

MariaBox – Marine environmental in situ Assessment and monitoring tool BOX

Institution/Company name	MariaBox – MARIne environmental in situ Assessment and monitoring tool BOX
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□ Key words

Sensors / instruments/ electronics - Materials / fabrication / assembly

□ Description

MariaBox is a four year project which is funded under the European Commission's Seventh Framework Programme. SmartBay Ireland and Dublin City University are part of the MariaBox European Research Consortium that will trial and validate a new sensor for detecting biohazards and man-made chemicals.

MariaBox will develop a **wireless marine environment analysis device for monitoring chemical and biological pollutants while installed into a buoy, a maritime means of transport or a mooring.**

The device, based on novel biosensors, will be of high-sensitivity, portable and capable of repeating measurements over a long time, allowing permanent deployment at sea. The word "MARIA" is the plural of the Latin "mar" (sea) and expresses the wide applicability that this system offers in multiple locations where low-cost and real-time in situ analytical monitoring devices are required.



Due to growing concerns about the health of our oceans and their capacity to continue to provide resources as well as associated risk of declining water quality for the general population

there is an increasing demand for real-time monitoring of the environmental status of marine water quality and the provision of early warning systems.

The ambitious project aims to deliver a Marine Pollution-Monitoring device based on new biosensors, implemented as a set of autonomous modules for the analysis of marine pollutants and the assessment of water quality. New biosensors for monitoring five man-made chemicals and four categories of microalgae toxins affecting the Aquaculture industry will be developed in parallel. SmartBay will lead the development of an innovative software platform and mobile applications, which will allow for data collection and distribution in near real-time. These data will be available and interfaced to Global Monitoring for Environment and Security (GMES) services. A pilot test will also be performed in Galway Bay.

□ **Applicability of Technology to Maritime SMES**

MariaBox – A wireless, portable marine environment analysis device, based on novel biosensors of high sensitivity, capable of autonomously repeating measurements over a long period of time for marine chemical and biological pollutants and water quality assessment has potential for a wide variety of users in the Environmental Monitoring and Water Management sectors.

The MariaBox system is suitable for free floating devices, buoys, ships, or to be used as a portable instrument.

The novel biosensors will allow monitoring of man-made chemicals (pesticides, heavy metals) and 4 categories of microalgal toxins.