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Building the Internet of Underwater Things



Oceans and lakes cover 71% of the Earth surface, and play a key role for the equilibrium of many earth systems, including climate and weather. Moreover, they support the life of nearly half of all species on earth. Approximately 40% of the global population lives within 100 km of a coast. The future of mankind is therefore very dependent on the careful monitoring and exploitation of the marine environments. SUNRISE aims to provide all the tools for the unprecedented exploration of marine environments, extending the concept of the "Internet of Things" to the underwater domain.

How does it work?

SUNRISE concerns developing innovative solutions for networking smart devices to monitor and control the marine environments. Several underwater platforms, including unmanned mobile robots, will be deployed in five different marine areas including the Mediterranean Sea, the Atlantic Ocean, the Black Sea, lakes and canals. These devices will be interconnected wirelessly, through prevailing underwater communication technologies (e.g., acoustic and optical). Data collected by sensors, whether on static or mobile platforms, will be delivered to a control station, where scientist and experts will be able to check 'in real time' the status of the marine environment and take any action, if needed. SUNRISE addresses the FIRE objectives providing innovative technologies for open underwater experimental facilities.

Key achievements

In the 2nd year of the project the different building blocks of the SUNRISE architecture have been designed and implemented, allowing to build cutting edge facilities

usable for experimentation. In particular: 1) Prototypes of Software Defined Acoustic Modems and Software Defined Communication Stacks have been built and successfully tested. The technologies developed enable interoperability and cooperation of heterogeneous, multi-vendor platforms and allow coexistence and dynamic selection of different communication technologies and solutions. 2) Three testing facilities, La Spezia (IT), Porto (PT) and Twente (ND) have been built, extended and federated through the SUNRISE GATE. The SUNRISE GATE allows to access the testbeds remotely through Internet, schedule tests, control in real-time the experiments, gather, store, analyze and present the collected data.

How to get involved?

Three SUNRISE facilities (two additional ones under deployment) are currently accessible. User participation at any level is eased by a user-friendly web interface, enabling the connection to remote underwater devices, to request measurements, and to remotely monitor the status of marine areas.

Project Facts

CALL: Collaborative Projects Call 10 | **EXECUTION:** From September 2013 to August 2016

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