/ar5/						
Applicable MS Sector(s):	Border control	Fisheries Control	Defence	Maritime Safety and Security	Marine Environment Monitoring	General Law Enforcement	
Contact Details of Owner:	Tekever EMEA Rua das Musas 3.30 1990-113 Lisboa Phone: +351 213 304 300 info@tekever.com						
Brief Description/ Photos/ Related Material							
The AR5 LIFE RAY EVOLUTION is a medium-altitude and medium-endurance fixed wing UAS. Search and Rescue, surveillance or maritime patrol missions benefit from the increased endurance, reduced operating costs and lower risk to life offered by the AR5. It is the European Maritime Patroller, selected by the European Space Agency (ESA) and in partnership with the European Maritime Safety Agency (EMSA) to test and demonstrate European-wide UAS-based maritime surveillance activities. The AR5 counts with high precision video, imagery and sensor data in real-time, flexible architecture, supporting multiple types of payloads and datalinks, fully managed LoS and BLoS datalink handover and automatic take-off and landing (ATOL). It needs short unpaved runways for take-off and landing.							
Stage of Development:	Already on the market						
Technology Readiness Level (TRL 1-9):	TRL 9						
Domains of Applications:	Maritime surveillance, search and rescue, patrol missions						
Keywords:	Video, imagery, sensor, real-time						
Comments on the Technology							
The main technical data are: - Dimension: 430 cm x 300 cm - MTOW (Maximum Take-off Weight): 150 kg - Cruise speed: 140 km/h - Endurance between 8 and 12 hours - Available payload capacity up to 50 kg - Minimum sensor package is composed by 1 multi sensor 3 axis gyro stabilized gimbal and AIS receiver - Other available sensors are AIS transponder, Mini SAR, LIDAR, LWIR, LRF and direction finder - The typical communication package is composed by configurable CNPC SDR DL, default between 400MHz and 1.2GHz, configurable CNPC SDR back-up DL, default between 400MHz and 1.2GHz and configurable Payload DL, default between 1.2GHz and 6GHz.							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

f. Spain

61.- Bleeper – PRO/AT

Link:	http://www.praesentis.com/eng/bleeati.htm						
Applicable MS Sector(s):	Fisheries Control	Marine Environment Monitoring	General Law Enforcement				
Contact Details of Owner:	PRAESENTIS Pol. Ind. Can Magí C/ Joan Buscallà, s/n, nave 1 08190 Sant Cugat del Vallés Phone: +34 935 898 081 info@praesentis.com						
Brief Description/ Photos/ Related Material							
Professional underwater Explorer, distinguished by its small size and its great versatility, based on a high strength tubular chassis, designed to provide visual presence of up to 100 meters, control via an interactive kit with high resolution display, which receives data from the robot, compass, temperature, panoramic camera, etc. The robot is controlled through a few simple controls located in a module, capable of monitoring the movements with both hands without the need of computers or keyboards. Thanks to its high definition, depths are observed through the sealed case, indicating depth and direction of the compass by robot. Its small size and lightness allow it's handling by a single person, reducing the start-up time and an agile use.							
Stage of Development:	Already on the market						
Technology Readiness Level (TRL 1-9):	TRL 9						
Domains of Applications:	Exploration, maintenance, rescue and safety, environment						
Keywords:	Monitoring, 100m depth, camera, light, display						
Comments on the Technology							
The main technical features are: - 100 m depth rating - maximum speed 1,70 m/s - Maximum strength 500 W - Working temperature -20°C to 50°C - Total Bleeper weight: 10 kg - TV camera CCD Colour 1/3", 480 lines - Lens 3,6 mm Angle vision 74º - Console with joystick control, 7 inch integrated display, orientation compass, vertical depth control							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

62.- Fulmar

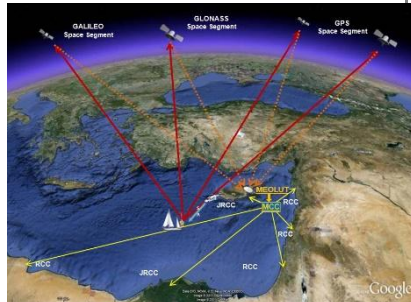
Link:	http://www.wake-eng.com/fulmar						
Applicable MS Sector(s):	Border control	Defence	Maritime Safety and Security	Marine Environment Monitoring	Customs	General Law Enforcement	
Contact Details of Owner:	Wake Engineering C/ Resina, Naves 22-24, 4-5B 28021 Madrid Phone: +34 912 999 962						
Brief Description/ Photos/ Related Material							
FULMAR is a system of reduced cost of life cycle and high-performance technical, easily deployable and can be integrated into systems C4 ISTAR. Its simplicity of operation and maintenance make it the most effective solution of a mini UAVs with high tactical abilities. The UAS Fulmar is very versatile, being trained to perform various missions such as search and rescue on mountain and sea, surveillance of illegal trafficking, support to land and naval forces, missions of intelligence, etc. The FULMAR is a vital element to increase the ISR capability of the armed forces, with the use of sensors advanced remotely and close to the area of interest. On the other hand, high reliability and ease of Fulmar add value to joint operations. These characteristics placed him as a differentiator in the process of decision making in all types of operations.							
Stage of Development:	Already on the market						
Technology Readiness Level (TRL 1-9):	TRL 9						
Domains of Applications:	Exploration, rescue and safety, environment, illegal trafficking						
Keywords:	Recording video, catapult launch, sensor navigation, modular concept						
Comments on the Technology							
The FULMAR system main features are: - Autonomy: 6 to 12 h - Operation range: 800 km - Reach recording Video: 70-90 km - Motor gasoline and heavy fuel. - Dual payload: capable of melting EO / IR - Portable catapult launch - Ready for operation in less than 20 min. - Operational capability with winds of up to 70 Km/h - Fully automatic operation with only two operators - High-precision double sensor navigation flight. - Remote viewing (TVR) terminals - Multifunction control station - Multi-tracking: tracking of static targets and moving - AIS incorporates Repeater							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

8. Systems

a. Cyprus

63.- MEOLUT

Link:	http://www.mod.gov.cy/mod/CJRCC.nsf/cjrcc44_en/cjrcc44_en?OpenDocument						
Applicable MS Sector(s):	Maritime Safety and Security	Border control	Defence	General Law Enforcement			
Contact Details of Owner:	Cyprus Joint Rescue Coordination Center 50, Spyrou Kyprianou Avenue Irida No 3, 11th Floor 6057, Larnaka jrcc_cyp@cytanet.com.cy						
Brief Description/ Photos/ Related Material							
The MEOLUT (Medium Earth Orbit Local User Terminal) is part of the MEOSAR (Medium Earth Orbit Search and Rescue) System of the COSPAS-SARSAT System. The Space Segment of the MEOSAR system is composed of the constellations: SAR/Galileo, DASS/GPS and SAR/Glonass. The SAR/Galileo system is based on a number of Galileo satellites equipped with SAR payloads that relay distress beacon signals back to Earth. SAR/Galileo System is composed of the Ground Segment of the COSPAS-SARSAT System and the Ground and Space Segment of the SAR/Galileo System. Republic of Cyprus and the European Commission reached an agreement on the establishment of a GALILEO ground station in Cyprus.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Global Search & Rescue Services						
Keywords:	SatelliteS, Search & Rescue Services,						
Comments on the Technology							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

64.- Integrated Coastal Surveillance System

Link:	http://www.mod.gov.cy/mod/CJRCC.nsf/cjrcc44_en/cjrcc44_en?OpenDocument						
Applicable MS Sector(s):	Maritime Safety and Security	Border control					
Contact Details of Owner:	Cyprus Joint Rescue Coordination Center 50, Spyrou Kyprianou Avenue Irida No 3, 11th Floor 6057, Larnaka jrcc_cyp@cytanet.com.cy						
Brief Description/ Photos/ Related Material							
The integrated Coastal Surveillance System that has been developed for the Joint Rescue Coordination Center (JRCC) of Cyprus provides the ability to remotely detect, recognise, identify and suveil targets at sea, in areas near coast and within the territorial waters of the Republic of Cyprus. The system has also the ability to surveillance and management of targets through the Automatic Identification System (AIS) of cargo ships. It is an integrated system which combines stationary and mobile (4x4 vehicles, van vehicle and UAVs) units equipped with long range thermal and day/night cameras, radar and AIS receivers. The data (image,video,etc) received by the above mentioned systems (immobile, mobile and unmanned aircrafts) is transmitted through telecommunication network to the Control Centers of the JRCC and the "ZENON" Coordination Center enabling the ground and aerial surveillance of the Island's coasts and territorial waters and the detection of targets and drastically increasing the safety of maritime navigation and marine activities as well as the early warning for any emergency situation within the territorial waters. The Integrated Coastal Surveillance System uses a specialized software which, among other functions, enables the management and projection of targets from all receivers (immobile and mobile cameras, AIS, UAVs etc) onto an electronic map, the automatic and continuous surveillance of selected targets, the measurement of distances, the capturing of an image/video etc.				 			
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Coastal Surveillance						
Keywords:	Cameras, radar, AIS, Coastal Surveillance, UAV						
Comments on the Technology							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

65.- MariaBox

Link:	http://www.mariabox.net/wordpress/vassilikos-bay/						
Applicable MS Sector(s):	Marine Environment Monitoring						
Contact Details of Owner:	CY.R.I.C. Cyprus Research and Innovation Center Ltd 72, 28th Octovriou Avenue, Office 301, Engomi, 2414 Nicosia info@mariabox.net						
Brief Description/ Photos/ Related Material							
The MariaBox pilot site in Cyprus is located in Vassilikos Bay, near a gilt-head (sea) bream fishery, in order to detect man-made and algae pollution level that can enter the food chain. The Vassilikos port is also very close to that location and affects the environmental pollution, while the Limassol port (biggest port in Cyprus) is also less than 20km away. The demo site is regularly controlled by DFMR, a fact that will allow validating the MariaBox in comparison with conventional monitoring methods.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Environment Monitoring						
Keywords:	Sensor, Pollution, Buoy						
Comments on the Technology							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

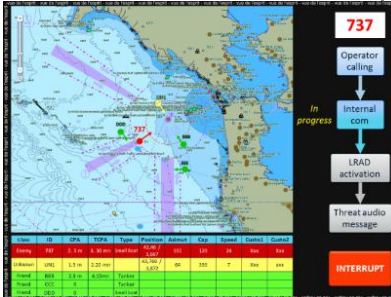
b. France

66.- Area Security system

Link:	www.c-s.fr						
Applicable MS Sector(s):	Border control	Defence	Customs	General Law Enforcement			
Contact Details of Owner:	CS Communication & Systèmes 22, avenue Galilée 92350 Le Plessis-Robinson Tél : +33 1 41 28 40 00 e-mail : sales@c-s.fr						
Brief Description/ Photos/ Related Material							
MWPS Maritime Warning & Protection System: a critical area security system. CS has implemented an operational center and a multi-sensor centralized system to protect critical restricted-access areas. Deployed in particular in the Bay of Toulon, this system detects and automatically monitors suspicious vessels. Maritime surveillance is a major challenge for the protection of port areas in the framework of the fight against piracy and terrorism.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Specific systems						
Keywords:	Detection, tracking and identification Night & Day, Sensors fusion, Image processing, Sensors and effectors control						
Comments on the Technology							
MAIN CHARACTERISTICS Functions : Detection, tracking and identification Night & Day of boats circulating in a restricted area. Local warning by sound and flasher active buoys. Injunction by acoustic messages and ultra directive lights. Intimidation by launch of non-lethal pyrotechnic payloads. Centralized Command & Control system for a global view of the area.							
Fusion of sensors tracks : AIS, IR, Radar		Control of effectors : Spotlights, Loudspeaker, Launchers		Lan based modular architecture		Specific devices : Active Video tracker and Pyrotechnic launcher	

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

67.- Sargos

Link:	http://en.sofresud.com/Surveillance-Maritime/SARGOS						
Applicable MS Sector(s):	Border control	Maritime Safety and Security	Customs	General Law Enforcement			
Contact Details of Owner:	Sofresud 777, Avenue de Bruxelles 83500 La Seyne-sur-Mer Phone: +33 (0)4 94 11 57 00 contact@sofresud.com						
Brief Description/ Photos/ Related Material							
SARGOS is a global system of alert and graded response taking care of all the chain of protection of the infrastructure, since the detection of a potential threat up to the implementation of the reaction. The system aims at answering the emergence of the need of safety of the civil offshore infrastructures vulnerable in the actions shares of hostility, piracy or terrorism led from the sea. The main goal of the application is to reinforce civil operational environment. The direct application of the complete system would stand for the protection of offshore oil platforms, FPSOs and the Merchant Marine fleet. The main sensor is a FMCW radar specifically designed to detect small marine targets at ranges up to 4 nautical miles.							
Stage of Development:	Already on the market						
Technology Readiness Level (TRL 1-9):	TRL 9						
Domains of Applications:	Security, piracy, terrorism, border control						
Keywords:	Threats detection, alert, crisis management, automatisms						
Comments on the Technology							
SARGOS system disposes of four essential capabilities: - Threats detection: Surveillance of the area to be protected is carried out by using: • Detections obtained with the specialized FMCW radar of the SARGOS system; • Information collected by sensors associated to SARGOS FMCW radar. - Danger evaluation: The "dangerous intrusion" alert generated by the "surface situation management" function is forwarded to the "reactions determination" function which implements: • Possible reactions planning calculations according to the level of knowledge, • Recommendation for activating reaction means. • Activation of an in-house alert broadcasting process • Activation of an outside alert broadcasting process. - Operator display: To assure a fast and comprehensive apprehension of the situation, SARGOS information are displayed on two adjacent screens: • The first screen shows on a map the tactical surface situation and a decision making support • The second screen is reserved for video camera imaging - Responses planning: SARGOS proposes an automated process to analyze situations: • Automatic surveillance • Alert • Processing							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

68.- Integrated Alarm Monitoring Control System

Brief Description/ Photos/ Related Material



Comments on the Technology

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

69.- SYLENA Decoy Launching System

Link:	http://www.lacroix-defense.com/produit.php?pole=naval&code=sylena						
Applicable MS Sector(s):	Defence	Border control	Maritime Safety and Security				
Contact Details of Owner:	LACROIX 6 boulevard Joffrery 31600, Muret Phone: +33 (0)5 61 56 65 00 info@etienne-lacroix.com						
Brief Description/ Photos/ Related Material							
From patrol boats to frigates, The SYLENA range of systems has been developed by Lacroix to offer an optimized solution for ship protection with RF and IIR (Imaging Infrared) SEACLAD decoy effects. Unlike many Decoy Launching Systems which deploy chaff regarded as outdated with respect to modern electric warfare due to chaff discrimination systems, SYLENA utilizes corner reflector (CNR) technology. The fixed launchers are fully compatible with corner reflectors (CNR) and our RF decoys are based solely on this technology: Lacroix does not mix CNR with chaff, in order to preserve the credibility of the decoy. Its decoying solution allows permanent monitoring of the missile and does not interfere with signal propagation, even after the deployment of the decoys, to enable the ship to use its jamming and hard kill capabilities.							
Stage of Development:	Already on the market						
Technology Readiness Level (TRL 1-9):	TRL 9						
Domains of Applications:	Ship protection						
Keywords:	Decoy launching system, corner reflector, signal propagation						
Comments on the Technology							
The SYLENA range is comprised of four models of launchers, and has been developed to meet the most commonly issued requirements, but also the most advanced technical requirements of international navies. The key benefits of SYLENA DLS are: - Effective protection against old and emerging threats - Designed for corner reflector technology - Fully compatible with hard kill and jamming - Fixed launcher for 360° protection and limited maintenance (cost effective solution) - Easy to integrate on the ship and to interface with CMS - Very low life cycle cost - Safe and optimized handling procedures - Very quick and easy reloading - Intuitive man/machine interface - Uses mortars only							

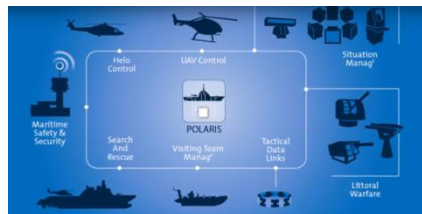
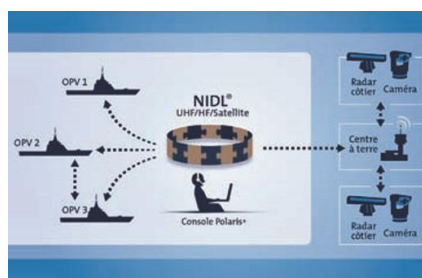
PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

70.- Autoprotection Management System

Link:	http://en.sofresud.com/Surveillance-Maritime/AUTOPROTECTION						
Applicable MS Sector(s):	Defence	Border control	Maritime Safety and Security				
Contact Details of Owner:	Sofresud 777, Avenue de Bruxelles 83500 La Seyne-sur-Mer Phone: +33 (0)4 94 11 57 00 contact@sofresud.com						
Brief Description/ Photos/ Related Material							
AUTOPROTECTION Management System offers effective protection against pirate attacks at sea, adapted to the operating constraints of merchant ships, including ease of use. The aim is to prevent or at least delay, the pirate's intrusion on the ship, while protecting the crew and giving them the opportunity to keep some control of the ship. The system is based on the concept of "multilayer" defense. The goal is to accumulate layers to reduce dramatically the likelihood of a successful pirate attack quantified by taking control of the vessel at a given minimum time. The system is designed to be highly modular by choice of all or part of the means proposed: - Surveillance and detection : radar and infrared imaging ; - Deterrence: light and sound means; - Protection: anti RPG7s (rocket) gateway; - Anti - boarding : external smoke and water repulsion systems; - Anti - theft : waterproof armoured doors and internal smoke							
Stage of Development:	Already on the market						
Technology Readiness Level (TRL 1-9):	TRL 9						
Domains of Applications:	Protection at sea, pirate's intrusion						
Keywords:	Decoy launching system, corner reflector, signal propagation						
Comments on the Technology							
AMS, "Autoprotection Management System" provides all monitoring the situation and equipment kit: - Establishment and keeping in real-time situational awareness around the ship, - Automatic threat analysis and automatic alarm generation using rules engines, - Establishment of a real-time action plan and procedures adapted to help decision support - Monitoring / control different means. So the crew is be relieved of its task of monitoring and is automatically notified when threatened. The Interface, simple and effective, provides the operator: - Consultation means: situation around the ship, location of the crew, - Decision support: parameters characterizing suspicious boats, plan responses plan - Action means: reactions' validation by the system, implementation procedures, ...							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

71.- POLARIS®

Link:	https://www.naval-group.com/wp-content/uploads/2017/01/polaris-shipborne-system-for-maritime-surveillance-and-defence.pdf						
Applicable MS Sector(s):	Maritime Safety and Security						
Contact Details of Owner:	DCNS – PARIS 40-42, rue du Docteur Finlay 75732 Paris cedex 15 Tél. : +33 (0)1 40 59 50 00						
Brief Description/ Photos/ Related Material							
POLARIS® is a naval system covering the full spectrum of maritime surveillance missions and protection of State interests at sea in the EEZ. Thanks to its ability to integrate all involved maritime and ground units into a common network, POLARIS® strengthens intelligence gathering means and strongly increases reaction and engagement capabilities. Based on an open architecture, POLARIS® processes a wide range of data, including from remote sensors. The correlation of all the retrieved data, analysed through an innovative tool or abnormal behaviours detection, helps the officer to take quickly the most relevant decision and react accordingly. A wide array of systems already integrated Based on an open architecture, POLARIS® is capable of integrating sensors and effectors ensuring control of the maritime and aerial space, such as: ■ 2D/3D surveillance radar, ■ optronic equipment, ■ communication systems, ■ guns, ■ antiship missiles, ■ short range air defence (Shorad) missiles. POLARIS® also integrates information systems dedicated to naval operations planning, and Search and Rescue (SAR) alerts management.				  			
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	patrol boats, LHD-LPD, UAS						
Keywords:							
Comments on the Technology							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

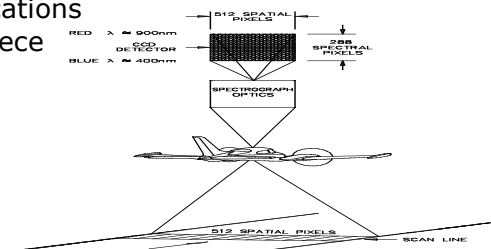
c. Greece

72.- Maritime Surveillance Solution (MARSS)

Link:	http://www.setel-group.com/index.php/solutions/marss-maritime-surveillance-solution						
Applicable MS Sector(s):	Maritime Safety and Security						
Contact Details of Owner:	Setel Group 1, Kantharou & 75, Akti Miaouli str. Piraeus, 185 37, Greece Email: info@setel-group.com Phone: +30 210 4528157						
Brief Description/ Photos/ Related Material							
The Maritime Surveillance Solution (MARSS) increases the level of safety and security in the work environment onboard the vessels. It improves safeness, efficiency and insurance of ship owners’ High Value Assets, ships’ infrastructure, cargo and crew, by receiving warnings of potential dangerous conditions in a wide range of operating circumstances and by providing optimal situational awareness of the surrounding area. This solution provides a close view on the on-board personnel contributing to improve the training and the day to day operation. MARSS offers multiple layers of surveillance and monitoring of several onboard locations simultaneously. It provides customized image detection algorithms to alert on for unwanted behaviours and waterborne threats or when onboard conditions change.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	onboard vessels						
Keywords:	image detection algorithms, alert on threats and dangerous conditions						
Comments on the Technology							
The Basic Features are: - Integrated solution. - Local and simultaneous remote monitoring, viewing and recording across multiple sites, regardless of geographical location. - Remote surveillance from ashore. - Quickly analysis thousands of recordings using motion, time and camera search criteria, saving valuable incident search time. - Supports motion detect, binary and video loss alarms. It can also trigger relays when an alarm occurs. - Customized image detection algorithms to alert on when conditions change. - Several users can simultaneously view, manage and record across the network from any point on that network. - Snapshot images (jpg) will be taken at pre-determined intervals. These images can be saved to a local server or the Cloud and viewed from any machine on-board or shore based (subject to network connection). - Review and retrieve historical data instantly.							

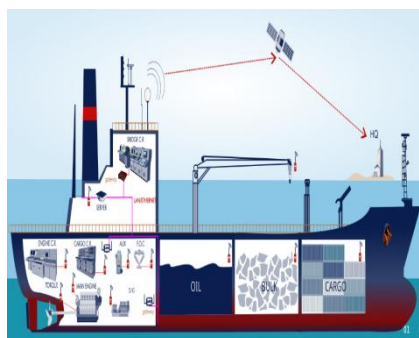
PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

73.- Hyperspectral Camera CASI 550 – Compact Airbone Spectrographic Imager

Link:	http://www.aerophoto.gr/el/2-uncategorised						
Applicable MS Sector(s):	Marine Environment Monitoring						
Contact Details of Owner:	Aerophoto 21 Antoni Tritsi Str. PC 57001, Thessaloniki GREECE Tel:+30 2310 804991-2 & 3 Mobile+30 6977089179 email:info@aerophoto.gr						
Brief Description/ Photos/ Related Material							
Collecting Geospatial Data that refer to Hyperspectral applications like Water resources using for this reason the Unique in Greece Hyperspectral –Thermal and Lidar cameras. 							
Stage of Development:	Project already started						
Technology Readiness Level (TRL 1-9):							
Domains of Applications:	Water resources, Detection of oil sources						
Keywords:	Spectrographic imager, camera						
Comments on the Technology							
Differences between Landsat TM, 7 canals and Hyperspectral camera Casi – (VIS/NIR: 0.40-0.97µm, 244 canals)							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

74.- Laros platform

Link:	http://www.laros.gr/						
Applicable MS Sector(s):	Maritime Safety and Security						
Contact Details of Owner:	PRISMA Electronics, 42 Poseidonos Ave., Kallithea, Athens, P.C. 17675 +30 210 931 3110						
Brief Description/ Photos/ Related Material							
LAROS is an advanced and comprehensive Remote Condition Monitoring & Performance Analysis system with enhanced analytics that allow the complete remote monitoring and analysis of all critical ship's functions in real time. It can be connected to any point of interest regardless vessels' age, type or size. The system utilizes robust industrial tested "intelligent wireless collectors" that gather in a fully automated way raw data from any signal source transmitted to the ship's LAROS server and via satellite at HQs onshore. LAROS DAS is equipped with a wide range of advanced tools for Performance Optimization for the entire fleet. Intelligent algorithms continuously analyze all synchronized (occasionally harmonized) data collected and then DAS software presents findings to fleet-managers in the HQs.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Main Engine and Electrical Generators, Voyage and weather information, Fuel Consumption including MRV, Engine efficiency, Motors and Pumps Condition, Tanks Pressure, Ballast Room, Bridge parameters, Burners, Boilers, Chillers, Heat exchangers and Air compressors/condition, Exhaust Economizers, Turbo Chargers, Inner Gas, Cargo						
Keywords:							
Comments on the Technology							
		LAROS system has been installed and operates in various types of vessels worldwide. Ship owners and operators report they experience: - Reduced everyday operational cost, - Reduced data entry on board, - Reduced repair time and maintenance cost, - Reduced breakdowns and docking down time, - Increased operation awareness, - Savings on Insurance Costs, - Improved vessels' operational efficiency					

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

75.- GUARDIAN Ship Protection System

Link:	http://www.armour.gr/4guardian.php#						
Applicable MS Sector(s):	Maritime Safety and Security	Defence					
Contact Details of Owner:	International Armour Co. 155 Syngrou Avenue, 17121 Nea Smirni, Athens T: +30 210 9312391, 2, 3 E: info@poseidongroup.eu						
Brief Description/ Photos/ Related Material							
The new and deceptively simple solution to the problem of unwanted boarding under sail, at anchor or in port is the GUARDIAN ship protection system that works by covering the ships safety rails with a specially designed barrier. Without GUARDIAN, these safety rails provide an easy purchase for roofing ladders and grappling hooks. Unlike Razor wire, GUARDIAN units are quick, simple, safe to install and prevent boarding equipment being secured to the vessel, with the GUARDIAN profile making it virtually impossible to climb over even if a grappling hook was to secure on deck. The system is currently protecting some of the worlds biggest fleets including CMA-CGM, Maersk, BW Tankers as well and being used to protect offshore rigs and drilling ships.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Ships exterior						
Keywords:	anti-piracy system, ship protection						
Comments on the Technology							
Advantages: - Cost-effective, - Easy to install and remove, - Safe alternative, - Guaranteed for 5 years, - Transferable between ships GUARDIAN Greenwater has been developed to deal with the issue of green water on-board deck following turbulent weather conditions. This means that the benefits to using GUARDIAN are two fold - it not only prevents against unwanted boarding but aids with the issue of green water, which causes untold damage and expense.							

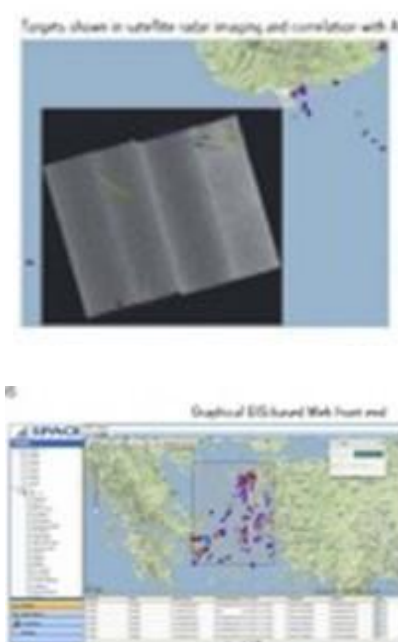
PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

76.- M2IMS – Maritime Mission Integration & Management System

Link:	http://www.isihellas.com/products/mission-tactical-command-control-systems/maritime-mission-integration-management-system-m2ims						
Applicable MS Sector(s):	Maritime Safety and Security	Defence	Border control	Fisheries Control	Customs	General Law Enforcement	
Contact Details of Owner:	ISI Hellas Kritis & Gravias 12, Argyroupoli, 16451 - Greece Phone: +30 210 964 7756 Email: info@isihellas.com						
Brief Description/ Photos/ Related Material							
M2IMS is a tactical mission system for Maritime Patrol Aircrafts (MPA) built with state-of-the-art technologies and a modular design that enables it to interface with a large variety of sensors, and provides enhanced situational awareness through the integration of sensor functionality and effective mission management capabilities. M2IMS is designed for an extensive range of platforms (long-range MPA to surveillance planes) and supports Maritime Surveillance, Antisubmarine Warfare (ASW), Anti-surface Warfare (ASuW), Coast Guard missions, Border control, and surveillance of Exclusive Economic Zones, Search and Rescue, Fishery Control, Anti-Smuggling Patrol and others. Information from available sensors and sub-systems (correlation, triangulation) is integrated to create the Common Operational Picture (COP). This information is available to the Tactical Coordinator (TACCO), Mission Commander (MC), other Mission System Operators and the Pilot (via the Pilot Display Unit), assisting them in their operational surveillance, identification and command and control tasks.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Multiple sensors such as SAR Radar, EO/IR, ESM, EW/ELINT, ASW/ACINT, MAD) Weapon Interfaces, AIS and ADS-B transponders, Data Links, Navigation systems						
Keywords:	maritime patrol aircrafts						
Comments on the Technology							
The M2IMS comprises of a number of features, such as: - Co-ordinated situation overview with the inclusion of AIS and ADS-B data - Advanced GIS functionality and user interface - Exchange of mission data via Data Links and Satellite - Decision support tools for vessel identification/classification and Anomaly detection - Expandability to include functionality for special applications required by the user.							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

77.- Integrated Maritime Surveillance Platform

Link:	http://www.esa-tec.eu/space-technologies/from-space/integrated-maritime-surveillance-platform/						
Applicable MS Sector(s):	Border control	Fisheries Control	Defence	Maritime Safety and Security	Customs	Marine Environment Monitoring	General Law Enforcement
Contact Details of Owner:	Space Hellas S.A. 312, Messogion Ave., GR-153 41 Ag. Paraskevi Tel.: +30210 6504100						
Brief Description/ Photos/ Related Material							
The offer refers to an integrated platform for maritime surveillance, based on the synergistic use of heterogeneous satellite technologies. The platform exploits and fuses: 1) data from satellite Earth Observation (EO) products (mostly Synthetic Aperture Radar images for ship detection), 2) information derived via satellite navigation systems (AIS, LRIT) and 3) data from terrestrial in-situ sensors collected via satellite communications (satcom) platforms, in order to produce an Integrated Maritime Picture for a given area. While satellite/EO-based maritime surveillance and sensor-based coastal monitoring are already offered in the market as separate solutions, this platform synergistically combines all the aforementioned technologies in order to offer a single integrated solution for maritime surveillance, suitable for both open-sea and coastal areas. It is thus adaptable and suitable for a wide variety of use cases, which is an important advantage over competitive solutions. The platform can either be adapted to exploit existing, already installed coastal sensors, or can be offered as a complete turn-key solution accompanied by the sensor system and the communications network.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Sea Border Surveillance, Harbour Surveillance, Fisheries Control, Maritime Safety, Protection of Critical Infrastructure (e.g. offshore oil platforms)						
Keywords:	Synthetic Aperture Radar, Object recognition mechanisms, AIS/LRIT, UAVs, GIS						
Comments on the Technology							
The technologies and modules supporting the maritime surveillance platform have been developed in the context of related R&D projects, such as ESA STINGRAY, ESA MARISS and MARISS Scale-Up, FP7 DOLPHIN and the recently commenced JASON project, funded by the Greek Secretariat of							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

Research and Technology.

78.- Man overboard

Link:	http://www.telesto.gr/man-overboard						
Applicable MS Sector(s):	Maritime Safety and Security						
Contact Details of Owner:	Telesto Technologies 62 Imitou Str, Cholongos, 15561, Athens - Greece Email: contact@telesto.gr Tel: +30 2106541942						
Brief Description/ Photos/ Related Material							
Man overboard is a system to identify man overboard situations on board passenger ships, by analyzing video streams from onboard cameras in near real time. Downward looking cameras are used so as to respect the privacy of the passengers. It builds on the "Safe-on-Board" platform for passenger ships. This platform has the primary objective to support the ship evacuation process, if such a need were to arise, or to assist the passenger in navigating around a huge passenger vessel. For the needs of this project we have enhanced the platform's endpoints with cameras and employ state-of-the-art computer vision techniques that was already been used in previous projects. It refers to the combination of preinstalled sensors and a free smartphone application. The solution refers to a computer vision system that analyze video streams from downward looking cameras installed at decks above open-air balconies to detect possible man overboard situations. These streams will be stored in real time in a Media Server for real-time processing. Algorithms then analyze the video to identify the event of an object (with a size and shape relevant to that of a human) crossing the boundary line that divides the ship deck and the sea (looking down). To minimize false alarms it is also required that the object does not cross-back the boundary line towards the ship. To increase performance, only the cameras that indicate presence are analyzed.							
Stage of Development:	Project already started						
Technology Readiness Level (TRL 1-9):							
Domains of Applications:	onboard cameras on board passenger or cruise ships						
Keywords:	ship evacuation process.						
Comments on the Technology							
Innovate UK-funded project https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/550451/IC_Tomorrow_-_Innovation_Contest_-_Intelligent_Data_Insights_-_Competition_Results.pdf It builds on the "Safe-on-Board" platform that the company has already created							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

d. Italy

79.- NADIR Radar

Link:	https://www.idscorporation.com/						
Applicable MS Sector(s):	Border control	Defence	Maritime Safety and Security				
Contact Details of Owner:	IDS Ingegneria Dei Sistemi S.p.A Headquarters: Via Enrica Calabresi, 24 56121 - PISA Phone: + 39 050 3124 1 E-mail: ids@idscorporation.com						
Brief Description/ Photos/ Related Material							
The NADIR Radar system is an outdoor, ground based transportable system targeted to the dynamic measurements of full-scale ships in an in-shore environment. NADIR Radar system performs: Radar Cross Section; High Resolution Range profiles; ISAR Imaging.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Surveillance system						
Keywords:	Multisensor surveillance system, maritime and terrestrial, border control, surveillance, detection						
Comments on the Technology							
NADIR Radar is a flexible radar system for use in an inshore environment which is designed to perform dynamic measurements of full-scale ships, for radar cross section (RCS), high resolution range profiles (HRRP), hourglass plots and inverse synthetic aperture radar (ISAR) images. The system is customizable and expandable and only requires a short time to perform an accurate and comprehensive analysis, the acquisition time being limited only by the movement capability and speed of the ship itself. The radar, tracking equipment and the cabin for its operators and control and monitoring equipment is all designed for outdoor use, is self-powered and is fully transportable. NADIR Radar consists of three modules which are transportable by a single truck and trailer: - The antenna subsystem is mounted on an equipment trailer and includes an RX/TX radar antenna assembly and an elevation over azimuth positioner. - The operating shelter houses the positioning, processing and control equipment including the tracking equipment and post processing computers. - The on-board subsystem which is carried on the target ship provides GPS and motion data and a radio data link.							

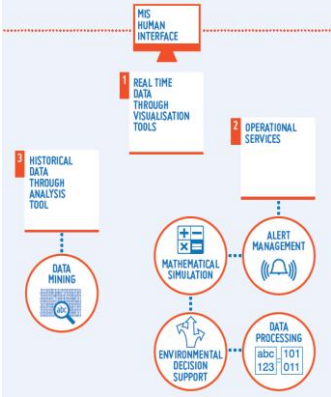
PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

80.- ZENITH

Link:	https://www.idscorporation.com/						
Applicable MS Sector(s):	Defence	Maritime Safety and Security					
Contact Details of Owner:	IDS Ingegneria Dei Sistemi S.p.A Via Enrica Calabresi, 24 56121 - PISA Phone: + 39 050 3124 1 E-mail: ids@idscorporation.com						
Brief Description/ Photos/ Related Material							
ZENITH is a system for assessing the infrared (IR) signature of a moving target at sea and can be used either from the shore or from a helicopter. It provides a temperature calibrated high resolution image of the ship under test and performs a temperature and radiometric analysis in order to identify an infrared signature. The results of the measurements and analysis are stored in a database allowing further post processing. Its modular and flexible architecture allows the standard system to easily be adapted and customized to a customer's requirements. ZENITH is easily transportable and can be operated in an outdoor environment.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Surveillance system						
Keywords:	Multisensor surveillance system, maritime and terrestrial, border control, surveillance, detection						
Comments on the Technology							
ZENITH is composed of two sub-systems, a mobile sub-system and a target sub-system. The mobile sub-system is either installed on shore (for horizontal measurements) or temporarily fitted to a helicopter (for elevations greater than 0°). The system includes: - Mid-Wave Infrared (MWIR) camera - Very Long-Wave Infrared (VLWIR) camera - Laser Range Finder (LRF) - Global Positioning System (GPS) - Database and Post-Processing software The target sub-system is installed on the ship under test and includes: - Visibility meter - Pyranometer (to measure solar irradiance) - Weather Station - Global Positioning System (GPS) - Blackbodies for camera calibration The two systems are connected by a radio link for time-stamped data synchronization. Starting and stopping data acquisition can be controlled by remote control.							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

81.- Marine Information System

Link:	http://www.edgelab.eu/products.html						
Applicable MS Sector(s):	Maritime Safety and Security						
Contact Details of Owner:	EdgeLab s.r.l. c/o CSCA, Via degli Altiforni, 3 57037 Portoferraio (LI) - Italy phone: +39.050.31.53.145 fax: +39.02.70.04.28.277 edgelab@edgelab.eu						
Brief Description/ Photos/ Related Material							
Effective and complete solution for detection, monitoring and management of maritime traffic and marine pollution events. Main features: * Integrated Communication System (ICS) and ARGO-geomatrix devices * Maritime traffic * Remote sensing (airborne and spaceborne) * POLLUTION FORECAST MODEL * Dynamic Risk Maps * Alerting and decision support							
							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Video surveillance system						
Keywords:	Radar, VTS System, high-level radar information, AIS data, comprehensive maritime management systems						
Comments on the Technology							

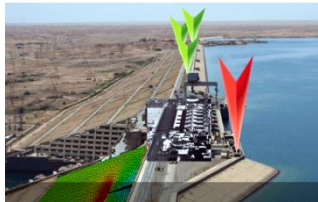
PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

82.- Embedded Real Time Systems

Link:	http://www.intecs.it/tecnologie.asp						
Applicable MS Sector(s):	Defence	Maritime Safety and Security					
Contact Details of Owner:	INTECS SPA Via Giacomo Peroni 130 I-00131 Roma T. +39 06 20 39 28 00						
Brief Description/ Photos/ Related Material							
Intecs has developed a family of Operating Systems and "micro-executives" for embedded applications with hard-real-time requirements that mandates deterministic response times. These Operating Systems are equipped with tools supporting the development, verification, and configuration of embedded applications.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	development of software for embedded systems						
Keywords:							
Comments on the Technology							

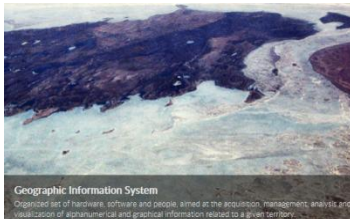
PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

83.- ARS (Augmented Reality System)

Link:	http://www.superelectric.it/ars.html						
Applicable MS Sector(s):	Defence	Maritime Safety and Security					
Contact Details of Owner:	Superelectric Via del Castagneto 3, 07029 - Tempio Pausania (OT) +39.079.0976380 info@superelectric.it						
Brief Description/ Photos/ Related Material							
Allows users to display on standard display in Increased Reality, that is, to superimpose in real time and completely 3D to LIVE images, any digital information (videos or images) in a georeferenced way. ARS can be used in parallel (as a stand-alone solution) and integrated with existing video surveillance systems.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	development of software for embedded systems						
Keywords:							
Comments on the Technology							
ARS is a DATAFUSION REAL TIME system that can handle and merge various georeferenced data sources (video streams, images, data sensors, etc.) to allow you to benefit from an integrated multisensory view of the underlying scenario . ARS can be integrated directly with Long Range Surveillance Systems through a PTZ control unit and controls.							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

84.- Remote Sensing

Link:	http://www.iptsat.com/index.php/en/remote-sensing						
Applicable MS Sector(s):	Defence	Maritime Safety and Security					
Contact Details of Owner:	IPTSAT Via Sallustiana, 23 00187 Roma Tel. +390642041717 Lat. 41.907621, Lon. 12.495085						
Brief Description/ Photos/ Related Material							
Remote sensing is a set of techniques of shooting, processing and interpretation of data, which uses electromagnetic energy as a carrier of information. Remote sensing uses photos or numerical data collected from aircraft, satellites and UAV drones, to characterize the surface of the earth in its parameters of interest.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	development of software for embedded systems						
Keywords:							
Comments on the Technology							
Distributing RapidEye satellite imagery, GeoEye, IKONOS, Aster, Landsat (7.8), Pleiades. Carry out activities in remote sensing proximity via radio-controlled UAV drones By providing remote sensing data processing and classification, i.e. analysis and interpretation of the images. Proposing solutions with high added value for the study and control of environmental resources, agricultural, and forest vegetation.							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

85.- TDS System

Link:	http://new.smitt.it/portfolio/tds-telescopic-detection-system/						
Applicable MS Sector(s):	Maritime Safety and Security	Defence	General Law Enforcement				
Contact Details of Owner:	Smitt Srl Via Martiri della Libertà, 5, 25030 Roncadelle (Bs) P.Iva e C.F. 03338520178 Tel. +39 030 2586164						
Brief Description/ Photos/ Related Material							
TDS is a modular product which offers a professional solution to any external surveillance need with a mast application. TDS allows a 180° or 360° coverage of areas to be protected, thus ensuring day and night detection of human intrusion as well as intrusion of cars. TDS is made of a technologic, telescopic mast, available in three different heights, with a technical head at its top, which houses vision equipment and image processing systems, as well as data transmission systems. These technological elements ensure professional height installations, with quick and easy maintainability at ground without the need of aerial platforms: the mast is retracted and the technological head is taken to the ground, so that it can be cleaned and – if need be – maintained. A set of options is also available for the system, which can be therefore adapted to any external surveillance need.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Control of airports, ports, dry ports.						
Keywords:							
Comments on the Technology							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

86.- BARNY SENTINEL Underwater Platforms

Link:	http://www.sielcotech.it/eng/Products/Barny/Barny.php						
Applicable MS Sector(s):	Marine Environment Monitoring						
Contact Details of Owner:	SIELCO SRL Via Greti di Durasca 19020 FOLLO (SP) - Italy Tel: +39 0187558775 Email: sielco@sielcotech.com						
Brief Description/ Photos/ Related Material							
Developed by NATO's SACLANT center (now renamed CMRE - Centre for Maritime Research & Experimentation) in the late 90's to be used during the Balkan crisis, in the following years it has been produced independently by SIELCO that has evolved some technical concepts. This system, made to put in a single assembly different configurations of oceanographic instrumentation, is perfect for the detection and recording of environmental parameters when positioned on the sea bottom. Its operating characteristic allow it to adhere to most of common marine surfaces and prevent the dredging by the trawls (due to his trawl resistant shape) and or other fishing gear / mooring, giving it a specific reliability when used in portions of sea without traffic vessel's control. In detail, thanks to its position on the seabed, it can house various instrumentation packages like Acoustic Doppler, Sea-Bird wave tide gauge with conductivity sensor, Current Instrument, Acoustic releases, etc., and it allows investigators / technicians to easily change configuration through modular construction. In normal conditions, after its release, the platform is recovered by actuating an acoustic command or , in adverse conditions / emergency, unlatching the ballast or using the specific arrangements for ROV.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:							
Keywords:	record environmental parameters, underwater system						
Comments on the Technology							



PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

87.- RAG-A200 – Gamma Radiation probe network

Link:	http://www.skytechnologies.it/Data_Sheet/DataSheet_RAG_eng.pdf						
Applicable MS Sector(s):	Defence						
Contact Details of Owner:	CST Centro Sviluppo Tecnologico Via delle Pianazze, 74, 19136 La Spezia- Italy tel.: +39 0187 984100 e-mail:skytech@skytechnologies.it						
Brief Description/ Photos/ Related Material							
SkyTech's RAG-A200 (RV33) is a state-of-the-art radiation doserate monitoring system for land fixed and mobile installations. It is a typically "dual-use" product that can meet both civilian and military (typically for the Navy) applications requirements. A typical self-contained system may consist of any number of: doserate probes, P/N RAG-A200 local or remote display units, P/N UVR-A100 audible alarm (horn) slaved to the display unit, P/N UA1							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	γ-doserate monitoring networks, Harsh environments, Non serviceable sites						
Keywords:							
Comments on the Technology							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

e. Portugal

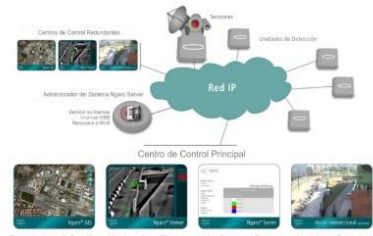
88.- Oversee Environmental Monitoring and Protection

Link:	https://www.criticalsoftware.com/en/industries/maritime#tab-1183						
Applicable MS Sector(s):	Marine Environment Monitoring	General Law Enforcement					
Contact Details of Owner:	Critical Software, SA Parque Industrial de Taveiro, lote 49 3045-504 Coimbra Phone: +351 239 989 119 info@criticalsoftware.com						
Brief Description/ Photos/ Related Material							
Oversee helps maritime organisations to make better decisions using the power of data fusion, predictive modelling, data analytics and machine learning techniques. Oversee’s technology helps public and private entities involved in Traffic Monitoring and Vessel Tracking, Search and Rescue, Law Enforcement, and Environmental Monitoring and Protection to intuitively integrate their available surveillance resources, delivering more cost-eff ective and efficient operations. Oversee Environmental Monitoring and Protection is an information system that provides support for decision-makers tasked with preventing, detecting and responding to pollution incidents at sea. Oversee is capable of monitoring the geographic parameters of off-shore infrastructures to present a real-time, integrated picture of maritime environmental measures.							
Stage of Development:	Already on the market						
Technology Readiness Level (TRL 1-9):	TRL 9						
Domains of Applications:	Marine environment, monitor, pollution incident, prevention, detection						
Keywords:	Decision, prediction, data, geographic, picture						
Comments on the Technology							
Oversee is composed by different modules that can be deployed according to clients’ needs: - Dashboard: shows the overall status of operations to support briefings or shift changes. - Integrated maritime picture: provides a geo-referenced display of traffic information, GMDSS distress alerts and METOC overlaid on cartographic and hydrographic layers. - Electronic log: allows the user to keep track of all events at the maritime centre. - Incident management: records all information related to a specific incident, including analysis, response planning and execution, conclusion and post-incident follow-up. - Resource management: keeps track of resources, including operational status, readiness, availability, location and ETA, that are geo-referenced. - Maritime safety information: manages navigational warnings, meteorological warnings, meteorological forecasts and other safety related messages for promulgation. - Behaviour analysis: creates and manages diff erent alarms. - Vessels database: records all vessels known by the system.							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

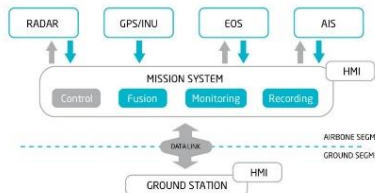
f. Spain

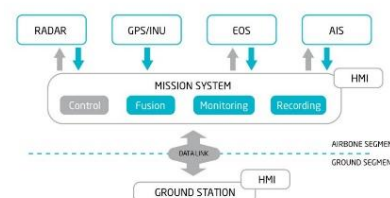
89.- Ngaro Coastguard

Link:	http://www.ngaro.es/pdf/mt_coastguard_web_en.pdf						
Applicable MS Sector(s):	Defence	Maritime Security	General Law Enforcement	Border control	Customs		
Contact Details of Owner:	NGARO Intelligent Solutions, S.L. C/ Mayor, 71 - 2 46970 Alaquas Phone: +34 961 547 858 info@ngaro.es						
Brief Description/ Photos/ Related Material							
Surveillance system for extensive perimeters, restricted access areas, roads and land confined environments. The image analysis algorithms used by NGARO® CoastGuard are optimized for operating on a maritime scenario. NGARO® CoastGuard works with thermal cameras placed in fixed poles, as well as on stopped coasta surveillance vehicles, covering 360 degrees from its position. Along with the rest of features which Ngaro systems have to offer, NGARC CoastGuard automatically monitors the maritime or fluvial area and gives information about approximations, intrusions, presence and the trajectory of the vessels located within the exclusion zone.							
Stage of Development:	Already on the market						
Technology Readiness Level (TRL 1-9):	TRL 9						
Domains of Applications:	Fixed poles to cover extensive perimeters, restricted areas, roads, confined areas. On vehicles.						
Keywords:	Alarms, video images, tracking						
Comments on the Technology							
The system is composed by a common architecture based on independently operating modules which continuously analyze the environment, identifying and discriminating targets, generating alarms according to user-defined parameters, compressing and transmitting thermal video images, making display, tracking and management of all this information easier from command and control centers, either mobile or fixed, and allowing the activation of pre-established response automatism. The system consists of two basic subsystems, which are independently marketed and also operate independently: the Detection Units and the Command and Control Centers.							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

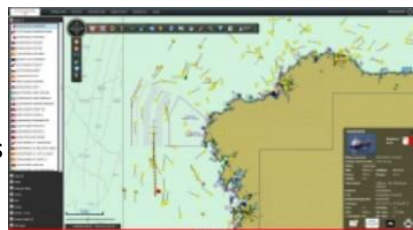
90.- P2006T MRI Surveillance System

Link:	http://www.indracompany.com/sites/default/files/indra-p2006t_mri_surveillance_system_0.pdf						
Applicable MS Sector(s):	Defence	Maritime Security	Border control	Marine Environment Monitoring	General Law Enforcement		
Contact Details of Owner:	INDRA Avda. de Bruselas, 35 28108 Alcobendas Phone: +34 914 805 000 indra@indracompany.com						
Brief Description/ Photos/ Related Material							
The concept of the design is to develop an airborne surveillance platform allowing to explore the area situated between 50 and 200 NM with a very low cost of acquisition and extremely low cost of flight hour. The result is an airborne surveillance platform allowing to explore areas from 3000 to 8000 square NM at a typical range of 100 NM from the coast with an acquisition cost similar to that of a light helicopter and a probability of intercept close to 100%. System design is based on four main factors: use of a low cost aircraft, use of a well proven airborne search & identification radar, use of a large format long range day and infrared stabilized optical sensors and use of Vessel Automatic Identification System. 							
Stage of Development:	Already on the market						
Technology Readiness Level (TRL 1-9):	TRL 9						
Domains of Applications:	Maritime safety, search and rescue, fisheries protection, maritime oil fields protection, drugs interdiction						
Keywords:	Aircraft, AIS, integration, radar, sensors						
Comments on the Technology							
The core of the MRI is the Mission System, the result of years of experience in Surveillance Systems. Being conceived as a state-of-the-art software system it fully integrates the information gathered by the all the sensors, controls them and manages the communication with the Ground Station. All the systems are integrated in a unique software application that controls all the sensors, collects, fuses and records the data received by them and presents all the information in a single moving image. Advanced functions involving the use of multiple sensors are easily achieved, executed and learnt by the operators. The operating concept is simple but powerful, combining and exploiting the maximum performance of every sensor: • The Radar search capabilities are used to detect and locate the targets with a very high Probability of Intercept. • The AIS information is correlated with the radar providing identification of those targets carrying AIS transceivers. • The SAR/ISAR modes are used to classify the unknown targets. • The EOS provides the identification of the targets. • All the information is presented graphically as an overlay over a map display. • All the information generated is recorded and transferred in real time to the Ground Station. • The operator receives support information (voice or data) sent by the Ground Station staff. • All the information is recorded, making possible the reproduction of the complete scenario.							



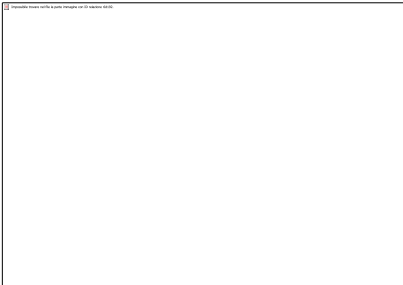
PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

91.- Shiplocus

Link:	http://www.gmv.com/en/Products/shiplocus/						
Applicable MS Sector(s):	Border control	Maritime Safety and Security	Fisheries Control	General Law Enforcement			
Contact Details of Owner:	GMV Isaac Newton 11 P.T.M. 28760 Tres Cantos Phone: +34 918 072 100 info@gmv.com						
Brief Description/ Photos/ Related Material							
Shiplocus system equips the organizations and agents performing inspection and surveillance with the necessary tools to exchange information and to support their operations. Comprised of a control center and a variety of user terminals (fixed and mobile - PDAs -), the system allows the user to create, edit and publish new forms or specific information requests to the network. It is also possible to download already existing inspection certificates. All this is done in real time, which contributes to an increased effectiveness and keeps inspections from being duplicated. It also allows access to information over the Internet. The system coordinates the search and rescue operations in the maritime environment from the control center. It also allows connecting to the already existing maritime traffic control systems, which together with the implementation of a geographic information system enable support in case of emergency.							
Stage of Development:	Already on the market						
Technology Readiness Level (TRL 1-9):	TRL 9						
Domains of Applications:	Surveillance, inspection, maritime traffic control, search and rescue						
Keywords:	Exchange information, real time, access to Internet, bathymetry, traceability						
Comments on the Technology							
This system manages different aspects of fleets of ships used in the transportation of goods and passengers: - Navigation aid: positioning, course and speed - Traffic management: ships monitoring and tracking; collisions detection - Determination of navigation channel: bathymetric exploration - Information about navigation conditions: measurement of different variables (pressure, temperature, volume, level) - Safety: response to ship alarms - Cargo management, intermodality, traceability: tracking of stocks in real time, coordinated performance for different means transportation, traceability of valuable, perishable or singular items - Optimal resource management: tools for the schedule management, sign in/sign out and human resources and materials.							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

92.- SVAP

Link:	http://www.navantia.es/interior.php?id_sec=3&id_pag=307						
Applicable MS Sector(s):	Defence	Maritime Safety and Security	Marine Environment Monitoring	General Law Enforcement			
Contact Details of Owner:	Navantia Carretera de la Carranza, s/n 11100 San Fernando Phone: +34 956 599 500 direccion.fa@navantia.es						
Brief Description/ Photos/ Related Material							
Navantia has developed a Port Surveillance and Security System (SVAP) whose main objective is to increase the security of the ports and ships. The concept is based on a integrated protection, global and extensive, both in size and in time (24/7). SVAP is designed as a complete system covering any aspect of the security of a facility. It integrates existing surveillance systems and in turn can be integrated with port management systems. The management of the SVAP system has been designed as a Command and Control System. This Command and Control System situational awareness, decision making framework, transmission of orders, and execution control inter-related functions are all managed by the SVAP system and provided to the Security Director in real-time.							
Stage of Development:	Already on the market						
Technology Readiness Level (TRL 1-9):	TRL 9						
Domains of Applications:	Surveillance, security						
Keywords:	Radar, infrared, cameras, sonar, AIS, VHF						
Comments on the Technology							
The system is based on an architecture, in which sensors and dissuasion elements are linked to a control centre via a communications network. A modular system is built in which any threat that crosses a virtual perimeter on (or under) the water surface, will be detected by the sensors and an alarm will be generated and managed at a control centre where the elements of deterrence and reaction area enabled, according to established protocols. NAVANTIA's specially developed software automatically detects targets and geo-references them on a map of the area indicating their direction, speed and condition (friend, foe, unknown) and identities them with a visible and infrared image or video that is registered and recorded in the system. The activation of the alarm by the operator starts a programmed sequence both dissuasive and informative. The basic capacities of the system are: - Automatic detection of contacts - Operator alert of possible threats - Automatic threat tracking - GIS localization - Dissuasion elements activation							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

93.- HORUS

Link:	https://www.thalesgroup.com/en/spain/press-release/thales-presents-its-smart-surveillance-solution						
Applicable MS Sector(s):	Border control	Defence	Maritime Safety and Security				
Contact Details of Owner:	THALES GROUP Edificio Álamo – Centro Empresarial Parque Norte C/ Serrano Galvache, 56 28033 – Madrid Phone: +34 912737200						
Brief Description/ Photos/ Related Material							
System integrated by sensors addressed to the accomplishment of works of surveillance and recognition both maritime and terrestrial with applications directed to civil or military use. This tool allows to respond to the current needs in the field of border control, surveillance and tracking of criminal activities and detection, tracking and identification of mini drones.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Surveillance system, Multisensor surveillance system						
Keywords:	Multisensor surveillance system, maritime and terrestrial, border control, surveillance, tracking, mini drones, detection.						
Comments on the Technology							
Horus is characterised by its high connectivity, enhancing the information flow between local positions and coordination centres with the gathering of sensor data and sending of commands. At the same time it makes operational units more effective with the use of a web viewer, reception of information captured by sensors and obtaining unit position from control positions and centres.							

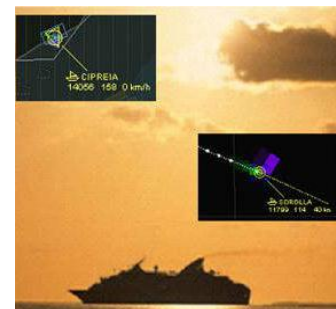
PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

94.- Argos – Surveillance Optronic System

Link:	http://grupooesia.com/en/portfolio-productos-ingenieria/sistema-argos/						
Applicable MS Sector(s):	Defence	Maritime Safety and Security					
Contact Details of Owner:	GRUPO OESÍA C/ Marie Curie, 17-19, Edif. II 4ª y 5ª Planta 28521 - Rivas – Vaciamadrid, Madrid Phone: +34 913098600 E-mail: marketing@oesia.com						
Brief Description/ Photos/ Related Material							
ARGOS (Surveillance Optronic System ARGOS) is a multisensor stabilized system for observation and surveillance. Its performances allows for day vision in the most severe weather conditions (smoke, fog and darkness).The ARGOS system is a high quality optronic surveillance system for day/night vision, used for navigation, observation and surveillance in fixed installations, sea and earth platforms, and it is able to operate in the most extreme weather conditions.Thanks to its modular concept, it can be easily and simply installed in any platform.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Video surveillance system						
Keywords:	Multisensor, day/night vision, sea/earth platform, high resolution, measure distances, four axis						
Comments on the Technology							
ARGOS is now installed and operating in the latest ships of the Spanish Navy (LHD Juan Carlos I, BAC Cantabria, F105 Cristobal Colon and the series of Maritime Action Ships BAM OPVs) as well as in different surveillance points of the Strait of Gibraltar. The ensemble of sensors ("Payload") is composed by a high quality cooled thermographic camera MWIR (Castor HR or Castor HD), a high resolution and sensibility camera CCD with a continuous zoom and a laser rangefinder ELRF ("Eye safe") to measure distances. This electro-optical multisensor system is placed in a four axis stabilized platform that allow to maintain always stable and clear the image even if the platform where it is installed keeps moving.							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

95.- Argos V 5000

Link:	http://www.nucleocc.com/productos/argos_v_5000?lang=27						
Applicable MS Sector(s):	Defence	Maritime Safety and Security					
Contact Details of Owner:	DF NÚCLEO C/ Vía de los Poblados, 7 28033 – Madrid Phone: +34 913826600						
Brief Description/ Photos/ Related Material							
The ARGOS V 5000 system is a VTS system (Vessel Traffic System) which allows radar and automatic tracking for ships and mobile stations around coastal maritime regions, within ports, and at sea. Its main design and its objective is to provide comprehensive maritime management systems, to increase levels of security, and to adhere to regulations imposed by existing navigation rules, along with the procedures implemented by official organizations such as IMO, IALA, IHO, etc. Both in clear weather and adverse weather conditions.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Surveillance system, Radar surveillance system						
Keywords:	Radar, VTS System, high-level radar information, AIS data, comprehensive maritime management systems						
Comments on the Technology							
The elements which comprise the ARGOS V 5000 system are a subsystem used for processing signals and high-level radar information, a subsystem used for processing AIS data (Automatic Identification System), high-level goniometric and meteorological data, a high fallibility data merger system, a display subsystem and high performance monitoring system, a scalable administration and management subsystem, a legally compliant recording/playback system, a signal acquisition unit, a high precision synchronisation subsystem, and a communications subsystem based on a local area network (LAN), which form a flexible system architecture dependent on certain requirements.							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

9. Integrable components

a. France

96.- Constellation-SDI

Link:	https://www.geomatys.com/en/constellation.html						
Applicable MS Sector(s):	Fisheries Control	Maritime Safety and Security	Marine Environment Monitoring	General Law Enforcement			
Contact Details of Owner:	Geomatys 24 rue Pierre Renaudel 13200 Arles Phone: +33 (0)4 84 49 02 26 contact@geomatys.com						
Brief Description/ Photos/ Related Material							
Constellation-SDI is the development base for our client geospatial applications. It is a tool that is packed with features to meet all the requirements for the processing of geospatial information. It is based on geospatial libraries, also developed by Geomatys. The Geomatys experts do more than master their tools, they build them. Constellation-SDI is the new geospatial infrastructure developed by Geomatys. More than a simple Geographical Information System, Constellation-SDI supports all the processing of geospatial data, from collection to distribution, from raster image to sensor data. It is the infrastructure on which all the customised services that need an Open Source base are based. The infrastructure combines a wealth of functions with ease of use. This is a web application that requires very little technical support.							
Stage of Development:	Already on the market						
Technology Readiness Level (TRL 1-9):	TRL 9						
Domains of Applications:	GIS development, spatial observation, oceanography						
Keywords:	geospatial, data						
Comments on the Technology							
The main features of the software are: - It manages 6 different formats of data: vector, raster, sensor and 3 upload modes - It manages metadata programmatically related to their data, imports metadata capacity ISO 19115/19139 formats, easy extension of the forms and completion validator form. - It can use histogram of displayable data values, view applied style in real time and filter on the zoom scale - It can create, start and stop services directly, it displays logs of a service and edits metadata services - Setup, planning and automation of automatic processing for automatic production of maps - About sensors management, it is able to add XML file O&M, import and format file creation SensorML and it displays comments on a graph and the sensors on a map for SOS Services.							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

97.- KINGKLIP – Hull Mounted Sonar

Link:	https://www.thalesgroup.com/en/worldwide/defence/kingklip-hull-mounted-sonar						
Applicable MS Sector(s):	Defence	Border control	Maritime Safety and Security				
Contact Details of Owner:	Thales Underwater Systems SAS 525 route des dolines 06903 Sophia Antipolis Phone: +33 (0)4 92 96 30 00						
Brief Description/ Photos/ Related Material							
High quality sonar with concurrent all-round anti-submarine warfare surveillance and self-protection to carry out escort, harassment and prosecution in littoral waters. - High performance in littoral environment: Excellent performance against submarines particularly in harsh conditions. - Self-protection against multiple threats: ASW capability with simultaneous early torpedo warning and complementary underwater obstacle / Mine-like avoidance capability. - Robust and easy to integrate: Few installation units / Light maintenance and support - Cooperative asset: Accurate target positioning to prosecute and engage distant submarines with airborne assets and capable of multi-static operation with most current low frequency sonars. - Reduced operator workload: User-friendly, integrated Human Computer Interface and same look & feel as CAPTAS VDS for high interoperability. - Mammals safe: Adjustable source level and noise monitoring for sea mammal protection.				 			
Stage of Development:	Already on the market						
Technology Readiness Level (TRL 1-9):	TRL 9						
Domains of Applications:	Defense, anti-submarine, littoral environment						
Keywords:	Sonar, littoral, threats, torpedo, submarine, mammal						
Comments on the Technology							
The main characteristics of the Kingklip HMS are: - Designed for medium size Surface Combatant - Cylindrical array installed inside an acoustically transparent dome (keel mounted) - ASW all-round surveillance - Several transmit configurations allowing operation with two ships in the same area - Integrated On-Board-Training capability - Embedded bathythermograph & performance prediction function for sonar optimisation Some technical features are: - Array (Weight/Height/Diameter): (1.4t / 0.7m / 1.2m) - Active frequency range: 5250 to 8000 Hz - Pulse types: Hyperbolic FM, CW and COMBO - Pulse length: 60 ms to 4 s							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

98.- C-CAP Wi 55

Link:	http://epcots.fr/portfolio_page/rugged-touch-tables/						
Applicable MS Sector(s):	Defence	Maritime Safety and Security	Border control	General Law Enforcement			
Contact Details of Owner:	EPCOTS 66 impasse Edouard Branly 83130 La Garde Phone: +33 (0)4 98 08 00 00 info@epcots.fr						
Brief Description/ Photos/ Related Material							
EPCOTS Touch Tables for marine and navy applications are developed to facilitate the collaborative work and provide a greater understanding of any onboard information such as specific tactical situation or navigation data. Those touch tables are engineered to withstand extreme weather conditions and address the various environmental requirements listed in common international standards such as MIL STD 810, MIL STD 167, MIL STD 461...							
Stage of Development:	Already on the market						
Technology Readiness Level (TRL 1-9):	TRL 9						
Domains of Applications:	Navy, civil marine, collaborative work						
Keywords:	Extreme weather conditions, TFT LCD, touch sensor						
Comments on the Technology							
EPCOTS designs and manufactures a range of rugged TouchTable from 32" to 55" for all types of naval and marine applications which key points are: - High Quality TFT LCD (high contrast ratio and luminance) - Dimensions: 1740x1190x960 mm - Resolution: 1920*1080 (HD), 4K (optional) - Touch sensor : Infrared or Projected Capacitive (gloves use compliant), multitouch : up to 100 points - Typical product availability: 8 to 10 years - Luminance : up to 1000 cd/m² (Sunlight readability enhancement) - Viewing angle: 178°/178° - Dimming, ON/OFF, OSD access on weatherproof dimmable front panel keyboard (Dimming 0-100%, Blackout with automatic disabling of touch sensor) - Integrated and configurable PC (CPU, GPU...), storage on HDD, SSD or CF... - I/O interface configurable : Ethernet, USB, Serial port... - Power : 115 VAC 60 Hz or 220 VAC 50 Hz							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

99.- Naïade Environment

Link:	http://www.hemera.fr/page.php?id=105						
Applicable MS Sector(s):	Fisheries Control	Maritime Safety and Security	Marine Environment Monitoring	General Law Enforcement			
Contact Details of Owner:	Hemera 25 Avenue du Granier 38240 Meylan Phone: +33 (0)4 76 51 73 95 sales@hemera-innovation.com						
Brief Description/ Photos/ Related Material							
Naïade environmental analyser is designed to meet operating requirements of a broad range of applications including waste water treatment plants, drinking water plants, surface water and sea water. Integrated in a cabinet with a battery system in case of power outage, or associated with a GPRS communication protocol, the analyser can be located at the sampling point. This automated instrument manages by itself detection, signal treatment and data storage. For ease of use, the analyser is equipped with colour touch screen and intuitive interface. Naïade environmental analyser can measure simultaneously a wide range of pollutants such as Nitrogen compounds, Phosphate, Hydrogen sulphide, Hydrocarbons and Organic Matters. By using an optical method, the measurement doesn't require chemicals.							
Stage of Development:	Already on the market						
Technology Readiness Level (TRL 1-9):	TRL 9						
Domains of Applications:	Surface water, sea water						
Keywords:	Analyser, detection, signal treatment, data storage						
Comments on the Technology							
The main features of the analyser are: - High degree of stability, selectivity and sensitivity - No second pollution - Up to eight componentes measured simultaneously - Uses FTLS mathematical (Resolution, sensivity, stability and reability superior to dispersive or filter NDUV analyzers) - Non-contact with sample - Upgrade - parameters: nitrate, color by changing software - No replacement parts into 5 years.							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

100.- STYRIS

Link:	http://www.signalis.com/styris/general/						
Applicable MS Sector(s):	Defence	Maritime Safety and Security	Marine Environment Monitoring				
Contact Details of Owner:	SIGNALIS France - Office La Ciotat ZI ATHELIA 2 - 220, impasse du Serpolet 13704 LA CIOTAT Cedex Phone: +33 (0)1 39 96 44 44 sales@signalis.com						
Brief Description/ Photos/ Related Material							
STYRIS® is the SIGNALIS single product line for collection, processing, consolidation, enrichment, distribution and display of data deriving from a wide range of maritime sensors such as radars, AIS, RDF, cameras, weather stations and sonars. It was developed to achieve the best ergonomic HMI for Operator's tasks in order to maintain awareness of the complete traffic image generated from fused data of the sensors and external systems. STYRIS provides intuitive means for the operator to retrieve detailed information related to the objects displayed on the traffic image and to interact with the integrated functions, such as sensor settings, cameras control, etc.							
Stage of Development:	Already on the market						
Technology Readiness Level (TRL 1-9):	TRL 9						
Domains of Applications:	Data from maritime sensors						
Keywords:	Radar, AIS, RDF, camera, processing, enrichment, information						
Comments on the Technology							
STYRIS® is used for the implementation and delivery of turnkey systems covering the full spectrum of Maritime Domain Awareness (MDA) from both a Safety and Security perspective. Typical applications are for Vessel Traffic Services (VTS), Coastal Surveillance Systems (CSS) and maritime Critical Infrastructure Protection (CIP) systems. SIGNALIS's unique software technology, developed in house specifically for maritime applications, can be tailored to satisfy the highest level of customer demands for Port authorities, Ministry of Defense, Navies, Coast guard, Police and Private companies. As per our User Centric Design approach, the involvement of our customers as key partners at every stage of the product development is one of the main added values STYRIS® provides, making it a true user leading edge product.							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

b. Greece

101.- ATTISAT FL500, Flat Satellite Antenna

Link:	http://www.attisat.gr/engl_lang_ver/engl_fl500_tecnica.asp						
Applicable MS Sector(s):	Defence	Maritime Safety and Security	Border control				
Contact Details of Owner:	ATTISAT SATELLITE SYSTEMS 141, Thessalonikis str., GR-18346 Athens, Greece Tel.: +30-2109939335, +30-210-9939177, e-mail:info@attisat.gr						
Brief Description/ Photos/ Related Material							
ATTISAT flat antennas distinguish from all other satellite antennas due to their impressive design and exceptional technical features. In contrast with conventional parabolic antennas, ATTISAT flat antennas are based on a totally different philosophy. Many small receivers collect the signals sent by the satellite. They are then guided, via printed circuits, to an amplifier (LNB) integrated at the back of the antenna. This different philosophy combined with the advanced manufacturing technology provides significant technical advantages							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:							
Keywords:	satellite antennas						
Comments on the Technology							
Technical Features Size: 53x53cm, Width: 5cm, Weight: 3,5 Kg, Bandwidth (BW): 10,7-12,75 GHz, Gain: >34,5 dB, Cross Polarization discrimination: <-30 dB, Elevation adjustment: 10°-70°, Azimuth adjustment: 0°-180°, Polarization adjustment: -22,5° to +22,5°, Polarisation: Vertical (VP) - Horizontal (HP), Mounting: On a 40-60 mm diameter post (wall or floor), LNB noise figure: 0,7 dB, LNB gain: 55 dB, Voltage: 11,5-14,2 (VP), 15,8-19V (HP), Current: 250 mA max., Operational temperature: -25° to +60°C							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

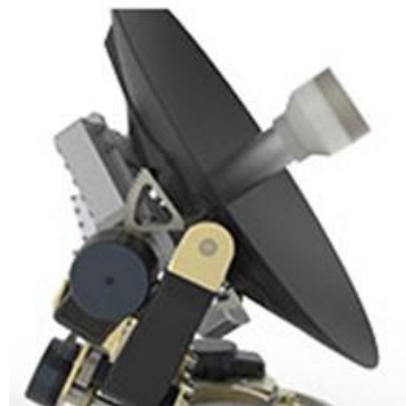
c. Italy

102.- BB150 Ku-band

Link:	http://www.skytech-research.com/bb150.php						
Applicable MS Sector(s):	Maritime Safety and Security						
Contact Details of Owner:	Skytech Italia Srl Via di Grottarossa 1148, 00189 Rome, ITALY Phone: +39 06 64 01 44 97						
Brief Description/ Photos/ Related Material							
The BB150 Ku-Band is the last updated product of Skytechfor the heavy duty professional worldwide market. This is the largest model in the BBxx product range, designed for wide coverage Ku-band beams, high-reliability and high-bandwidth applications such as cruise ships, live video streaming from heavy duty Oil&Gas Offshore Operation Support Vessels (OSV). It allows uninterrupted operation up to polar regions or marginal coverage areas. Based on the field-proven technology of the BB100 MKIII, the parabolic dish and the feed have been designed using state-of-the-art computer simulation software used in aero-space missions. The lightweight construction gives exceptional tracking agility, reduced stress on belts and motors for maximum operational life and minimum maintenance. This is the first antenna in the world to include all electronics into the radome, without any additional parts inside the boat.				 			
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	cruise & cargo ships, research vessels						
Keywords:							
Comments on the Technology							
Reflector: Radome diameter: 195 cm Antenna weight: 120 Kg (including radome) Operating temperature: -20°C/+60°C Heaters can be added on request for ambient temp <-20°C Antenna power: 110-230Vac, 50-60Hz Maximum angles: Roll +/- 30°; Pitch -25° / +100° Unlimited azimuth movement Rotary joint: Combined slip-ring for Ethernet and power, coaxial 2 way rotary joint for RF signals Tracking accuracy: <0.2° Pedestal type: 4 axis: azimuth, elevation, cross level, polarization skew							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

103.- BBIG30 Ku/Ka-Usat Airbone

Link:	http://www.skytech-research.com/bbig30.php						
Applicable MS Sector(s):	Maritime Safety and Security						
Contact Details of Owner:	Skytech Italia Srl Via di Grottarossa 1148, 00189 Rome, ITALY Phone: +39 06 64 01 44 97						
Brief Description/ Photos/ Related Material							
BroadBand Intelligence Gathering 30 cm Ku/Ka satellite antenna Leader in combining multiple bands onto a single radiant system, SKYTECH proudly presents BBIG30, an extremely light, compact and efficient aeronautical U-Sat antenna system which is capable to simultaneously operate on Ku and Ka extended bands. BBIG30, the smallest of BBIG antenna series and soon to be joined by BBIG45, ensures unmatched connectivity performances in relation to its size, due to its RF efficiency and tracking accuracy. BBIG30 is specifically designed to fit existing aeronautical mountings like airplane upper tail stabilizer, fuselage top or drone nose.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Executive airplaine, UAVs, Intelligence Gathering Missions						
Keywords:							
Comments on the Technology							
Reflector: 30cm ADE RF tuned carbon fibre Antenna weight: 9Kg \ 20 lb (with ACU) Operating temperature: -55°C/+60°C Antenna power: 20 to 36 Volts DC - 10A peak Performance: Elevation range: 0° to 95° (65 deg/sec); Roll range ± 20° (50 deg/sec) Azimuth range: unlimited 360° (70 deg/sec) Tracking accuracy: <0.2° Pedestal type: 4 axes: azimuth, cross-level, elevation, polarization skew Mechanics: 60% carbon fiber composite; 40% aluminium/titanium							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

104.- Applications and Data Processing – Drone APP

Link:	http://www.dermap.com/en/act-drones-satellites/drone-data-processing.html						
Applicable MS Sector(s):	Border control	Defence	Maritime Safety and Security	General Law Enforcement			
Contact Details of Owner:	DERMAP c/o Parco Scientifico e Tecnologico "Luigi Danieli" Via J. Linussio, 51 33100 Udine, Italia Tel: +39 0432 629 911 - 752 info@dermap.com						
Brief Description/ Photos/ Related Material							
A unique process that guides from planning to restitution of acquired data. THERMAL ACQUISITION: Overflights by drone equipped with thermal sensor. Acquisition and processing of the image with evidence of failures or low yields requiring cleaning. MULTISPECTRAL ACQUISITION: Overflights by drone equipped with a multispectral camera. Acquisition, processing and return thematic cartography with evidence of various vegetation indices (NDVI, SAVI). ACQUISITION AERO PHOTOGRAMMETRIC: Analysis of the sample area; verification of the control points on the ground; use of differential GPS; flight planning; return data on Cloud systems. DATA PROCESSING 3D: Analysis of the area concerned; checking of sensors to be used; flight planning; data acquisition; cartographic and GIS elaboration; return data on Cloud and Mobile platform.				 			
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Inspections of hazardous areas, Photogrammetry and aerial mapping, Scientific investigations						
Keywords:	UAS-drones, cameras and other sensors App for geographic data integration Remotely Piloted Aircraft Systems						
Comments on the Technology							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

105.- BB50 Ka-Band / Telenor THOR-7

Link:	http://www.skytech-research.com/bb50.php						
Applicable MS Sector(s):	Maritime Safety and Security						
Contact Details of Owner:	Skytech Italia Srl Via di Grottarossa 1148, 00189 Rome, ITALY Phone: +39 06 64 01 44 97						
Brief Description/ Photos/ Related Material							
This new Skytech product opens the ultra-fast Regional Ka-band internet market by reaching finally all Yachts owners of small and medium size and, above all, the super-fast Yachts which for various reasons could not install an heavy standard Vsat system. This new technological gem that is produced mainly in carbon fiber at high resistance and precision is now finally available and has a footprint of only 50 cm. weighing only 23Kg, and this technology has been designed based on the aerospace and military state of the art guaranteeing always at least 20Mb download and at least 1Mb upload while surfing even at 50 knots also under very rough sea. One hour only of fast and easy installation and no more long and costly commissioning are required thanks to the embedded modem, only one single power cable and a simple Ethernet cable to be connected to the Wi-Fi router / PC on board, and you will get the fastest, reliable and easiest Internet access that you have ever imagined or desired to get while browsing.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	fast yachts						
Keywords:	antennas, radars, data collector						
Comments on the Technology							
Regional Ka services for the best fast worldwide broadband satellite Internet operators Modem & ACU controller integrated into the dome, no coaxial cables Ready to use after installation, no commissioning needed Simplified one hour installation 23 Kg of weight only Ultra silent operation Does not need any maintenance for the first 5 years Skytech remote assistance service package 24/7/365							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

d. Portugal

106.- Offshore Abyssal OS

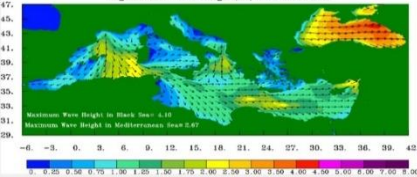
Link:	https://abyssal.eu/abyssal-os/offshore/						
Applicable MS Sector(s):	Fisheries Control	Maritime Safety and Security	Marine Environment Monitoring	General Law Enforcement			
Contact Details of Owner:	Abyssal Avenida da Liberdade, s/n Polo do Mar do UPTEC, Sala F4 4450-718 Leça da Palmeira, Matosinhos Phone: +351 220 120 768 info@abyssal.eu						
Brief Description/ Photos/ Related Material							
Abyssal OS Offshore is an advanced 3D Visualization and Operation Management System to support Pilots and Supervisors to perform tasks in complex and low visibility subsea environments, increasing safety and efficiency in ROV operations. It provides pilots and supervisors a real time 3D overview of the entire operation´s environment, increasing their overall spatial awareness. Resorting to augmented reality technology, Abyssal OS Offshore superimposes on the screen relevant and accurate information, such as waypoints, checkpoints and flight paths in order to support the pilot to reach his target safely and efficiently. It organizes worksites, keep track of every mission, and manage its data in real time.							
Stage of Development:	Already on the market						
Technology Readiness Level (TRL 1-9):	TRL 9						
Domains of Applications:	Subsea environment, safety, security						
Keywords:	3D visualisation, operation, augmented reality, geographical information						
Comments on the Technology							
About augmented reality, Abyssal allows you to create flight paths, extremely useful in high currents and low visibility conditions to indicate hazard free corridors increasing efficiency and safety. It also superimposes 3D objects on top of the video in order to provide a complete spatial awareness of the operations environment. The operator can select and identify targets to efficiently follow the correct path to the next asset on the mission's procedure list. About 3D viewer, with Abyssal's advanced technology, pilots are able to navigate with a real time extended FOV of at least 270°, increasing safety and efficiency of ROV operations. It enables to track multiple live assets at an updated rate of up to 30ms. About supervisor station, a remarkable Geographic Information System presents information accurately to the millimeter range. The operator can change, add and remove assets in the worksite, updating all of the connected stations in real-time. Finally, it's possible to manage overlay profiles, adding all relevant information instantly reflecting changes to the pilot's screen.							

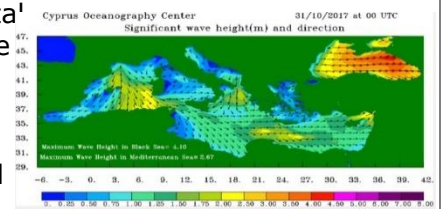
PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

10. Stand alone tools

a. Cyprus

107.- Cyprus Coastal Ocean Forecasting and Observing System (CYCOFOS)

Link:	http://www.oceanography.ucy.ac.cy/cycofos/offshore.html						
Applicable MS Sector(s):	Maritime Safety and Security	Marine Environment Monitoring					
Contact Details of Owner:	Oceanography Center University of Cyprus P.O. Box 20537 1678 Nicosia Tel.: +357 22 893 988 gzodiac@ucy.ac.cy						
Brief Description/ Photos/ Related Material							
Cyprus Coastal Ocean Forecasting and Observing System (CYCOFOS), is a sub-regional forecasting and observing system in the Eastern Mediterranean Levantine Basin, which covers the coastal and open sea areas of Cyprus, Cilician and Lattakian basins and the Eastern Levantine Base. CYCOFOS follows the developments of European research projects developing and promoting the operational oceanography, such as the MFSP, MFSTEP, MAMA, MERSEA, ECOOP, MyOcean. CYCOFOS is related also to operational oceanographic initiatives, such as EuroGOOS, MONGOOS, MedGLOSS and Copernicus-GMES.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Monitoring sea temperature, sea currents, waves and salinity						
Keywords:	Environmental Monitoring						
Comments on the Technology							



PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

b. France

108.- Electronic Navigation Chart S57

Link:	http://diffusion.shom.fr/produits/carte-marine/cartes-marines-s57.html						
Applicable MS Sector(s):	Defence	Maritime Safety and Security	Marine Environment Monitoring				
Contact Details of Owner:	SHOM 13 rue du Chatellier - CS 92803 29228 BREST CEDEX 2 Phone: +33 (0)2 56 312 312						
Brief Description/ Photos/ Related Material							
The Electronic Navigation Charts are established on the basis of vector map data (S - 57 format) containing the detailed description of each object (brand of markup, wrecks, underwater cables, restricted areas, sensors, etc...). SHOM puts at disposal for areas which the France is responsible cartographic data for professional applications in the field of management of the territory, of the State action at sea, protection of the environment, integration in derivatives... The purchase of a lot of data to the S57 format allows unlimited downloading of updated versions for 12 months from the date of purchase. The date of the last update is in the metadata associated with each batch.							
Stage of Development:	Already on the market						
Technology Readiness Level (TRL 1-9):	TRL 9						
Domains of Applications:	Hydrographic data						
Keywords:	Defense, Coastal, Navigation						
Comments on the Technology							
ENC S57 are classified according to 6 categories of scale: - Cat 1: Overview: scales larger than 1:1.500.000 - Cat 2: General: scales between 1:350.000 and 1:1.500.000 - Cat 3: Coast: scales between 1:90.000 and 1:350.000 - Cat 4: Approaches: scales between 1:22.000 and 1:90.000 - Cat 5: Port: scales ranging from 1:4.000 to 1:22.000 - Cat 6: Mooring: scales less than 1:4.000							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

109.- Operational evaluation

Link:	http://www.inpp.org/fr/technologies/evaluationoperationnelle.php						
Applicable MS Sector(s):	Defence	Maritime Safety and Security	Marine Environment Monitoring				
Contact Details of Owner:	I.N.P.P. Port de la Pointe Rouge - Entrée n° 3 13008 Marseille Phone: +33 (0)4 96 14 09 40 info@inpp.org						
Brief Description/ Photos/ Related Material							
The Institut National de Plongée Professionnelle (National Institute Professional Scuba Diving) ensures the operational evaluation of materials, equipment and gear, ensuring the technical coordination of the operational assessment of underwater vessels within the framework of the Commission trials - civil submarines of the Ministry responsible for Transport Operations. (Ref. réglementation the safety of ships - article 120.2.06) To perform these operations, the I. N.P.P has a technical logistics, an operational logistics, a medical logistics, logistics of home and security of access.							
Stage of Development:	Already on the market						
Technology Readiness Level (TRL 1-9):	TRL 9						
Domains of Applications:	Underwater						
Keywords:	Evaluation, material, equipment, trials						
Comments on the Technology							
The main ressources are: - Personal technicians (mechanics, electro-mecaniciens, electronics, water...) - Specialized workshops with machine tools and recompression of tests up to 100 bar. - Media and barge with equipment for underwater work ships - Means of intervention (independent, arguile, bubble of diving and diving system saturation 200 meters) - Water with piers of parking supply fluid (fluid and energy) and means of handling. - Cells of aircraft (canadair scale 1 and Chopper ecureil) for survival rescue. - Medical service with hyperbaristes doctor and nurse. - Hyperbaric therapy.							

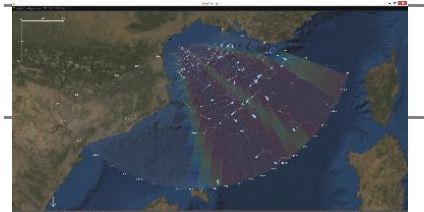
PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

110.- Underwater Vision Profiler

Link:	http://www.hydroptic.com/uvp.html						
Applicable MS Sector(s):	Fisheries Control	Marine Environment Monitoring	General Law Enforcement				
Contact Details of Owner:	Hydroptic SARL 33 route de ségoufielle 32600 L'Isle-jourdain Phone: +33 (0)9 63 24 82 20 sales@hydroptic.com						
Brief Description/ Photos/ Related Material							
The Underwater Vision Profiler or UVP (CNRS patent) is designed to study large (>100 μm) particles and zooplankton simultaneously and to quantify them in a known volume of water. The UVP system makes use of computerised optical technology with custom lighting to acquire digital images of zooplankton IN SITU down to depths of 6000m. The UVP acquires only in-focus images in a volume of water delimited by a light beam issued from red light-emitting diodes (LEDs) in 100μs flashes. The typical light beam illuminates an area of 4x20 centimetres which gives a sampling volume of 1 litre per image. When interfaced with conventional CTD measuring devices, the distribution of particles and fauna can be displayed in real time integrated with the CTD metadata. The high-resolution digital image can then be processed by the computer.							
Stage of Development:	Already on the market						
Technology Readiness Level (TRL 1-9):	TRL 9						
Domains of Applications:	Particles and zooplankton study						
Keywords:	Computerised optical, custom lighting, digital images						
Comments on the Technology							
The image analysis software is implemented in the camera to acquire and process images in real time in a number of modes. These modes are: (1) Full process: all images are saved and processed in real time, (2) Image acquisition only: the images are recorded on the flash memory or the hard drive, (3) Mixed process: the images are acquired and processed to get size and gray level for each object. Vignette images or full images of objects above a preset pixel size limit are saved on the flash memory or the hard drive. This mode saves memory. (4) Process only: the images are processed and only the size and mean gray value of each of the detected object is saved in a text file. The pressure and environmental data are saved with the measurements from the objects and some summarized data are transmitted to the user in real time.							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

111.- Stradivarius

Link:	http://www.diginext.fr/images/download/STRADIVARIUS%201.png						
Applicable MS Sector(s):	Defence	Border control	Maritime Safety and Security	Customs	General Law Enforcement		
Contact Details of Owner:	Diginext Parc d'activités de La Duranne 45, impasse de la Draille 13857 Aix-en-Provence Phone: +33 (0)4 42 90 82 82 sales@diginext.fr						
Brief Description/ Photos/ Related Material							
STRADIVARIUS is a brand-new HF Surface Wave Radar (HFSWR) for cost-effective, accurate and reliable surveillance of wide maritime areas beyond the horizon, such as the EEZ. One of the key breakthroughs of STRADIVARIUS is its unique capability to provide accurate and consistent target detection within its entire range. This continuous and homogeneous coverage can be reached as STRADIVARIUS technology is designed to manage the main challenges of modern HFSWR: Mitigation of both ionospheric and sea clutters. The main characteristic of STRADIVARIUS is its ability to detect and track farther and smaller targets than any other HFSWR, providing a 200 Nm surveillance range for targets as small as trawler, all-weather, 24/7. It can be used as a standalone system or integrated in an existing surveillance solution, as an excellent complement to optimize usage of existing assets such as UAVs, AIS, satellites, OPVs, surveillance aircraft, etc. Therefore it provides an efficient way to focus other assets in high added value operations such as identification or interception.				 			
Stage of Development:	Already on the market						
Technology Readiness Level (TRL 1-9):	TRL 9						
Domains of Applications:	Surveillance, tracking, identification, interception						
Keywords:	Radar, wide areas, accurate target, coverage						
Comments on the Technology							
Stradivarius unique features offer several advantages compared to any other HF radar: - Wide coverage: Up to 400km of shoreline for 200Nm coverage - Lower power: Continuous waveforms reduce transmitted power - Smaller antennas: Reducing visual and environmental impact - Easily scalable: Several radars can share the same frequencies due to patented orthogonal waveforms - Low possession cost: Mostly made of COTS for low life cycle/maintenance costs - Autonomous: One single operator can remotely control and operate Stradivarius radar - Easy C4i integration: Operated as standalone solution or Integrated in C4I system							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

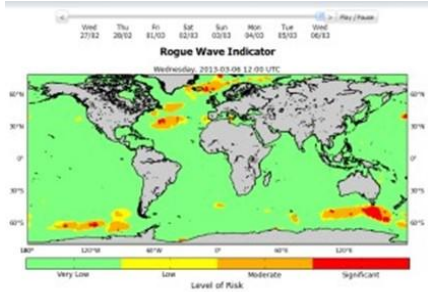
112.- SmartFind AIS Class A Transponder

Link:	https://www.mcmurdogroup.com/mcmurdo-products/mcmurdo-smartfind-m5-ais-class-a-transponder/						
Applicable MS Sector(s):	Defence	Maritime Safety and Security	Border control	General Law Enforcement			
Contact Details of Owner:	McMURDO Bât. D, Office D204 (2nd floor) 2405 Route des Dolines 06560 Valbonne Sophia-Antipolis Phone: +33 (0)4 92 90 70 40 sales@mcmurdogroup.com						
Brief Description/ Photos/ Related Material							
The McMurdo SmartFind M5 AIS Class A Transponder is packed with powerful features. It is the first to include an AIS MOB and AIS SART alarm function, with a Steer To Rescue MOB display enabling you to quickly and easily navigate to the location of the MOB. As well as the traditional “radar style” display and AIS target list views, the SmartFind M5 also features an embedded coastline map which accurately plots the AIS equipped vessels on a chart overview display - without the need to connect to an external plotter. Designed to operate as a stand alone unit, the McMurdo SmartFind M5 AIS Class A Transponder can also be integrated with ECDIS (Electronic Chart Display), ECS (Electronic Chart System) or chartplotters via its NMEA0183, NMEA2000 and USB interfaces. It can also be interfaced with a PC system using the PC AIS Viewer software supplied with the unit.							
Stage of Development:	Already on the market						
Technology Readiness Level (TRL 1-9):	TRL 9						
Domains of Applications:	Identification, tracking						
Keywords:	AIS MOB, AIS SART, ECDIS, ECS, plotter						
Comments on the Technology							
The main characteristics of M5 AIS Class A Transponder are: - Compact, low cost solution - Meets EU Fishing Mandate requirements for Class A shipborne AIS transponders - 3.5” colour LCD display including embedded coastline map - Target list and radar overview displays - Unique AIS MOB and AIS alarm function - Optimised for use with McMurdo S10 and S20 personal AIS beacons - “Buddy List” of crew AIS Beacon IDs allows easy identification of crewmember in distress - NMEA0183, NMEA2000 and USB interface to ECDIS, ECS and chartplotting systems - Includes GPS antenna - Optional remote MOB/Alarm sounder							



PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

113.- SAVaS

Link:	https://www.mcmurdogroup.com/mcmurdo-products/mcmurdo-smartfind-m5-ais-class-a-transponder/						
Applicable MS Sector(s):	Defence	Maritime Safety and Security	Border control	General Law Enforcement			
Contact Details of Owner:	NOVELTIS 153, rue du Lac 31670 Labège Phone: +33 (0)5 62 88 11 11 contact@noveltis.fr						
Brief Description/ Photos/ Related Material							
SAVaS is a service for the forecasting and warning of sea states and dangers including innovative indicators for rogue waves, extreme waves, steep seas, crossed seas, etc. The service offers continuous and tailored protection for all civilian and military actors involved in the marine environment. It provides continuous 7-day forecasts of tell-tale indicators by taking into account the size of ships and offshore platforms to adapt risk assessment based on their vulnerabilities. Forecasts are produced at different spatial and temporal scales, and are updated every 6 hours. The information delivered by SAVaS is reliable, accurate, fast and easy to use and interpret. SAVaS is completely independent and is operational worldwide. SAVaS has been tested and approved by the French Navy after an experience with one of its ships.							
Stage of Development:	Already on the market						
Technology Readiness Level (TRL 1-9):	TRL 9						
Domains of Applications:	Naval ships, maritime ships, border control						
Keywords:	Forecast, waves, protection, indicators, independent						
Comments on the Technology							
The SAVaS mission is: - Anticipate and locate the risk of extreme and rogue waves in any location of any ocean and sea - Secure and protect people, vessels and infrastructures from the threats of these waves - Provide a decision-making support in unstable and dangerous situation - Ensure a continuous monitoring of the sea state and its risks Their main characteristics are: - Intelligent alert service: risk assessment matched to the size of the target of interest - Latest generation of deterministic and statistical modeling chain - Autonomous and reliable system: continuous validation with satellite observations and buoy data - Requires no software installation by the end-user							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

114.- ASV Software Suite

Link:	http://www.asv.fr/en/produits/the-asv-software-suite						
Applicable MS Sector(s):	Defence	Maritime Safety and Security	Border control	Marine Environment Monitoring	General Law Enforcement		
Contact Details of Owner:	ASV S.A. 65 rue de la Garenne 92310 Sèvres Phone: +33 (0)1 41 15 94 20 contactus@asv.fr						
Brief Description/ Photos/ Related Material							
AUTOMATIC SEA VISION® (ASV) answers the needs of an automatic maritime video surveillance. Using a network of infrared or visible cameras, ASV provides security for the ships, installations, platforms or infrastructures by: - extending the capabilities of visual watch to address maritime risk at sea; - providing greater nautical safety; - improving the effectiveness of nautical watch through automation and high-performance solutions. The ASV software suite is composed of DET, SERVO and ARGUS independent modules meeting the following requirements: - automatic detection and tracking of all surface targets existing within a nautical environment; - control and command of a pan-tilt-zoom camera; - display video and information using a simple user interface; - control and command of a non-lethal effector enabling immediate implementation of an appropriate response; - interface with the ship's navigational data.							
Stage of Development:	Already on the market						
Technology Readiness Level (TRL 1-9):	TRL 9						
Domains of Applications:	Security, trafficking, immigration						
Keywords:	Camera, infrared, data recording, control, alerts						
Comments on the Technology							
The ASV video analytics technology allows to make a network of cameras: - Autonomous : use of cameras without the need for an operator; - Intelligent: watch, detection and tracking of all objects seen by the camera. With the ASV software, the network of cameras becomes a new sensor that is capable, like a radar system, to deliver an automatic indication that something is present within the area. This intelligent camera makes it possible to analyse the complete maritime image and provide the pertinent data, which are invisible to the other sensors, such as: - very small targets - objects that do not reflect radar waves - mobile objects without AIS transmitters.							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

115.- ADVANSYS Mission Management Systems for XXV

Link:	http://www.prolexia.fr/en/Products/MissionPlanning						
Applicable MS Sector(s):	Fisheries Control	Maritime Safety and Security	Defence	Marine Environment Monitoring			
Contact Details of Owner:	PROLEXIA 865 Avenue De Bruxelles - Parc d'Activité des Playes 83500 La Seyne sur Mer Phone: +33 (0)4 94 87 26 41 snicolas@prolexia.fr						
Brief Description/ Photos/ Related Material							
Dedicated to all users who want to efficiently prepare and program the mission of their robots, PROLEXIA's Mission Planning and Simulation capabilities represent the next generation in comprehensive and user-friendly mission planning. Now it's possible to: - Give operational experience in order to facilitate the implementation of the XXV or swarms of XXV - Provide 2D/3D Mission Planning Tools - Perform Multi-Tasks / Multi-vehicles / Multi-phases operations - Conduct Mission Feasibility Simulations to validate performances before mobilizing resources - Control and supervise Missions, Vehicle's states, Payloads and Sensors to embrace all the missions parameters easier - Use a post-mission analysis tool to review missions in details - Provide last generation of Human-Machine interface such as 3D and multi-touch devices.				 			
Stage of Development:	Already on the market						
Technology Readiness Level (TRL 1-9):	TRL 9						
Domains of Applications:	Mission planning, simulation, control and supervise						
Keywords:	XXV (UGV, USV, UAV, AUV), mission, multi-vehicles						
Comments on the Technology							
Advansys system offers also: - Serious Games for Autonomous systems for defense, security and educational fields: • Model and simulate future systems to help design • Assess the feasibility of a mission or its reliability before executing real ones • Develop test bed simulators for designing systems • Train pilots and operators in a virtual environment - Augmented/Virtual reality, using terrain mapping to provide information such as, but not limited to: • Landscape data (main towns, 3D models, trajectories, ...) • Piloting helps (Obstacles, different areas, events, landmarks, ...) • Piloting parameters (altitude or depth, speed, distance to ground, ...) - Robotics: Prolexia provides an embedded intelligence controller that can be used in 3 modes: • Execution of the Mission generated by the MMS • Remote Operation via a joystick, smartphone or a tablet with augmented reality assistance							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

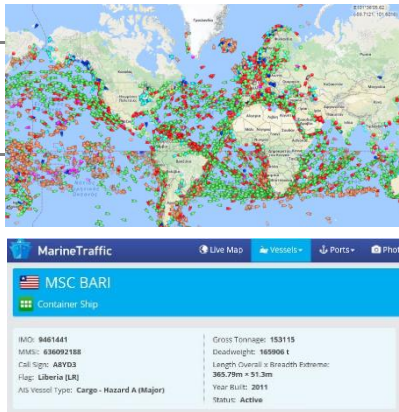
c. Greece

116.- Safe-on-board

Link:	http://www.telesto.gr/safe-on-board http://www.safe-on-board.net/						
Applicable MS Sector(s):	Maritime Safety and Security						
Contact Details of Owner:	Telesto Technologies 62 Imitou Str, Cholargos, 15561, Athens - Greece Email: contact@telesto.gr Tel: +30 2106541942						
Brief Description/ Photos/ Related Material							
Safe-On-Board is an application for cruise ship passengers. Its primary objective is to ensure the passenger safety and convenience. It assists the passenger understand his position and how to navigate around the ship and at the same time offers increased awareness by the crew about the safety of the passengers. The application (through its back end functionality), supports the officers of the ship to better assess the situation with regard to passengers' safety. The functionality of the application is in complete accordance to IMO (International Maritime Organization) and SOLAS (Safety-Of-Life-At-Sea) regulations.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	mobile smartphones for people on board passenger or cruise ships						
Keywords:	passenger safety, application						
Comments on the Technology							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

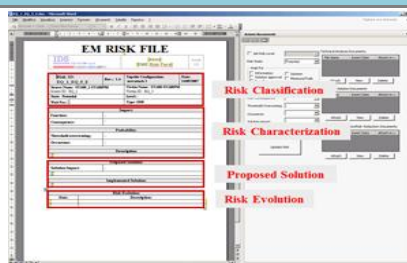
117.- MarineTraffic

Link:	www.marinetraffic.com						
Applicable MS Sector(s):	Maritime Safety and Security	General Law Enforcement	Defence	Border control			
Contact Details of Owner:	https://www.marinetraffic.com/en/p/contact-us						
Brief Description/ Photos/ Related Material							
MarineTraffic is an open, community-based project, which provides real-time information on the movements of ships and the current location of ships in harbours and ports. A database of information on the vessels include for example details of the location where they were built plus dimensions of the vessels, gross tonnage and International Maritime Organisation (IMO) number. Users can submit photographs of the vessels which other users can rate. Vessel locations are shown on a Google Maps background using the Google Maps API, Nautical Charts and OpenStreetMap. The basic MarineTraffic service can be used without cost; more advanced functions are available subject to payment.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	vessel tracking						
Keywords:	vessel tracking						
Comments on the Technology							
MarineTraffic was originally developed as an academic project at the University of the Aegean in Ermoupoli, Greece. In late 2007, Professor Dimitris Lekkas published it as a trial version.							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

d. Italy

118.- Ship EDF-EM Risk Management

Link:	https://www.idscorporation.com/naval/our-solutions-services/emc-emi-prediction-measurement/products/item/116-ship-edf-em-risk-management.html						
Applicable MS Sector(s):	Maritime Safety and Security						
Contact Details of Owner:	IDS Ingegneria dei Sistemi Via Enrica Calabresi, 24, 56121 Pisa, ITALY Phone: + 39 050 3124 1 E-mail: ids@idscorporation.com						
Brief Description/ Photos/ Related Material							
Ship EDF is a software framework conceived for the electromagnetic design of naval vessels. It is a comprehensive system capable of supporting concurrent electromagnetic design and assisting the optimization of naval platforms. It is a modular system which can provide coverage for EMC/EMI assessment including antenna placement and radiation hazard identification, as well as radar cross section (RCS) and infrared (IR) signature analysis. Tailored risk files and risk matrices have been introduced in the Ship EDF-EM Risk Management Module in order to manage the complexity of EM risks. The risk matrix contains a complete view of a ship's overall EM risk status. The risk file reports the assessment and evolution of the EM risk derived from the specialized EM analysis. The evaluation of the risks and the related mitigatory solutions can help to define the best choices for compromise, which once recognized, by the design authority and by the end users, will provide a general increase in understanding of a ship's capability and of the ways to get the best operational performance from it				 			
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	naval vessels						
Keywords:							
Comments on the Technology							
The EM Risk Management module is directly linked to the ship projects that are present in the database of the ShipEDF-EME module: all the information about the combat system (antennas, susceptible items, technical data sheets and position in the topside) are imported directly into the risk project. The system automatically performs the assessment of potential risk: by knowing the antennas' locations on the ship and their technical data (power, gain, susceptibility, etc.) the system automatically indicates to the user which analyses to perform by marking the relative risk as potential (both EMI and RADHAZ).							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

e. Spain

119.- Atlas of Species

Link:	http://www.ieo.es/en/web/ieo/atlas-de-las-especies						
Applicable MS Sector(s):	Fisheries Control	Marine Environment Monitoring	General Law Enforcement				
Contact Details of Owner:	Instituto Español de Oceanografía C/ Corazón de María, 8 28002 Madrid Phone: +34 913 421 100 webmaster@ieo.es						
Brief Description/ Photos/ Related Material							
The Atlas of Species is the first in Europe which integrates marine information with relevant information about different taxonomic groups (from phytoplankton to large species) for a period of more than 40 years of research and campaigns. From these data, a database that contains over 90,000 records and integrates a large number of taxa is built. The spatial database covers a sampled area of approximately 150,000 km2. With the aim of providing easy access to information has developed a spatial data infrastructure, consisting of a set of tools that enable interoperable access to data and metadata standards according to the European directive INSPIRE. Web Map Server is installed using ESRI ArcGis Server, which allows the publication of WMS, and REST services that can be used by other clients or ESRI native applications.							
Stage of Development:	Already on the market						
Technology Readiness Level (TRL 1-9):	TRL 9						
Domains of Applications:	Surveillance, marine life, atlas						
Keywords:	Species, taxonomic groups, records, Balearic Islands						
Comments on the Technology							
Data were collected from projects and campaigns carried out by the Centre Oceanografic de les Balears in the Balearic Sea. The oldest data belong to the 1970 and the most recent in 2010. The timescale includes series of long duration (up to 10 years) and data of specific campaigns. The project covers all of the Balearic Sea. Most data are located relatively close to the coast, especially in Majorca, and the number of records decreases as we go into the pelagic domain. The user can perform a search for a specific species, a taxon or other parameters such as: month, year, depth, technique of sampling, biological stage, project... The results can be displayed individually (points) or aggregate (through a grid 5x5km that represents the wealth of results obtained by species or taxon). Another important part of the infrastructure of spatial data is the search for services and data sets. For this reason an interoperable web catalogue via OGC CSW standards for catalogues was implemented according to the specifications of Directive INSPIRE.							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

11. Technologies outside project area

a. Equipment

1.- M-Series Underwater Acoustic Modems

Country of Origin:	DE						
Link:	https://www.evologics.de/en/products/acoustics/index.html						
Applicable MS Sector(s):	Maritime Safety and Security	Marine Environment Monitoring					
Contact Details of Owner:	EvoLogics GmbH Ackerstrasse 76 13355 Berlin Tel. +49 30 4679 862-0 sales@evologics.de						
Brief Description/ Photos/ Related Material							
The M-series relies on EvoLogics S2C broadband communication technology to overcome the challenges of dynamic underwater environment and deliver a great performance in various subsea conditions. S2C M-series modems are smaller and lighter than the standard EvoLogics R-series devices, but deliver the uncompromising performance of the full-sized product line. Up to 62.5 kbps for short-range transmissions							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Communications with Underwater Autonomous Vehicles and underwater platforms						
Keywords:	Underwater acoustic communications						
Comments on the Technology							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

2.- iSea-20, Gyro-stabilized EO / IR Camera Payloads

Country of Origin:	IL						
Link:	http://www.controp.com/missions-platforms/maritime/						
Applicable MS Sector(s):	Maritime Safety and Security	General Law Enforcement	Border control	Marine Environment Monitoring	Customs	Defence	
Contact Details of Owner:	CONTROP Precision Technologies Ltd. 4 Haharash Street, Building A, Hod Hasharon Telf: +972-9-744-0661 info@controp.com						
Brief Description/ Photos/ Related Material							
The iSea-20 is a compact Day/Night observation system especially configured for marine patrol boat applications. The iSea-20 is easily integrated onto a wide variety of maritime vessels due to its flexible configuration, making it suitable for most requirements. Enables a wide range of communication interfaces to the host vehicle including RS-422. The iSea-20 is operated by a ruggedized Control Unit(CU) with a thumb LOS control stick and all control switches are specially designed for rough environment conditions and for best human comfort. The CU could be attached to a fixed location or using a flexible cable enabling it to be movable.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Unmanned Maritime Boats, USVs						
Keywords:	patrolling, camera, observation system						
Comments on the Technology							
MAIN FEATURES							
• Maritime patrol boats and ships applications. • Three (3) Gimbals Gyro-stabilized. • Sensors: - High performance Thermal Imaging Camera. - High performance daylight channel using color camera and x22 Zoom Lens. - Optional Eyesafe Laser Range Finder. - Optional Laser Pointer. • Light weight – 10 kg (Turret). • Image Enhancement (Built-in) and Local AGC capabilities. • Automatic Target Tracker. • Customized graphics superimposed on video.							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

3.- DSIT's Shield (Diver Detection Sonars)

Country of Origin:	IL						
Link:	https://dsit.co.il/products/underwater-security/						
Applicable MS Sector(s):	Maritime Safety and Security						
Contact Details of Owner:	DSIT 2 Rechavaam Zeevi St. Givat Shmuel 5401777 Phone: 972-3-5313333 marketing@dsit.co.il						
Brief Description/ Photos/ Related Material							
The threats to offshore and coastal critical infrastructure have produced a need for sophisticated underwater surveillance solutions. Designed with a single purpose in mind – superior performance – DSIT's fixed and portable systems provide the most advanced underwater security solutions available. Our solutions are tailored for port security, energy terminal protection, platform security, ship protection and harbor surveillance. Our comprehensive line of underwater security products covers the entire spectrum of surveillance, from the very long range detection of submarines up to close monitoring of close circuit divers.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	8						
Domains of Applications:	long term security and surveillance of coastal areas and assets						
Keywords:	Underwater, security, systems, surveillance, detection, sonars						
Comments on the Technology							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

4.- Automatic Identification System (AIS) shipping traffic density analysis system

Country of Origin:	MT						
Link:	http://www.transport.gov.mt/roads-infrastructure/infrastructure-marine/maritime-projects-completed/maritime-safety						
Applicable MS Sector(s):	Maritime Safety and Security	Marine Environment Monitoring	General Law Enforcement				
Contact Details of Owner:	Malta Maritime Authority Marina Pinto, Valletta VLT 01 Phone: +356 21232653 E-Mail: david.bugeja@mma.gov.mt						
Brief Description/ Photos/ Related Material							
The Maltese AIS System operates to enable the Authority to obtain and analyse maritime traffic density information for maritime safety risk assessment purposes relating to the safety of navigation in designated anchorages, port approaches, harbours and review of port marine safety procedures. It was founded within the AIS Shipping Traffic Density Software for Maritime Risk Assessment Project to improve the Maritime Safety through the implementation of the Maritime Transport Acquis (VTMIS) by entailing the procurement of AIS analysis software; hardware plus necessary communication links to permit the flow of the high volume of data that the software will require from the existing VTMIS system.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	AIS System						
Keywords:	Safety of navigation, maritime traffic, maritime pollution prevention, Malta Maritime Authority						
Comments on the Technology							
The software records the tracking of ships fitted with an Automated Identification System bound to and departing from Maltese Ports and also vessels navigating within the Territorial Waters of Malta. Traffic density images can be generated for a specific time frame (duration). Such data helps in identifying and analysing close-quarters interaction of vessels and potentially high risk areas which may require particular attention and better monitoring.							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

5.- VTMIS

Country of Origin:	MT						
Link:	http://www.transport.gov.mt/roads-infrastructure/infrastructure-marine/maritime-projects-completed/maritime-safety						
Applicable MS Sector(s):	Maritime Safety and Security	Marine Environment Monitoring	General Law Enforcement				
Contact Details of Owner:	Malta Maritime Authority Marina Pinto, Valletta VLT 01 Phone: +356 21232653 E-Mail: david.bugeja@mma.gov.mt						
Brief Description/ Photos/ Related Material							
The VTMIS System in Malta was established with a Twinning Project with France funded under the NP2002 programme owing to the European Directive 2002/59/EC for establishing a Community Vessel Traffic Monitoring and Information System for maritime traffic and repealing Directive 93/75/EC. This maritime safety project involved the procurement of the sensor and communications equipment, infrastructure improvements, computer hardware and software making up the system and the training of personnel who manage and operate the VTMIS. The overall objective of the project is to ensure that the Malta Maritime Authority has the required technical capacity, equipment and human resources to implement European Union standards in improving maritime safety through the monitoring of maritime traffic.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	VTMIS System						
Keywords:	Safety of navigation, maritime traffic, maritime pollution prevention, Malta Maritime Authority						
Comments on the Technology							
As part of Malta’s negotiations with the European Union and the process of alignment with the Transport Chapter of the Acquis Communautaire, the Government of Malta prepared a Maritime Transport Action Plan. This plan, with special focus on the maritime safety aspect of the Transport Chapter, aims at ensuring that by accession date Malta will be in a position to align itself with the relative provisions of the Acquis Communautaire, not only from the policy and legislative aspects, but also with regard to technical and operational implementation. The project reflects the medium term Accession Partnership priorities concerning training of human resources, capacity building and organisational mechanisms to effectively execute the regulatory function in respect of safety of navigation and maritime pollution prevention.							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

6.- High resolution interferometric synthetic aperture sonar

Country of Origin:	NO						
Link:	https://www.km.kongsberg.com/						
Applicable MS Sector(s):	Marine Environment Monitoring						
Contact Details of Owner:	Vissim AS Vollveien 5, N-3183 Horten Telephone: +47 33 07 1890 vissim@vissim.no						
Brief Description/ Photos/ Related Material							
Synthetic aperture sonars combine a number of acoustic pings to form an image with much higher resolution than conventional sonars, typically 10 times higher. HISAS is a wideband SAS sonar with frequency range of 70-100kHz, capable of producing ultra high resolution acoustic images as well as co-registered bathymetry. The sonar is tightly integrated with the INS navigation and motion sensing platform of the HUGIN AUV, and makes use of modern signal processing such as DPCA (Displaced Phase Centre Analysis) to process the raw data into images.							
Stage of Development:	Field Tested/Evaluation						
Technology Readiness Level (TRL 1-9):	6						
Domains of Applications:	Underwater Autonomous Vehicles						
Keywords:	Underwater Acoustic, synthetic aperture sonar, Underwater Autonomous Vehicles						
Comments on the Technology							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

7.- R5 Supreme W-AIS

Country of Origin:	SE						
Link:	http://saab.com/about-saab/sites/2016/maritime-traffic-management/solutions/automatic-identification-systems-ais/r5-supreme-secure-w-ais/						
Applicable MS Sector(s):	Maritime Safety and Security	Marine Environment Monitoring					
Contact Details of Owner:	SAAB GROUP P.O. Box 12062 SE 10222 – Stockholm Phone: +46 13 18 00 00 http://saabgroup.com						
Brief Description/ Photos/ Related Material							
The R5 Supreme W-AIS System is based on the R5 Supreme AIS product, but offers great benefits for qualified customers. In addition to working as a Class A transponder, it will give access to other modes of operation, enabling encrypted communication between selected units and other additional capabilities. The high-frequency active sonar DDS-3, has been specifically designed for the detection of underwater threats such as divers and manned and unmanned underwater vehicles (SDV, ROV or UUV), offering protection and surveillance to counter the threat of underwater attacks against harbours, critical facilities, ships, offshore platforms, coastal power plants, shipwrecks and environmentally protected areas.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	AIS Transponder						
Keywords:	AIS radios, intruder detection, military, civil ships, cruises						
Comments on the Technology							
The main features of the R5 Supreme W-AIS are: - 7" ultra-bright high contrast colour LCD - Touch screen, keypad or USB keyboard control - Ethernet, RS-422 and USB interfaces - Optional additional display units for redundant or slave operation - Use USB memory for quick software upgrades, data logging and more - Automatic, manual or remote dimming - Pilot plug integrated in display - Full AIS-SART support - Text messaging - VHF communication test function - R4 Navigation Sensor Compatible - Gimbal or flush mounting							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

8.- SHARPEYE

Country of Origin:	UK						
Link:	https://www.kelvinhughes.com/maritime/naval-radar						
Applicable MS Sector(s):	Defence	Border control					
Contact Details of Owner:	KELVIN HUGHES Voltage 6 Mollison Avenue Enfield EN3 7XQ Telf: +44.19.9280.5200						
Brief Description/ Photos/ Related Material							
Kelvin Hughes SharpEye™ naval radars are able to see small targets in sea, rain or land clutter that others will miss. It provides early warning of the presence of larger vessels, small targets and asymmetric threats such as submarine periscopes, RHIBs, small wooden boats, USVs and Jetskis and enhances force protection across a range of platforms from fighting ships and submarines through to patrol vessels, auxiliaries and coastguard vessels. The radar delivers improvements in sub-clutter visibility by approximately 30dB, enabling targets with a low RCS (Radar Cross Section), typically 0.5m2, to be detected even in heavy rain and high sea states.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Radar						
Keywords:	Naval / Radar / Doppler / small targets / rain						
Comments on the Technology							
The main features of the SHARPEYE Naval Radars are: - Detection in clutter - Performance advantage - No magnetron - minimal routine maintenance requirements - High MTBF (Mean Time Between Failure) - Extremely low through life costs - Covert - Type Approved - Military Aviation Authority approved (Helicopter Control) - Mil-Spec design - Multipurpose radar sensor - Multifunction tactical radar display							

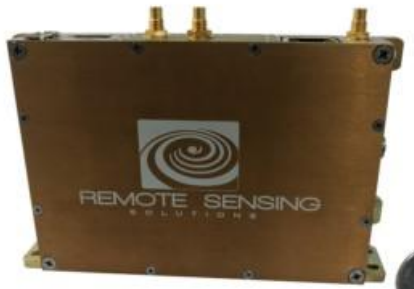
PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

9.- Underwater Acoustic Modem Micro

Country of Origin:	UK						
Link:	https://www.sonardyne.com/product/underwater-acoustic-modems/						
Applicable MS Sector(s):	Maritime Safety and Security	Marine Environment Monitoring					
Contact Details of Owner:	SONARDYNE INTERNATIONAL LTD Blackbushe Business Park Yateley - Hampshire - GU46 6GD Phone: +44 (0)1252 872 288 sales@sonardyne.com						
Brief Description/ Photos/ Related Material							
Modem Micro provides a reliable and cost-effective method of wirelessly transferring underwater sensor data in real-time. Data transfer rates range from 9,000 bps down to 200 bps depending on the environment. For users wishing to integrate Modem Micro into their own instrument package, an OEM kit (PCB and remote transducer) is available. portable and ship-borne applications its lightweight and compact construction provides world leading protection in a highly portable and flexible package.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Underwater Autonomous Vehicles abd platforms						
Keywords:	Underwater acoustic communications						
Comments on the Technology							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

10.- ARENA

Country of Origin:	US						
Link:	http://remotesensingsolutions.com/arena/						
Applicable MS Sector(s):	Defence	Border control					
Contact Details of Owner:	REMOTE SENSING SOLUTIONS 3179 Main Street PO Box 1092 Barnstable, MA 02630 Telf: +1.508.362.9400 sales@remotesensingsolutions.com						
Brief Description/ Photos/ Related Material							
The ARENA is a patent pending radar digital subsystem solution that offers a modular approach which is reconfigurable at all levels: hardware, firmware and software. It is reconfigurable (adaptive) on a pulse-to-pulse basis enabling real-time optimization to support cognitive sampling and processing solutions. Through multiple plugin modules (mezzanine cards), an ARENA can provide a radar with Control & timing signals, General data acquisition and system monitoring, Arbitrary waveform generation, Complex digital receiver, filtering & signal processing and Data distribution & storage.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Radar						
Keywords:	Radar / XML / reconfigurable / customized / digital						
Comments on the Technology							
The main features of the ARENA are: - Reconfigurable at the hardware, firmware & software levels and on a pulse-to-pulse basis - Object orientated architecture for simplified integration and operation - Auto discovery plugin mezzanine cards provide reconfigurable waveform generation, digital receiver processing and digital I/O signal acquisition & generation - Seamless integration into network environments - Provides sustained data rates - Supports embedded applications - Modular and scalable solution - Ultra-low SWaP & conductive cooled							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

b. Vehicles

11.- 27m FAST PATROL

Country of Origin:	SE						
Link:	http://www.swedeship.se/?portfolio=patrol-27						
Applicable MS Sector(s):	Border control	Fisheries Control	Maritime Safety and Security	Customs	Marine Environment Monitoring	General Law Enforcement	
Contact Details of Owner:	Swede Ship Marine AB Varvsvagen 14 SE-471 98 Fagerfjall Phone: +46.304.679.500 ssm@swedeship.se						
Brief Description/ Photos/ Related Material							
27m Fast Patrol is a 45 knot multi-role combat vessel. It has a compact, efficient and flexible platform for medium range surveillance and weapon engagement. It disposes of an extreme area coverage and endurance for control of asymmetric threats in a flotilla configuration.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Surveillance and weapon engagement						
Keywords:	knot, surveillance, weapon, ECDIS, GPS, Gyro						
Comments on the Technology							
The main technical specifications are: - Performance speed: 45 Knots - Endurance: At top speed: 350 NM, at patrol speed: 2.500 NM - Hull material: Aluminium, AlMg4, 5Mn - Machinery: Main engines: 2 x MTU, 1790 kW, Waterjets: Rolls-Royce FF600 - Bridge system: Multi function workstation, ECDIS, GPS, Gyro, Magnetic compass, Echo sounder, Doppler logg, Weather station, WAIS, CCTV - Communication system: VHF (GMDSS), MF/HF (GMDSS), Navtex (GMDSS), VHF (Mil), UHF (Mil), HF (Mil), Intercom							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

12.- SUPER MOHAWK

Country of Origin:	US						
Link:	http://www.f-e-t.com/products/drilling-and-subsea/subsea-technologies/rovs-observation/super-mohawk						
Applicable MS Sector(s):	Defence	Border control	Maritime Safety and Security	Customs	Marine Environment Monitoring	General Law Enforcement	
Contact Details of Owner:	Forum Energy Technologies 920 Memorial City Way, suite 1000 Houston, TX 77024 Phone: +1.281.949.2500 info@f-e-t.com						
Brief Description/ Photos/ Related Material							
Sub-Atlantic's fully electric Super Mohawk remotely operated vehicle is an excellent general purpose professional ROV system suitable for observation, survey, pipelay support, light to medium work and NDT inspections It can carry out many of the tasks currently carried out by work class vehicles. An abundance of space, the rigid open-frame design and the generous payload capability provide a versatile solution for the fitting of manipulators, additional equipment and sensors. Super-Mohawk provides high quality video for inspection work but also has the capabilities for running underslung tool packages such as tree valve torque tools, high pressure water jetting pumps and small hydraulic or electric manipulators.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Observation, survey, pipelay support, NDT inspections						
Keywords:	Camera, sensors, manipulation						
Comments on the Technology							
The main features of the Super Mohawk ROV are: - SubCAN Control System - High Reliability, Easy Maintenance - Multiple Camera and Sensor Interfaces - 2,000 metres / 6,500 feet Depth Rated - Auto-Heading and Depth and Altitude - Sub-Atlantic AC Propulsion Thrusters - 2-Manipulator Capability - Live Boat or TMS Operation - 60 kg / 132 lb Payload with options - Superb Work Skid Capability							

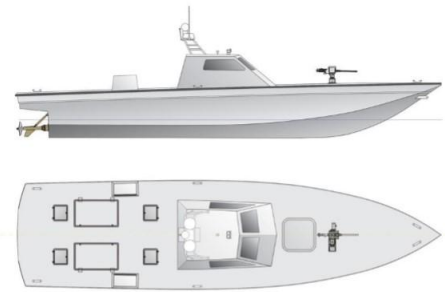
PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

13.- SEAVUE

Country of Origin:	US						
Link:	http://www.raytheon.com/capabilities/products/seavue/						
Applicable MS Sector(s):	Defence	Maritime Safety and Security	Border control	Customs	General Law Enforcement		
Contact Details of Owner:	RAYTHEON COMPANY 870 Winter Street Waltham, MA 02451-1449 Phone: +1.781.522.3000						
Brief Description/ Photos/ Related Material							
The SeaVue radar family is known for its proven ability to detect small maritime vessels in high sea states including the stealthy, self-propelled semi-submersible (SPSS) craft that pose a significant threat to homeland security. The radar has incorporated new capabilities (Expanded Mission Capability - XMC) that greatly enhance wide area surveillance effectiveness, identifying threats quickly and efficiently. These techniques apply to a variety of missions, including search and rescue.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Radar						
Keywords:	Small maritime vessels / high sea states / homeland security / wide area surveillance						
Comments on the Technology							
SeaVue XMC incorporates a next-generation maritime situational awareness package developed under the Ocean Surveillance Initiative (OSI) program. NAVSEA sponsored the OSI program to address a need for complete, persistent and accurate wide area surveillance in the tactical maritime theater. SeaVue XMC provides operators with wide area situational awareness to support tactical decision making, significantly improving mission effectiveness and operational efficiency. More than 150 Raytheon SeaVue radars are operational worldwide.							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

14.- 50 USV

Country of Origin:	US						
Link:	http://www.tampa-defense.com/						
Applicable MS Sector(s):	Defence	Border control	Maritime Safety and Security	Customs	Marine Environment Monitoring	General Law Enforcement	
Contact Details of Owner:	Tampa Yacht Manufacturing LLC 4350 62nd Avenue North Pinellas Park, FL 33781-5902 Phone: +1.727.954.3435 robert.stevens@tampa-yacht.com						
Brief Description/ Photos/ Related Material							
50 USV is an unmanned surface vessel under development. The main specifications are: - Loa Max: 15,9 m - Beam shear max: 4,44 m - Deadrise: 16,4 degrees - Draft: 0,75 m - STD HP: 2.250 kW - Speed, full load: 56 kts - Range, full load: 600 NM at Cruise							
Stage of Development:	Concept Stage						
Technology Readiness Level (TRL 1-9):	6						
Domains of Applications:	Surveillance and weapon engagement						
Keywords:	knot, surveillance, weapon, ECDIS, GPS, Gyro						
Comments on the Technology							
The main key features are: - Low Signature - Arneson Drives for High Performance - Designed & built to class: IACS Patrol Vessels - Navionics including chart plotter, WAAS GPS, 4 KW Radar - All composite construction - Integrated anchor system - Integrated towing bitts							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

c. Systems

15.- MEOS II N

Country of Origin:	DE						
Link:	https://www.hensoldt.net/solutions/sea/optronics/ship-surveillance-systems-meos-ii/						
Applicable MS Sector(s):	Defence	Fisheries Control	Border control	General Law Enforcement			
Contact Details of Owner:	HENSOLDT Sensors GmbH Willy-Messerschmitt-Straße 1 82024 Taufkirchen Phone: +49.89.3179-0						
Brief Description/ Photos/ Related Material							
MEOS II is a fully stabilised, compactly designed surveillance system which bundles various state-of-the-art sensors. Thus, offering the user a large variety of functions comprised in only one device. It is equipped with an windows cleaning unit, operated from thestandalone or integrated console. The system can be upgraded to meet specific naval surveillance, target acquisition and tracking requirements. The standard MEOS II system can be operationally enhanced by the addition of a high repetition rate 12 Hz laser rangefinders and SWIR capability for exceeding atmospherical limits (haze and fog), as a complement to the visual daylight and infrared camera. Deeper integration into a CMS, as an aid to fire control solutions, is feasible.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Surveillance system						
Keywords:	Sensors, console, naval surveillance, target adquisition, tracking requirements						
Comments on the Technology							
The main features and benefits of the MEOS II N Ship surveillance system are: - High-resolution, thermal imaging with powerful zoom optics - Daylight TV with continuous zoom - Eye-safe laser rangefinder - Auto-tracker & motion detection capabilities - Dual-axis gyro stabilisation - Ruggedised for high-stress maritime missions - Modular buildup for easy installation and maintenance - Recording capability for further analysis							

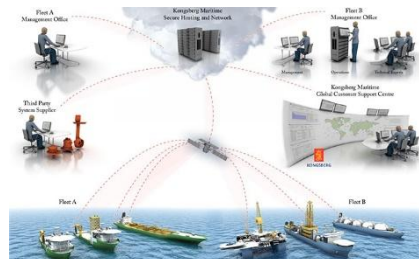
PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

16.- K-IMS

Country of Origin:	DE						
Link:	https://www.atlas-elektronik.com/what-we-do/maritime-security-systems/cerberus/						
Applicable MS Sector(s):	Maritime Safety and Security						
Contact Details of Owner:	ATLAS ELEKTRONIK GmbH Sebaldsbruecker Heerstr. 235 28309 Bremen Phone: +49 421 457-02 info@atlas-elektronik.com						
Brief Description/ Photos/ Related Material							
Cerberus Mod2 Portable Diver Detection Sonar (PDDS) is the latest addition to Atlas Elektronik's growing portfolio of security products. Designed to meet the demands of both portable and ship-borne applications its lightweight and compact construction provides world leading protection in a highly portable and flexible package.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	8						
Domains of Applications:	long term surveillance and security of costal areas and assets						
Keywords:	Underwater, security, systems, surveillance, diver detection, sonars, portable						
Comments on the Technology							

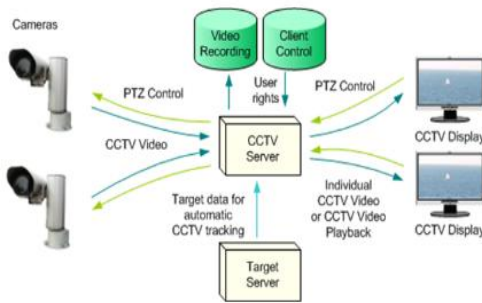
PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

17.- K-IMS

Country of Origin:	NO						
Link:	https://www.km.kongsberg.com/						
Applicable MS Sector(s):	Fisheries Control	Maritime Safety and Security					
Contact Details of Owner:	KONSBERG MARITIME AS Kirkegardsveien 45 NO-3616 Kongsberg Phone: +47.3228.5000 km.sales@kongsberg.com						
Brief Description/ Photos/ Related Material							
The KONGSBERG Information Management System (K-IMS) is a collaboration platform developed for the offshore and maritime industry. K-IMS is designed to enable continuous access to data both onboard and onshore through an interactive web based solution and to provide an efficient information flow. The system unites all data logging and communication into a single, secure and maintainable solution. It gives the fleet owner control of the information flow and security. A common solution for all roles in owner and 3rd party supplier organization enables collaboration and improved decision processes.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Informacion Management system, Communication						
Keywords:	Informacion, fleet control, traceability, decision making						
Comments on the Technology							
K-IMS provides a complete and up-to-date information portal for better traceability and quality of communications between offshore and onshore organizations: - Improve decision making and support - Reduce need for service personnel onboard vessels - Improve troubleshooting - Improved safety through visualization and supervision K-IMS infrastructure includes system components such as portal, data logging, secure network, malware protection, replication, security and integration by standard protocols such as OPC and web services. K-IMS Global system tools include dashboards, alarm statistics, trend and reports.							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

18.- Vissim – Closed Circuit Television System

Country of Origin:	NO						
Link:	http://vissim.no/products/closed-circuit-television						
Applicable MS Sector(s):	Border control	Fisheries Control	Defence	Maritime Safety and Security	Customs	Marine Environment Monitoring	General Law Enforcement
Contact Details of Owner:	Vissim AS Vollveien 5, N-3183 Horten Telephone: +47 33 07 1890 vissim@vissim.no						
Brief Description/ Photos/ Related Material							
The Vissim CCTV digital surveillance system is easily installed and connected for local and (where required) distributed access. Compared with earlier analogue-based CCTV systems, digital video systems provide full flexibility for installation, processing of data and transmission. The system requires only a LAN cable and a power cable entering the PAN/TILT unit. The digital video and the control data is then transmitted via the network. Employing TCP/IP transmission eliminates the need for multiplexers or matrix switches, and reduces the amount of cabling significantly. Any PC with the Vissim CCTV Display software installed can view the picture and control the camera. There is no limit to the number of users viewing the picture from any camera.							
							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:							
Keywords:	digital surveillance system						
Comments on the Technology							
- Support solutions for: Offshore Sea Surveillance, Ports and Harbours, Firing Ranges, Offshore Wind Farms, Coastal Surveillance, Automatic Oil Spill Detection - Processes information from CCTV							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

19.- MARITIMEINSIGHT

Country of Origin:	SE						
Link:	http://saab.com/about-saab/sites/2016/maritime-traffic-management/solutions/vessel-traffic-services/MaritimeInsight/						
Applicable MS Sector(s):	Maritime Safety and Security	Marine Environment Monitoring					
Contact Details of Owner:	SAAB GROUP P.O. Box 12062 SE 10222 – Stockholm Phone: +46 13 18 00 00 http://saabgroup.com						
Brief Description/ Photos/ Related Material							
The MaritimeInsight™ VTMS is a proven solution for Vessel Traffic Services for a wide range of systems. Easily scalable from single radar, single display solutions to multiple traffic centres with extensive radar and AIS networks at national levels. It's a solution for a safe, efficient and secure flow of traffic in ports, waterways and coastal regions. It provides authorities with the means to guide, assist and manage all shipping within their areas of interest.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Surveillance system, Multisensor surveillance system						
Keywords:	Multisensor surveillance system, surveillance, tracking, detection.						
Comments on the Technology							
MaritimeInsight is characterised by its full range of functionality (multi-sensor target tracking, decision support, routing, traffic analysis, incident investigation), ergonomic user interface (display of Electronic Navigation Charts, integrated Electro-Optical Sensor), support for sectorisation (alert filtering according to relevant sector, multiple traffic centres can be linked), synchronous recording and replay of (traffic image, voice communications, operator actions) and full range of interfaces (AIS, IVEF, NMEA)							

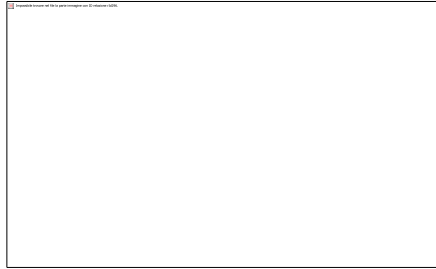
PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

20.- SENTINEL

Country of Origin:	UK						
Link:	https://www.sonardyne.com/product/sentinel-diver-detection-sonar/						
Applicable MS Sector(s):	Fisheries Control	Defence	Maritime Safety and Security				
Contact Details of Owner:	SONARDYNE International Ltd Blackbushe Business Park, Yateley Hampshire, GU46 6GD Phone: +44.1252.872.288 sales@sonardyne.com						
Brief Description/ Photos/ Related Material							
Sentinel Intruder Detection Sonar (IDS) is a Diver Detection sonar, developed to meet the underwater security requirements of private, commercial, government and naval end users. The system reliably detects, tracks and classifies divers and small underwater vehicles approaching a protected asset from any direction and alerts security personnel to the potential threat. Whether it is protecting a critical infrastructure facility, offshore platform, sea port or super yacht at anchor, Sentinel’s autonomous monitoring capabilities, long range diver detection and proven low false alarm rates, provide a rapidly deployable, 360° underwater security solution for any application.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Sonar						
Keywords:	Underwater, yachts, harbours, waterside facilities, protection						
Comments on the Technology							
Sentinel takes reliable, long range underwater intruder detection to a new level and since its first introduction in 2006, has been shown to outperform far more expensive and complex technologies. The system is small, lightweight, has a low false alarm rate and once configured, can be left to operate autonomously. Three variants of Sentinel are available. The base system, Sentinel, is configured to meet the needs of most commercial and infrastructure facility protection projects. Sentinel RD (Rapid Deployment) meets the need for a Portable Diver Detection Sonar (PDDS). Sentinel XF (eXtra Functionality) is available to military and government security agencies as it has both active and passive detection and classification modes.							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

21.- Camera model 92

Country of Origin:	US						
Link:	http://www.eoimaging.com/camera_902.html						
Applicable MS Sector(s):	Defence	Border control	Maritime Safety and Security				
Contact Details of Owner:	Electro-Optical Imaging, Inc. 4300 Fortune Place, Suite C West Melbourne, Florida 32904 Phone: +1.321.435.8722 info@eoimaging.com						
Brief Description/ Photos/ Related Material							
E-O Imaging's Model 902 camera/lens system is a ruggedized visible zoom optics package designed for high performance tracking applications. The lens is selected and tested for low boresight shift over the entire zoom range. The camera and its lens are precision aligned and tested at the E-O Imaging factory, then fitted into an enclosure. The enclosure is sealed and pressurized with dry nitrogen to keep out moisture, pollution, chemicals, salt, and grime. The enclosure is ruggedized to operate during the shock and vibration experienced with high performance tracking systems and during transport over unimproved roads.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Observation, survey						
Keywords:	Zoom, optics, camera, lens, enclosure						
Comments on the Technology							
The 902 is a complete system containing camera, lens, heaters, universal power supply and control electronics. The physical interface with the Customer's system can be customized to fit any configuration and bolt-hole pattern. The integrated control electronics provide the following features: - Full system control via a single RS-422 or RS-232 serial interface - Control of all camera parameters, including integration/exposure and gain (camera dependent) - Closed loop servo control of all lens parameters, including zoom, focus and iris The Model 902 includes: - Remotely controlled, high-precision, continuous 60x zoom lens - Wide selection of cameras, including extended IR sensitivity, high resolution and various video outputs (standard selection 768 x 480 RS-170) - Unequalled alignment of lens optical axis to the physical center of the imager (within 5 pixels) - Lens / camera structure easily removed from enclosure to facilitate reconfiguration or maintenance - Regulated heaters to maintain performance even during extreme cold - Three axis image boresight adjustment (azimuth, elevation and rotation)							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

22.- Multi-Sensor Surveillance System

Country of Origin:	US						
Link:	http://www.sensorsinc.com/products/detail/multi-sensor-surveillance-system						
Applicable MS Sector(s):	Defence	Border control	Maritime Safety and Security				
Contact Details of Owner:	UTC Aerospace Systems Sensors Unlimited Products 330 Carter Road Princeton, NJ 08540 Phone: +1.609.333.8000 sui_info@utas.utc.com						
Brief Description/ Photos/ Related Material							
The Multi-Sensor Surveillance System features a 640 x 512 pixel, high-sensitivity, stabilized InGaAs snapshot imager and utilize Sensors Unlimited’s algorithms to produce highest quality imagery especially under challenging weather conditions. The camera provides real-time daylight to low-light 24 hour imaging in the Short Wave Infrared (SWIR) wavelength spectrum for persistent surveillance, penetration through fog, dust, smoke, and for man-overboard/search and rescue applications as well as waterborne debris. On-board Automatic Gain Control (AGC) is used to address the varied gain in the challenges of day to night imaging. A joystick and keyboard remote interface steers the camera onto targets or other areas of interest.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Observation, surveillance						
Keywords:	Sensors, zoom, optics, camera, quality image						
Comments on the Technology							
Multi-Sensor Surveillance System has the following characteristics: - Environmental Enclosure: Sealed, IP-66 rated - Sunlight Viewable LCD w/Stand - Pan range/speed: 360° continuous / 0.25° – 96°/sec - Tilt Range/speed: ±90/ 0.25° – 96°/sec - Built in heater - Pressurized: Nitrogen purged at 2.5psi / Td -40°C. - Housings - Aluminum, Hardware - Stainless Steel							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

23.- SMART TETHER

Country of Origin:	US						
Link:	https://www.kcftech.com/smarttether/						
Applicable MS Sector(s):	Defence	Maritime Safety and Security	General Law Enforcement				
Contact Details of Owner:	KCF Technologies 336 S. Fraser Street State College, PA 16801 Phone: +1.814.867.4097 sales@kcftech.com						
Brief Description/ Photos/ Related Material							
Smart Tether™, a complete underwater navigation system, offers unmatched operation with VideoRay system or tethered diver. The system, which includes tether, control box, ultra-mobile PC and software, is designed to meet multiple missions and tested to survive extreme environments. Smart Tether™ includes a series of sensors nodes embedded in the tether itself. These nodes use acceleration, magnetic, and rate-gyro sensors to measure the orientation and track the position of your vehicle and tether. This data is then transmitted to the control box and displayed on your computer screen in real time. With Smart Tether™, there is no need for additional external transponders or complicated set-up, measurement, and training. 							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Underwater navigation						
Keywords:	Tether, control box, extreme environments, sensors, real-time navigation, GPS						
Comments on the Technology							
The Smart Tether™ system's fast refresh rate gives the crew instant and accurate information about the diver's or VideoRay submersible's position. This real-time navigation facilitates missions that require precise operation, including: close-up inspections, rescue and recovery work, ordnance location, and homeland security operations. Tides, currents, and wave dynamics can make precise underwater navigation using a fixed launch point nearly impossible. Smart Tether™ includes GPS integration to help you navigate your ROV or diver from a moving point such as a boat or barge. It makes navigation in the field simple, smart, and safe. The system displays the live position of the ROV or diver and tether, allowing real-time navigation, communication, and tether awareness.							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

24.- PREDATOR

Country of Origin:	US						
Link:	http://www.hydroacousticsinc.com/products/aquaculture-predator-protection-system.html						
Applicable MS Sector(s):	Fisheries Control						
Contact Details of Owner:	HYDROACOUSTICS Inc. 999 Lehigh Station Road Henrietta, NY 14467 Phone: +1.585.359.1000 info@hydroacousticsinc.com						
Brief Description/ Photos/ Related Material							
The HAI Aquaculture Predator Protection System (APPS) generates a low frequency, broadband, impulsive acoustic signal that deters pinnipeds and other mammals from predatory feeding or damaging activity within aquaculture facilities. The APPS is powered with compressed air that is safe, inexpensive, and non-polluting. No dangerous explosives are used or stored. The anti-predatory acoustic effect of the APPS can be varied by changing the air pressure or the chamber volume of the system. The reusable APPS is capable of rapid, repeatable firing, up to sixty times per minute. The in-water component of the mobile APPS is deployed over the side of a boat, dock, or other structure before it is armed, thereby reducing the hazard to the operator.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Protection in fisheries						
Keywords:	Protection, Aquaculture, damage, acoustic signal, portable						
Comments on the Technology							
The main features of the Aquaculture Predator Protection system are: - Non polluting as only compressed air is put into the water - Highly reliable and low maintenance - The APPS is not consumed with each use as are explosives or plasma devices - Selective zone firing by operator, shot patterns can be varied so learning by predators is difficult - Intensity and rate of shots are operator controllable - Operates effectively in shallow water environments - System is highly customizable for Fish Farms - Protects workers safety as no explosives are used							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

d. Integrable components

25.- SCANVIEW

Country of Origin:	NO						
Link:	https://dspnor.com/products/scanview-framework/						
Applicable MS Sector(s):	Maritime Safety and Security	Fisheries Control	Defence				
Contact Details of Owner:	DSPNOR Vagsgaten, 22 - 4th Floor 5160 Laksevaag Bergen, Norway Phone: +47.5594.1515 info@dspnor.no						
Brief Description/ Photos/ Related Material							
The ScanView framework is a collection of modules that enables the user to display, process and distribute virtually any type of radar video / target data. The software is multi platform and is coded as a 64 bit application from ground up. 32 bit versions are available. The modules offer true 16 bit datapath and is the highest resolution, highest performing and most innovative radar visualization software on the market today. In addition to modules supplied by dspnor, a SDK will be made available to selected customers that allows for user designed custom modules. Support for Asterix Video and Tracks is available.							
							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Radar						
Keywords:	Display and distribute videos, multi platform, radar visualisation software						
Comments on the Technology							
The main features of the ScanView system are: - Connect to any Radar Transceiver on the market - Multiple Sources View optionally controlled via Multitouch - Display real and simulated Targets simultaneously - Surveillance Display - Display Log/Lin Video, IFF or other Transponder - Design your own custom module - Run as a background service - "On the fly" Record and Playback							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

26.- Antenna AC17M4-AIS

Country of Origin:	NO						
Link:	http://www.comrod.com/getfile.php/131361/Datasheets/T%20Antennas%20-%20Marine/AC17M4_AIS%20250509.pdf						
Applicable MS Sector(s):	Defence	Maritime Safety and Security	General Law Enforcement	Fisheries Control	Border control		
Contact Details of Owner:	Comrod Communications A S Fiskaavegen 1 4120 Tau, Norway Phone: +47.5174.0500 post@comrod.com						
Brief Description/ Photos/ Related Material							
AC17M4-AIS is an antenna for Automatic Identification System transponders. The antenna includes an active GPS receiving antenna and a VHF dipole antenna. It is a high quality antenna with a durable construction and a beautiful finish for installation on all kind of vessels. Also suitable for maritime VHF and navigational GPS when space is at premium. A signal splitter (AIS/F) for separating VHF and GPS signals comes with the antenna.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	VHF and GPS Antenna						
Keywords:	AIS, GPS, VHF, antenna						
Comments on the Technology							
AC17M4-AIS is easily mounted to the bulkhead by means of 4 holes in the aluminum bracket, or to a mast or tube with U-bolts. The U-bolts in stainless steel, are included. The main electrical specifications are: - Frequency range: VHF: 156-162 MHz, VSWR < 2:1; GPS: 1575,42MHz, L1 - Nominal impedance: 50 ohm - Power rating: VHF: 25 W - Noise figure, GPS amp: 1,2dB maximum And the main mechanical specifications are: - Design: VHF: Centerfed coaxial dipole; GPS: Active Quad helix - Height: 0,97m - Weight: 0,5kg - Wind rating: 55 m/s							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

27.- SR01-Heading Repeaters

Country of Origin:	NO						
Link:	http://www.scansys.no/SMSWebstructure/SR01HeadingRepeaters.aspx						
Applicable MS Sector(s):	Defence	Maritime Safety and Security					
Contact Details of Owner:	Scandinavian Micro Systems AS Oppegård Næringspark, Trollåsveien 36, P.O. Box 155, 1411 Kolbotn Phone: +47.6681.2740 sales@ScanRepeater.com						
Brief Description/ Photos/ Related Material							
The digital gyro repeaters of Scandinavian Micro Systems are used by both naval and commercial ships and more than 15,000 units are installed worldwide. Current models are LR40 (for step signals and 360X synchro signals), LR60 (for 1x, 36X and 90X synchro signals) and LR61 (dual input digital gyro repeater and compass compare unit). All ScanRepeater™ units provide NMEA output data suitable for interfacing to radars and AIS devices.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Headings repeaters						
Keywords:	Gyro, connection of signals, NMEA, Serial Data Protocols						
Comments on the Technology							
The three models have a large super-bright Heading Display and an Analog Turning Indicator, giving the user instant information about the ship's heading and the ship's rate of turn. But they have also some differences: - LR40 connects to virtually all types of step-by-step signals and 360X Synchro signals. In addition it can both send and receive NMEA and various other Serial Data Protocols. - LR60 connects to 1X, 36X and 90X synchro signals. When LR60 is connected to 1X synchro signals it is self-aligning. In addition LR60 can both send and receive NMEA and various other Serial Data Protocols. - LR61 is a DUAL COMPASS-COMPARE-UNIT and DIGITAL REPEATER all in one. It receives Heading data from two independent Gyrocompasses and gives an alarm, if the heading difference exceeds a pre-set limit. It is available for connecting to 1X Synchro signals or for connecting to NMEA Serial Data signals.							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

28.- Triple Display Console

Country of Origin:	UK						
Link:	http://www.aishtechnologies.com/products/multifunction-consoles/						
Applicable MS Sector(s):	Defence	Border control	Maritime Safety and Security	Customs	Marine Environment Monitoring		
Contact Details of Owner:	Aish Technologies Ltd Aish House, Broom Rd. Poole, Dorset. BH12 4NL Phone: +44.1202.307.007 sales@aishtechnologies.com						
Brief Description/ Photos/ Related Material							
Building on its heritage as the supplier of analogue VCS and CRT operator consoles for navies worldwide during the latter part of the 20th century, Aish Technologies is now the leading supplier of operator consoles to the Royal Navy, including Combat Management System and Platform Management System consoles for the new Daring Class destroyers, command system consoles for Trafalgar Class submarines, and the new Common Console, which will be fitted throughout Astute Class Submarines from boat 3 onwards. Consoles can be supplied with up to four screens, in horizontal or vertical configuration, and with a number of processing options. Ancillary requirements such as KVM switching, touch panels and dedicated keypads can also be provided.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Observation, survey, radar, sonar						
Keywords:	VCS, CRT, KVM switching, touch panels, dedicated keypads						
Comments on the Technology							
In use on the Royal Navy’s Daring Class destroyers, and configured for 3 main Aish displays of 18” and 21”, with desk options including a 12.1” touch input panel. This is a very powerful console that can host a number of networks of different security classifications at one station. Processing options includes up to 3 industrial form factor computers using passive backplane technology.							

PROTEUS – 3.3.1 Mapping of existing technologies and applications on integrated maritime surveillance per sector

29.- RADII

Country of Origin:	US						
Link:	https://ssreng.com/products/radii/						
Applicable MS Sector(s):	Defence	Fisheries Control	Maritime Safety and Security				
Contact Details of Owner:	SSR Engineering, Inc. 950 Fee Ana, Suite A Placentia, CA 92870 Phone: +714.229.9020 info@ssreng.com						
Brief Description/ Photos/ Related Material							
The Radii situational awareness display presents an integrated view of the operational area, enables situation management by providing automated analytics and decision support tools, and provides control of the underlying radar and sensor systems. Its user interface allows operators to create a customized layout specific to their mission preferences and needs. It provides complete control and management of the underlying sensor systems. Real-time tracking, data analysis and anomaly detection is performed by the system, reducing operator workload and ensuring only pertinent information is provided to the operator.							
Stage of Development:	Already on the Market						
Technology Readiness Level (TRL 1-9):	9						
Domains of Applications:	Display						
Keywords:	Operational area, automated analytics, decision support tool						
Comments on the Technology							
The main features and benefits of the RADII situational awareness display are: - Multi-language support available - Real-time tracking, data analysis, and anomaly detection - Event management and logging features, including SOP integration and remote alerting - A myriad of sensors, up to sixty-four radars supported							

12. Conclusions

The mapping of the technologies and applications confirms the ideas that we have obtained in the previous task (number 2 of work package 3), especially with the deliverable 3.2.1. First of all, we can vouch that the countries represented in the project have an important development of technologies and applications, idea already advanced by the big number of technological companies working on these issues.

The second idea that we can underline is about the main sectors. This mapping confirms that Defence and Maritime safety and security are the main sectors for these MED countries. The amount of technologies devoted confirm the initial idea proposed in previous tasks. 80% of the technologies could be used in Maritime safety and security and 57% in Defence. Only 12% of the technologies are not used neither in Maritime safety and security nor in Defence.

The bigger group of type of technologies is the one of systems, followed by equipments and vehicles. This denotes a big development of the sector that is not limited to produce elements to be assembled by the user (for example different kind of sensors). The developers know well the needs of users (public authorities and private companies) and produce the systems that they need to develop correctly their work, with the integration of different elements to obtain information, to process it and to alert if necessary.

Outside this group of countries, we realise that the main technologies are developed by the most technologically advanced countries (United States and North European countries). It could be surprising to observe the huge development of Norwegian technologies, but the response could be associated to the high degree of citizen awareness on sustainability and to the development of the oil industry in the North Sea. By other side, with the information collected, we do not observe any specific difference between their technologies and the MED ones.

This document helps to continue working on the task 3 of this work package with the identification of the market / business opportunities and, for sure, to compose the database of technologies. This will be an important step before to set up the MED Maritime Surveillance Cluster. Further on, this information will be also integrated in the Maritime Surveillance Platform, which hosts all relevant information collected during the project.