ARES Project - "*Autonomous robotics for the extended ship*" – The goal of the project is the realization of an "extended ship": through the use of a fleet of underwater and surface drones it will be possible to extend the flexibility of use and mission of the ship and make it operational in different areas and emergency situations.

Partner. MAR.TE. S.c.ar.l., Apphia s.r.l., National Research Council (CNR), University Consortium for Socioeconomic Research and for the Environment (CURSA), DIAMEC Technology s.r.l., Geocart S.p.A., Next Geosolutions Europe spa, Seastema S.p.a., So.Pro.Mar. SpA, University of BOLOGNA, University of GENOA, University of PALERMO, University of ROME "La Sapienza", University of CALABRIA

Duration of the project: 36 months

Budget: € 9,5 MLN

ARES project, co-financed by the European Union and by the MIUR within the PON Research and Innovation 2014-2020 funds (www.ponricerca.gov.it), aims at developing a new paradigm in the marine technology area: a complex system – the ship with all the subsystem (for control, measurement, etc.) – integrated with new marine robotic technologies (a cooperative system of underwater and surface drones), to extend its operability and flexibility of use in many missions: environmental emergencies, support to the defense system, deployment and maintenance for marine renewable energy devices, off-shore platforms, etc.

The technology challenge is the development of a new RD&I ecosystem in the shipbuilding and marine robotic sector, which combines the strategic perspective of large industries (do develop dual-use system integrated into a IoT framework) with the ship-owner perspective (to acquire new marine vehicle capable of cooperative working with swarm of drones).

The ambition is to develop research in the robotic framework empowering, by the creation of spin-offs and start-ups, a layer of SME capable of developing robotic vehicles, maritime instrumentation and sensors, ICT systems, data control and analysis, remote control and coordination.

The lack of a stable productive fabric in the less developed Italian regions, especially in the sectors of marine robotic, sensors and instrumentation development, and ICT services, require a step-by-step approach of technology and know-how transfer from the regions in Centre-North (by Universities and Research Centers) toward the productive system. To this aim, ARES has an entire specific work-package dedicated to the enhancement of the RD&I results, and to the creation (in mid-term scenario) spin-offs and innovative start-ups I the Blue Growth sector, starting from the expected results of the project:

- To provide a research and a multi-purpose vessel with the equipment needed to operate surface and underwater autonomous robotic vehicles and tethered and/or towed robots;
- To develop low cost marine Autonomous Marine Vehicles (AMV), via rapid prototyping technology;
- To develop a prototypal "middleware" for a marine IoT, a prototype of a first Italian underwater acoustic modem, a system for the energy management of AMV, integrated with a fuel-cells propulsive system, prototypes of sensor labs for obstacle recognition and environmental monitoring.