

Autonomous Robotic Inspection and Maintenance on Ship Hulls and Storage Tanks

Deliverable report – D10.2

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Declaration	Any work or result described therein is genuinely a result of the BugWright2 project. Any other source will be properly referenced where and when relevant.	





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HISTORY OF CHANGES

Date	Written by	Description of change	Approver	Version No.

REFERENCED DOCUMENTS

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Executive summary

In this report is presented the Bugwright2 website and its structure with details of all the web pages enabling a continuous information about the project progress and a very easy way to keep in contact with the academic partners and industrial ones. The website is available at the address <http://www.Bugwright2.eu>

I. BugWright2 concept

1. Goal

The ultimate aim of the website is to increase the visibility of the project, to ensure that relevant targeted groups such as researchers and companies, end-users and the general public are informed about the project activities and its outcomes. On top of that, it is the best way to establish direct contact with third parties to increase the BugWright2 partnership. This website will be in a continuous development through the progress of the project.

The main information that the website contains are:

- Presentation and vision of the project,
- Updates of the progress of the project,
- Deliverables, publications and videos produced in the project.

Although IEIC is responsible for the dissemination and exploitation task, support from all project partners is necessary. All consortium members do have a role in dissemination activities through their own and combined professional networks at regional/national and international level, at relevant seminars, trade fairs, exhibitions, conferences etc.

2. Structure

The Coordinator is in charge of creation and maintenance activities of the project website. The website will contain the project's presentation, all the public downloadable documents related to the project itself (press release, information about partners, public deliverables, etc.) and information on events and activities of interest for the targeted audience.

The structure of the website has been developed to provide a general vision about the main information to the general public and industry but also to be intuitive, to ensure an easy navigation.

The menu has been thought of in six main sections: *Home page*, *News*, *Consortium*, *Project*, *Documents* and *Contact Us*. *Consortium* consist of two sub-sections: *Partners* and *Boards*. *Documents* consist of three sub-sections: *Deliverables*, *Publications* and *Videos*.

A complete description of each page will be carried out in section II.



II. BugWright2 design

1. Home page

The *Home* page is the main one of the website, providing a clear and attractive image of the Bugwright2 EU project. There is a menu and navigation bar at the top of the page. The footer is consistent across all pages. It features the EU logo and funding acknowledgement prominently, together with copyright information and links to our Facebook and LinkedIn accounts.



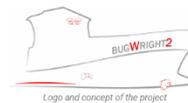
The BugWright2 project

This H2020 project aims at changing the European landscape of robotics for infrastructure inspection and maintenance and will lead to important economic and ecologic break-through in this sector.

The EU-funded Bugwright2 project will facilitate a multi-robot visual and acoustic inspection of the whole structure from robotic platforms in the air and underwater, detecting corrosion patches or cleaning the surface as necessary.

The latter has the potential to very significantly reduce the fuel consumption of merchant vessels and as a result, reduce the need for antifouling paint on the hulls.

It will combine the survey capabilities of autonomous micro air vehicles (MAV) and small autonomous underwater vehicles (AUV) with teams of magnetic-wheeled crawlers operating directly on the surface of the structure. The technology being developed may also be adapted to storage tanks or other structures assembled out of metal plates.



Logo and concept of the project



Crawler (RoboPlanet), Aerial drone (iB), Pioneer (Blueye)

How do we plan on implementing autonomous inspection?

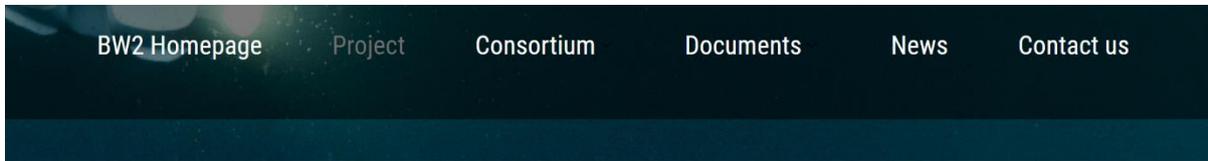
[Check our project](#)



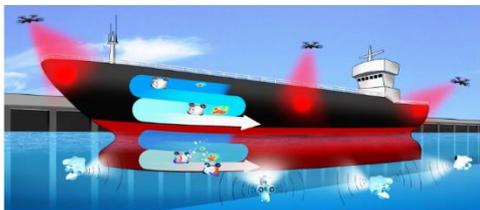


2. Project

The purpose of this section is to present: a general summary about the project aimed at a broad audience, the challenge that the consortium aims to overcome, the types of ships that will be considered within the project as well as the advantages, benefits, and impact that BugWright2 will bring to the ship surveying market.



What is the Bugwright2 project about?



BugWright2 is a collaborative project co-funded by the European Union's Horizon 2020 Research and Innovation programme under Grant Agreement No. 871260. It is a 4.5 years project, started the 01st January 2020 and finishing the 31st March 2024.

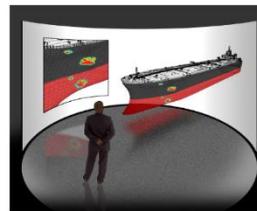
The objective of BUGWRIGHT2 will be to bridge the gap between the current and desired capabilities of ship inspection and service robots by developing and demonstrating an adaptable autonomous robotic solution for servicing ship outer hulls.

How do we plan on implementing autonomous inspection?

By combining the survey capabilities of autonomous Micro Air Vehicles (MAV) and small Autonomous Underwater Vehicles (AUV), with teams of magnetic-wheeled crawlers operating directly on the surface of the structure, the project inspection and cleaning system will be able to seamlessly merge the acquisition of a global overview of the structure with performing a detailed multi-robot visual and acoustic inspection of the structure, detecting corrosion patches or cleaning the surface as necessary – all of this with minimal user intervention.



Pioneer (AUV) by Blueye



An inspector has real-time access to the detailed measurement map within a virtual reality environment



The detailed information provided will be integrated into a real-time visualization and decision-support user-interface taking advantage of virtual reality technologies. Although ships are the targeted application, BUGWRIGHT2 technology may be easily adapted to different structures assembled out of metal plates, and in particular to storage tanks, our secondary application domain.

Learn about our 3 angles of approach

- Innovation Action

- Development of the technologies towards a clearly defined application
 - Development of demonstrators
 - Short path to market, strong industrial implication, less fundamental research
- Field Robotics

+ Technical Concept

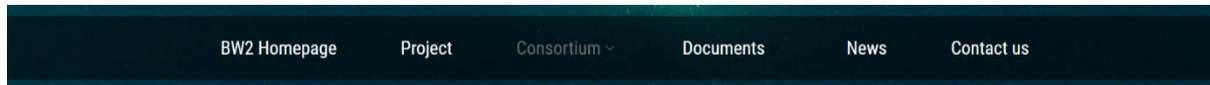
+ Operation Concept



3. Consortium

This section consists of two pages:

The *Partners* page is a page with a synthetic and short description of the Consortium partners with links to their websites.



Partners



The Bugwright2 consortium consist of highly qualified partners which cover the entire spectrum of know-how necessary to carry out the project.

The Consortium is composed of 9 academics partners (CNRS, UPORTO, UIB, INSA, RWTH, UNI-KLU, NTNU, UT, WMU) and 11 industrials partners (CETIM, LSL, RBP, BEYE, RINA, GLM, APDL, AASA, TRH, IEIC, DANAOS, SBK).



Centre National de la Recherche Scientifique – Dream Lab:

As the result of a strategic alliance between the Georgia Institute of Technology (GIT) and the French Centre National de la Recherche Scientifique (CNRS), a joint GIT/CNRS research laboratory, the GT- CNRS UMI 2958, was established at the GeorgiaTech Lorraine campus in Metz, France, in March of 2006. So far, the laboratory has been conducting a unique transatlantic collaborative program of research in secure networks and smart materials. Research faculty and graduate students from GIT, French universities, and other CNRS laboratories work on joint research projects sponsored by industry and by local and national governments. The founding associate partners in this unique laboratory are the University of Metz, the University of Franche-Comté, the École Nationale Supérieure d'Arts et Métiers (ENSAM), and L'École Supérieure d'Électricité (Supélec).



Centre Technique des Industries mécaniques:

The Technical Centre for Mechanical Industry, was established in France in 1965 in order to improve companies' competitiveness through mechanical engineering, transfer of innovations and advanced manufacturing solutions.



Universidade do Porto, Underwater Systems and Technology Laboratory:

The Laboratório de Sistemas e Tecnologia Subaquática (LSTS) is an interdisciplinary research laboratory established in 1997 with researchers drawn from Electrical and Computer Engineering, Mechanical Engineering and from Computer Science. The LSTS is specialized on the design, construction, and operation of unmanned underwater, surface and air vehicles and on the development of tools and technologies for the deployment of networked vehicle systems.



Universitat de les Illes Balears – Higher Polytechnic School:

The Polytechnic School (EPS) of the University of the Balearic Islands was born in 1999 as a result of the merger of the Faculty of Computer Science and the Polytechnic University School (EUP). The first one has taught Computer Engineering since 1988. Some of the studies taught by the EUP have been at the UIB since 1985. Currently, the EPS offers Degree in Building Engineering, Degree in Industrial and Automatic Electronic Engineering, Degree in Computer Engineering, Degree in Mathematics, Degree in Telematic Engineering, Degree of Agri-Food and Rural Engineering and Double Degree in Mathematics and Telematics Engineering.



Deliverables



Here is the history of BugWright2 deliverables

TITLE	DELIVERABLE	DISSEMINATION LEVEL	DATE	LINK
D11.2	Minutes of Consortium Meeting	Confidential	07 February 2020	/
D1.1	Use-case analysis and requirements	Public	05 May 2020	Here
D1.3	Simulation Environment and Middleware integration	Public	05 May 2020	Here
D11.3	Development repositories and shared servers	Confidential	10 June 2020	/
D11.1	Project Manual	Confidential	08 July 2020	/
D10.6	Data Management Plan	Public	10 August 2020	Here
D10.1	Plan for the Dissemination and Exploitation of Results	Confidential	20 October 2020	/
D1.2	Software and Hardware Modification Specification	Confidential	23 October 2020	/
D9.1	Large-scale pilot specification and integration plan	Confidential		

5. News

The news page is a dynamic generated page collecting the abstracts on the various news generated by the project. By clicking on “read more” or on the title of the news, the page of the associated article is opened.

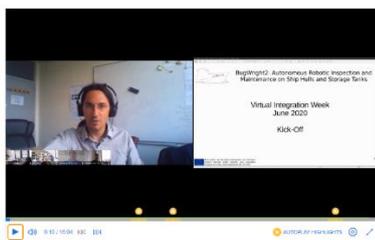
The idea is to include the dissemination activities implemented by the consortium members such as the Integration Weeks, related conferences, fairs, journal publications, etc.

News of the project



[January 2020]

Kick-off meeting in Nantes, France.



[June 2020] First Virtual Integration Week:



[January 2021]

Second Virtual Integration Week:





6. Contact us

The page Contact us is a simple contact form linked with the email of the European Project Manager. This location has access for any visitor to contact the project co-ordinator and consortium by providing their contact details.



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Form

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