

# Sustainable port management through Copernicus: the space-based IMPRESSIVE platform

IMPRESSIVE is an Horizon2020 maritime pollution project (<http://impressive-project.eu>) implemented by a consortium of 12 partners from the European private and public sector.

Serious marine pollution events such as oil spill accidents and waste water discharges constitute a common challenge across regions' ports that severely impact the environment at a European and global level. In response to this, **IMPRESSIVE project aims at the development of a universal relocatable geoportal which tracks the marine pollution events** in the ports of the European Union and their areas of influence.

In the framework of the EU's Blue Economy and the Green Port Strategies, **IMPRESSIVE web application achieves at a low cost a better port management** which provides to the end user with all needed information to control pollution incidents.

The use of IMPRESSIVE EO platform could benefit the following target audiences and potential clients of the system as below:

- a) Port authorities** (also Coast guards, Environmental protection Agencies) could improve sustainability and secure safer activity through a better pollution control management in the ports,
- b) local and regional authorities** could enhance industry competitiveness and innovation thanks to job creation and technology transfer of new skilled human resources with EO-data expertise, able to support the end users,
- c) maritime industry** (including Oil/gas industries, Off-shore industries) and SMEs could get a better corporate image concerning their operations within the ports.

**[impressive-project.eu](http://impressive-project.eu)**

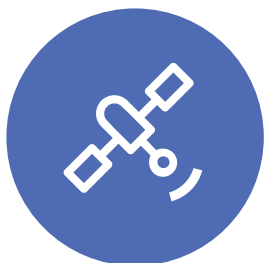




An ultimate goal of IMPRESSIVE's innovation action is **to foster the exploitation of Copernicus by supporting efforts to reduce the amount of pollutants**, to improve the quality of waters and to provide greater access and information to citizens.

To achieve this, the IMPRESSIVE web application is **built on different innovative technologies/techniques for earth observation, robotics and advanced mathematical models**, for the development of this integrated, universal and replicable system, based on satellite images and Copernicus Marine products.

**[impressive-project.eu](http://impressive-project.eu)**



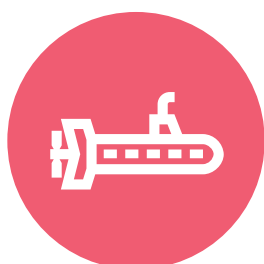
**Satellite  
monitoring  
service**



**Software  
package**



**Risk  
mapping**



**Autonomous  
Surface Vehicles**



**Action  
protocol**



**Rapid-response  
integrated system**



The positive impact of the project has also been evident in 2020 when the Commission's "Innovation Radar" portal recognised IMPRESSIVE as an excellent innovation product. IMPRESSIVE project was recently selected in the May 2021 edition of RESEARCH\*EU Magazine in the Topic "EU researchers tackle pollution for a cleaner, greener Europe". More info in the following weblink: <https://cordis.europa.eu/article/id/429874-a-set-of-new-eyes-to-detect-oil-spills-in-harbours-and-coastal-areas>

Additional information on IMPRESSIVE one may listen in the following podcast episodes of CORDIS following the below weblinks:

- <https://anchor.fm/cordiscovery/episodes/EU-researchers-tackle-pollution-e11kf7n> (Anchor.fm)
- <https://open.spotify.com/episode/6FSDMphypHpAAIAIYU3ku5> (Spotify)
- <https://podcasts.apple.com/gb/podcast/eu-researchers-tackle-pollution/id1552133898?i=1000523170414> (Apple Podcasts)

**Save-the-date for the final IMPRESSIVE conference on 27th October 2021!**

IMPRESSIVE is an **Horizon2020** project implemented by a consortium of 12 partners



Aratos.Net Ltd



National Observatory of Athens (NOA)



Instituto de Ciencias Matematicas (CSIC)

Puertos del Estado



Euro-Mediterranean Center on Climate Changes (CMCC)



Planetek Italia



Universidad de Las Palmas de Gran Canaria



European Association of Universities in Marine Technology and Related Studies (WEGEMT)



Elittoral s.n.l.e. (Estudios de ingeniería costera y oceanográfica)



Wide Pilot S.r.l



Network of European Regions Using Space Technologies (NEREUS)



CloudFerro sp. z o.o.



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# 1st press release: Rafina Port (GR)

The tools and methodology of IMPRESSIVE are tested and validated in three selected European harbors that are modelled as pilot areas: **La Luz Port (Gran Canaria, Spain)**, **Taranto Port (Italy)**, and **Rafina Port (Greece)**.

The purpose of these press releases is to present the successful outcomes of the three pilot tests and help interested stakeholders to explore how to use the online IT platform.

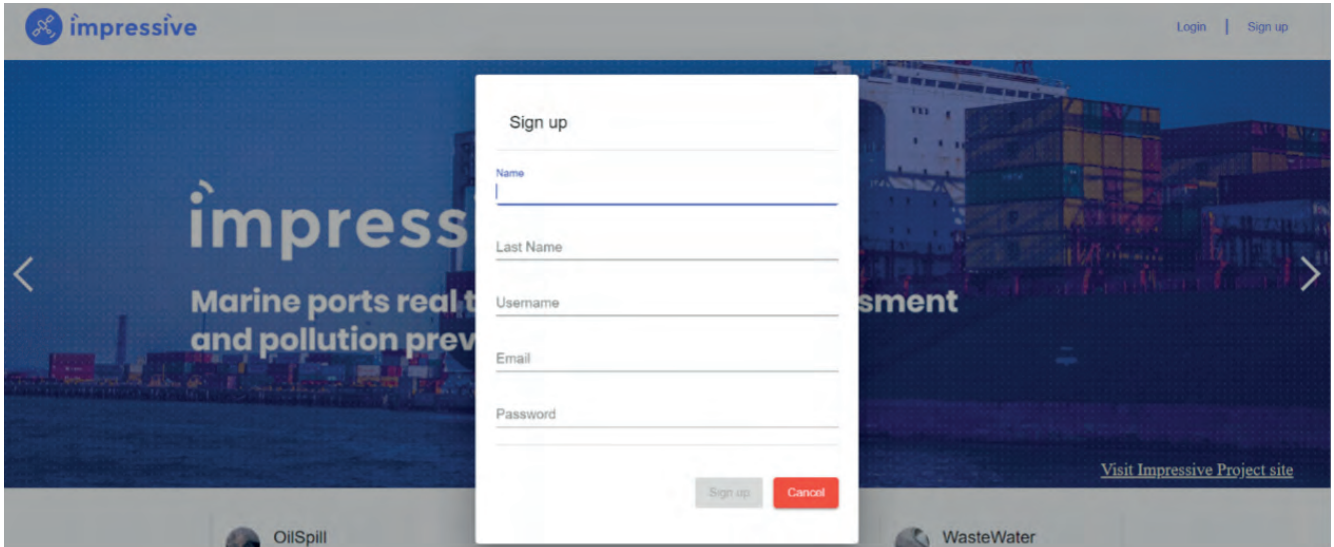


*Rafina port and its vicinity with calm winds and clear skies (source: Iphigenia Keramitsoglou NOA)*

Rafina Port represents the first and simple case of **IMPRESSIVE 2nd level of services**, which means that only satellite and modelling components were implemented and ran.

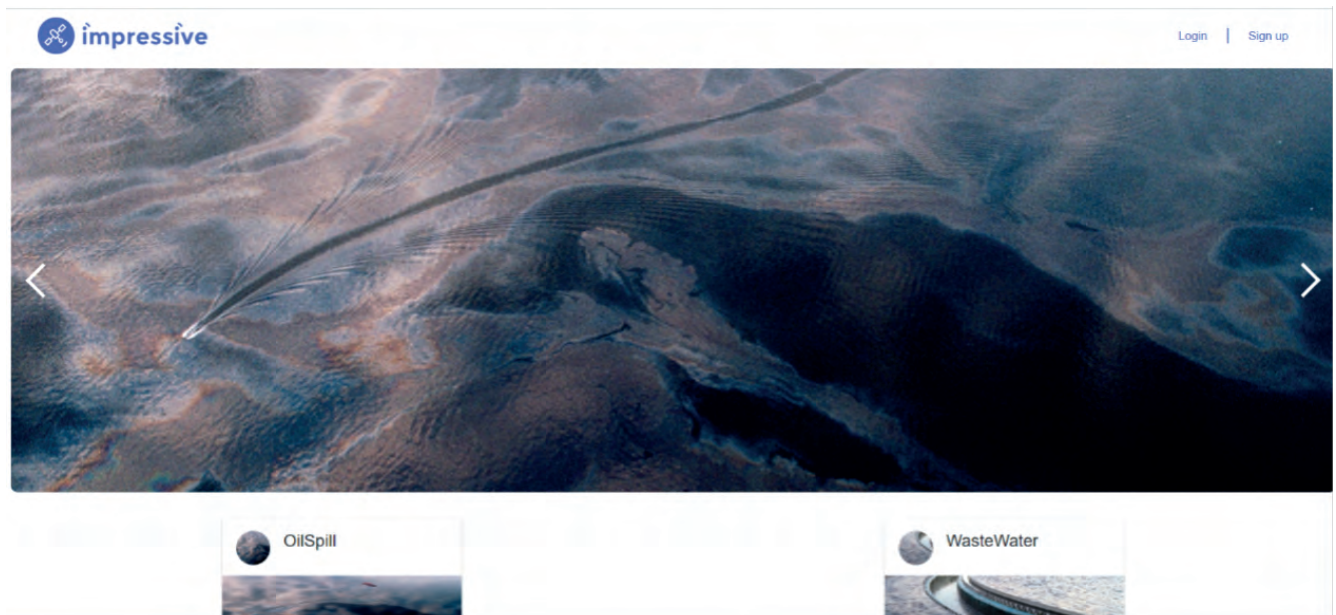


In order to consult the web application, we invite you to take the following steps:



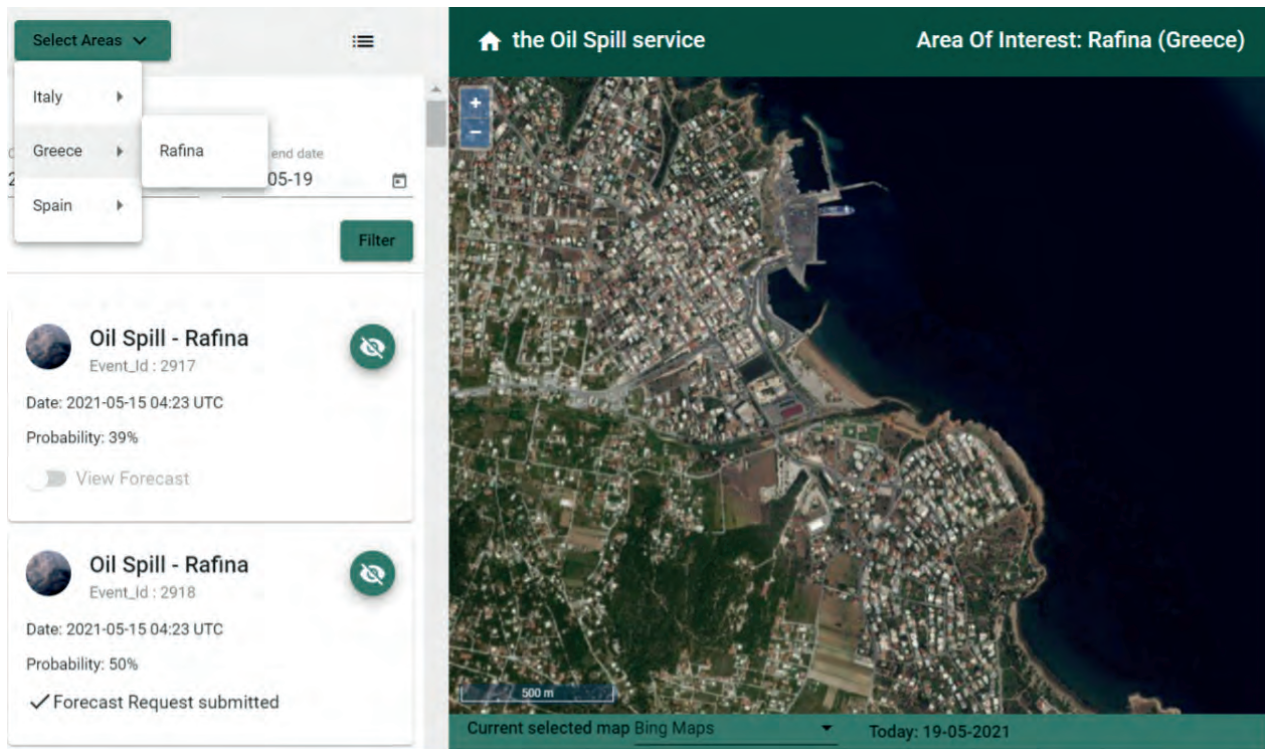
Registration form to enter in the IMPRESSIVE platform

- 1) Register to the system at the following address: <https://impressive.planetek.it/>



Access page to the IMPRESSIVE web application

- 2) After the selection of Oil Spill service, you can **select the port of interest** from the drop down menu. On the map, the Rafina area is zoomed with 2 option of background maps: Bing or OpenStreetMap to facilitate the navigation.



Selection of the area of Rafina Port

**3)** On the left, you can see the list of events occurred. **Each event has a unique identifier and represents a potential oil spill** identified by satellite in the date and hour defined. It is also characterized by a probability that represents the level of confidence that the event is an oil spill. When the probability is over a defined parametric threshold, the system automatically sends a request for forecast. The threshold for Rafina is set up to 50%. Users can also search event in a specific time range. In the above figure, the polygon represents a potential oil spill identified by Sentinel 1 (15-05-2021). The threshold is less than 50% since the forecast is not produced.

## Concluding remarks

The first IMPRESSIVE service on Rafina port is online. **Users can easily consult the marine area of Rafina to check the presence of suspicious oil spills** and monitor the drift in the next few days. From a technological point of view, **this first pilot is successful and integrates** into a unique geoportal 3 sub-systems, the one for the **Sentinel-1 processing hosted by NOA in Greece**, the forecast modelling hosted by **ICMAT/CSIC in Spain** and the web portal for visualization and consulting hosted by **Planetek in Italy**.

For future perspectives, it will be possible to integrate a local system optimized for the local conditions in a unique environment. Customers can access the IMPRESSIVE geoportal without plug-in or local SW installation with evident financial and technical advantages.