

# SEALAB PROYECT

## IMPROVEMENT OF THE SERVICES FOR PRIORITY SUBSTANCES ANALYSIS IN INSHORE WATERS

by the use of nanosensors, robotic and information  
management systems



OPORTO 11-13 NOVEMBER 2019

SILVIA TORRES-CETMAR

Funding



FONDO EUROPEO DE  
DESENVOLVIMENTO  
REGIONAL  
"Unha maneira de facer Europa"

Partnership



Colaboration



# SEALAB PROJECT

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- PARTNERS: Galician Enterprises



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- R&D CENTERS



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- FUNDED by CONECTA PEME 2018 CALL (Xunta de Galicia)



BUDGET: 1.056.297,97 €  
Partially funded (50-60%)



# MAIN GOAL OF SEALAB

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- Improvement of the services for inshore water quality by the development and integration of a **portable laboratory** on board an **unmanned surface vehicle**.



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- A **mission management system** facilitates the control of information and decision making for end users.





# SOCIAL AND LEGAL DRIVERS



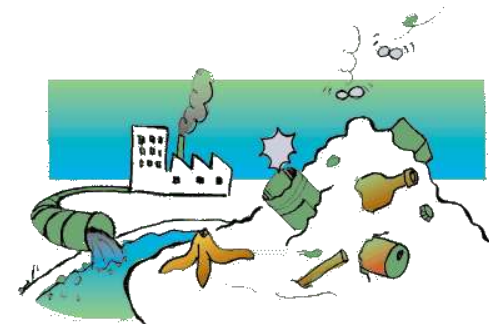
- Increased concern for the environment in society
- Improvement of environmental regulations and legislation in European Union and in their member countries
  - Directive 2000/60/EC: Water Policy Framework
  - Directive 2013/39/EU: Regards Priority substances
  - Each country, autonomous region, councils, etc.



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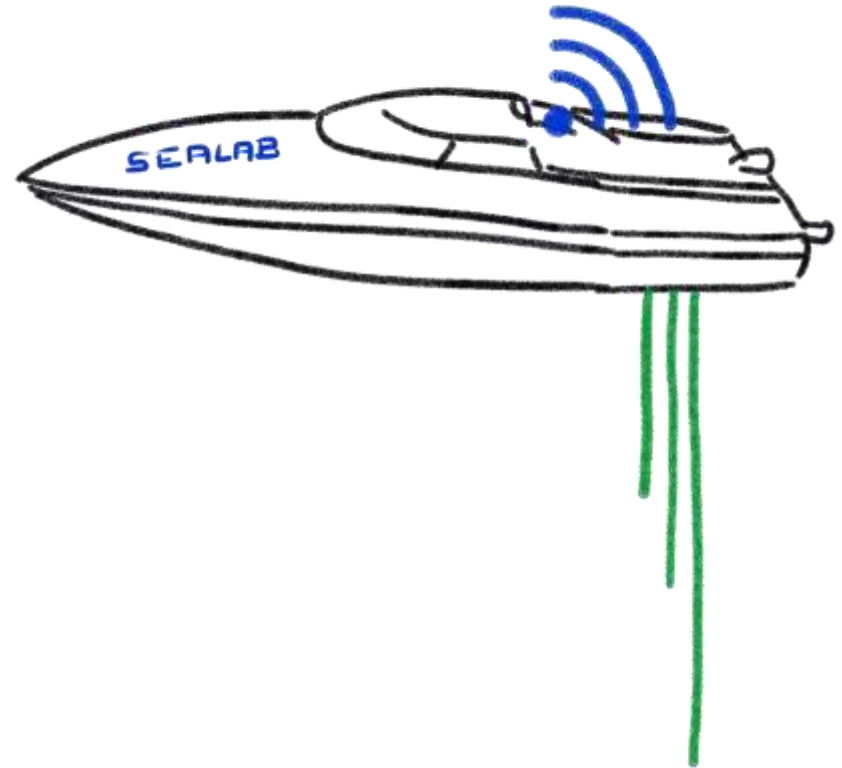


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  - Each country, autonomous region, councils, etc.
- Need to improve Water Quality and its control in waterbodies and discharges



# LOOKING FOR A SOLUTION...

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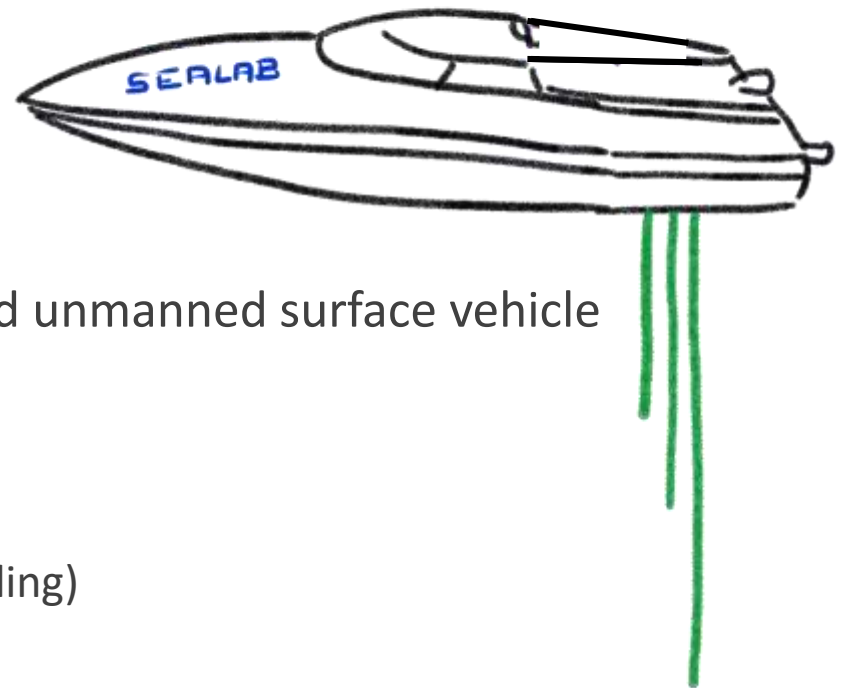
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- Autonomous and remoted controlled unmanned surface vehicle

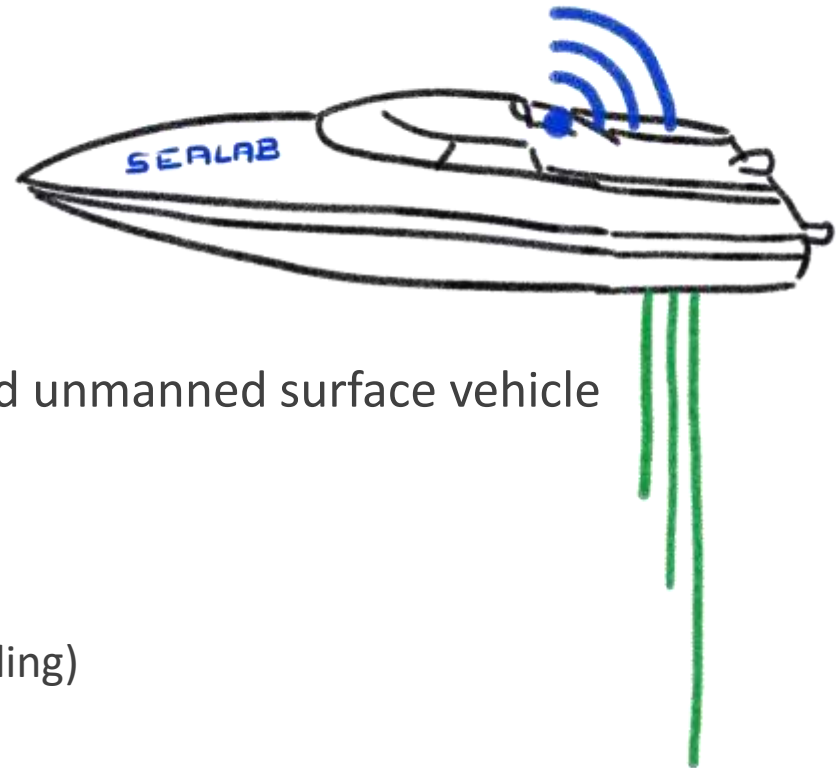
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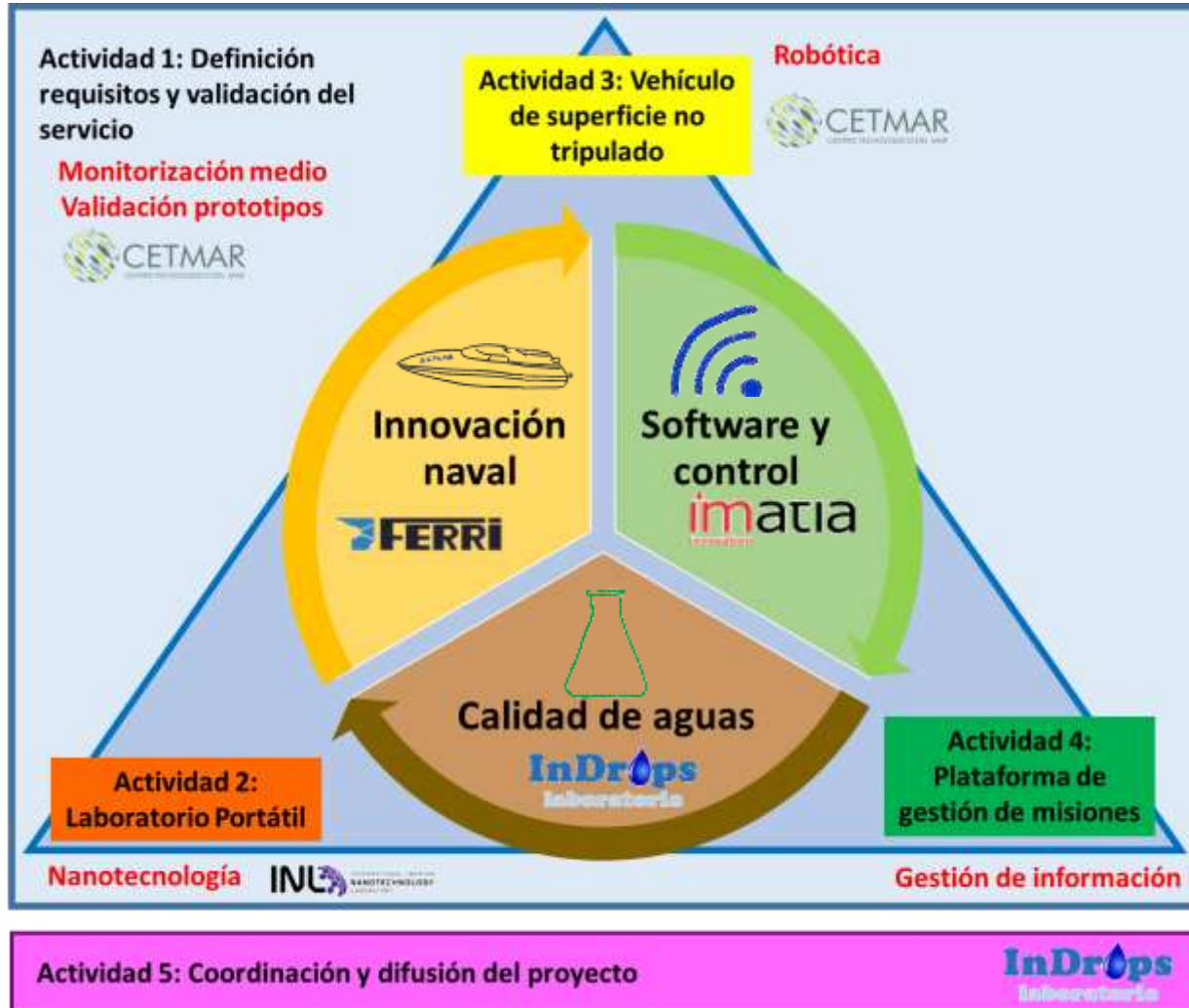


- Autonomous and remoted controlled unmanned surface vehicle
- Portable laboratory
  - Priority substances nanosensor
  - Autosampling system
  - Auxilary parameters monitoring (profiling)

# LOOKING FOR A SOLUTION...



- Autonomous and remoted controlled unmanned surface vehicle
- Portable laboratory
  - Priority substances nanosensor
  - Autosampling system
  - Auxilary parameters monitoring (profiling)
- Mission management system



# PROJECT STRUCTURE & PARTNERS EXPERTISE



# PORTABLE LABORATORY



## Portable laboratory

Water intake system

On-site measurement system

Automatic sampler collector

Priority substances Lab (nanosensor)

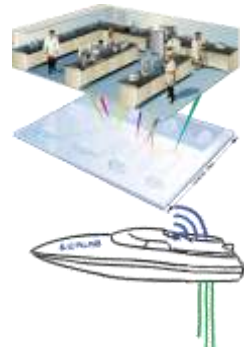
Multiparameter Sonde



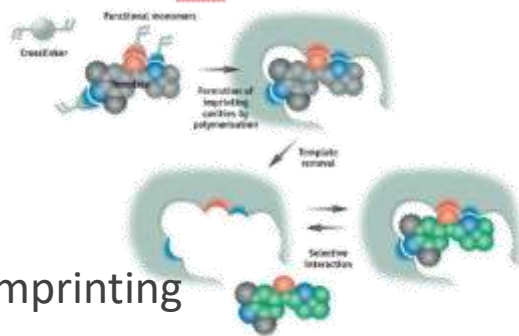
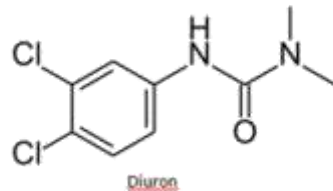
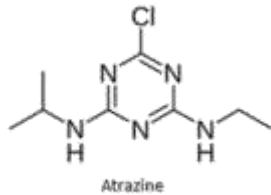
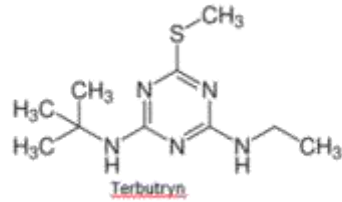
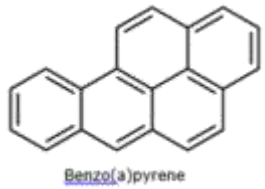
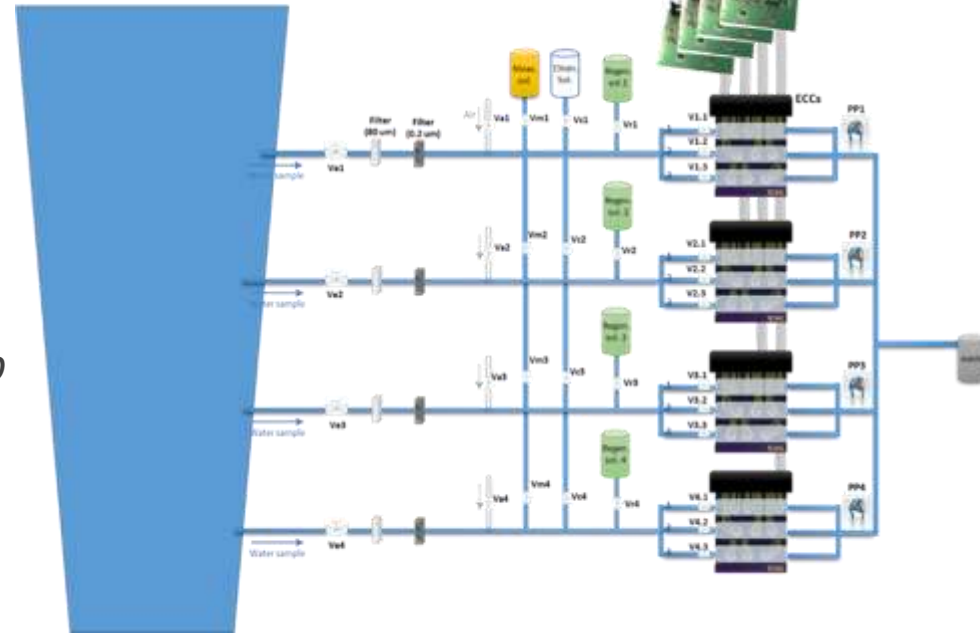


# NANOSENSOR

4 priority substances



Lab-on-a-chip



Molecular imprinting

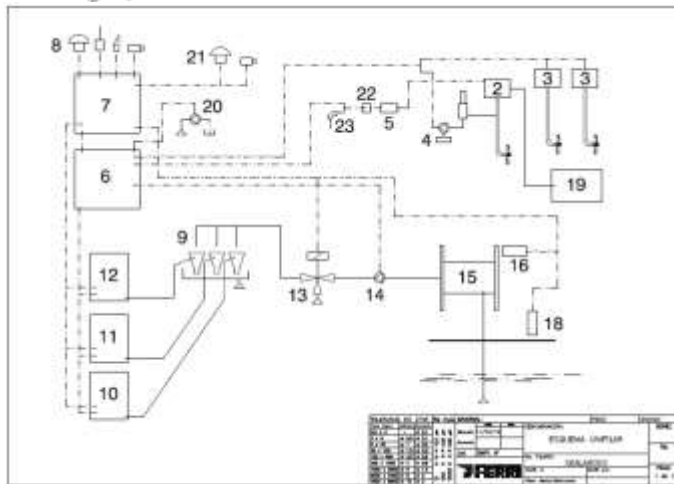
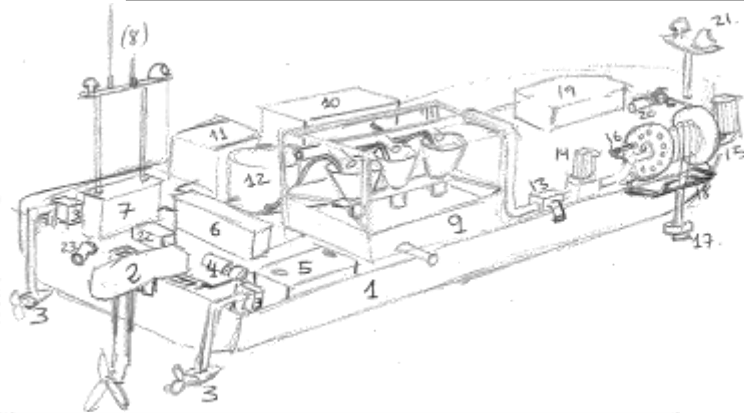
Reusable



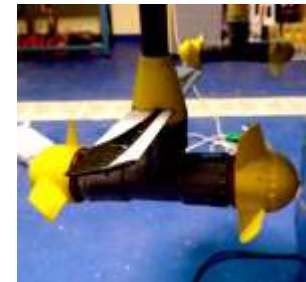
Quick



# UNMANNED SURFACE VEHICLE



Explosion engine

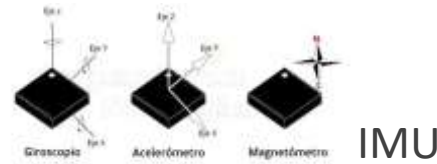


Electric Engine

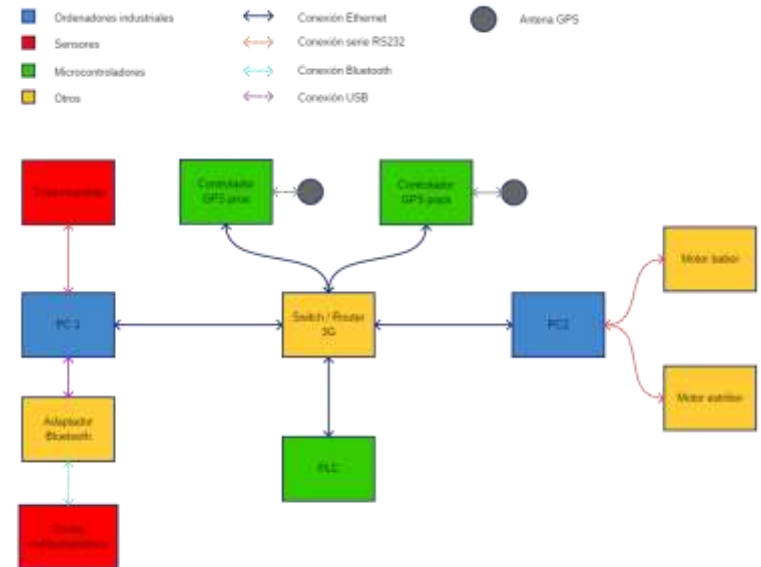
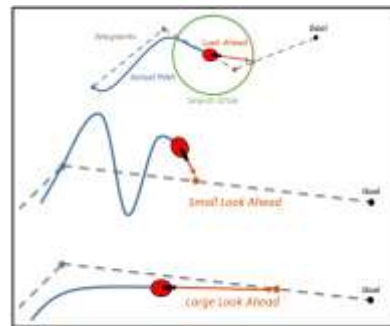


# UNMANNED SURFACE VEHICLE

- Communications: data, teleoperation and view
- GPS position: 2 systems

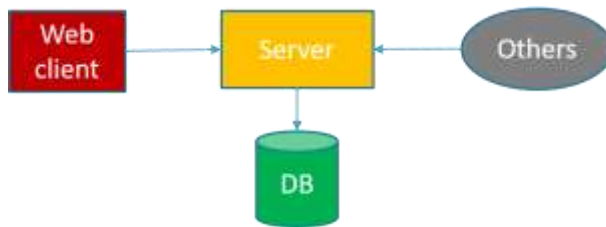


- Planning, navigation and control (Automatic or remoted)

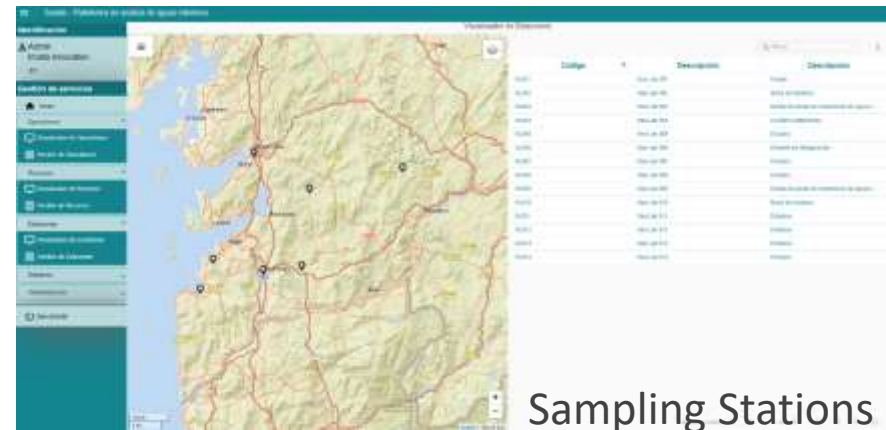
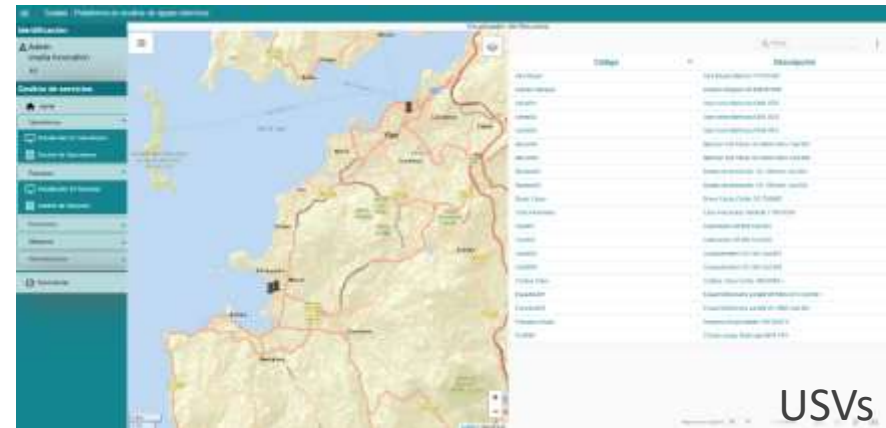


# MISION MANAGEMENT SYSTEM

Software architecture



Software end-users



# SEALAB PROGRESS

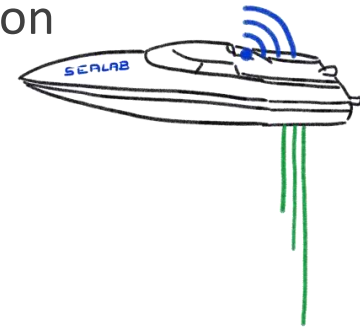
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# SEALAB PROGRESS

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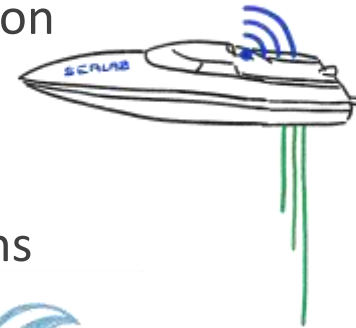
- Currently-March 2020: finishing different issues and integration



# SEALAB PROGRESS

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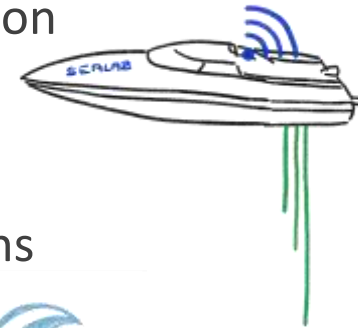
- Currently-March 2020: finishing different issues and integration
- April-September 2020: Prototype Validation in Real Conditions



# SEALAB PROGRESS

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- Currently-March 2020: finishing different issues and integration



- April-September 2020: Prototype Validation in Real Conditions



- September 2020: Dissemination Day

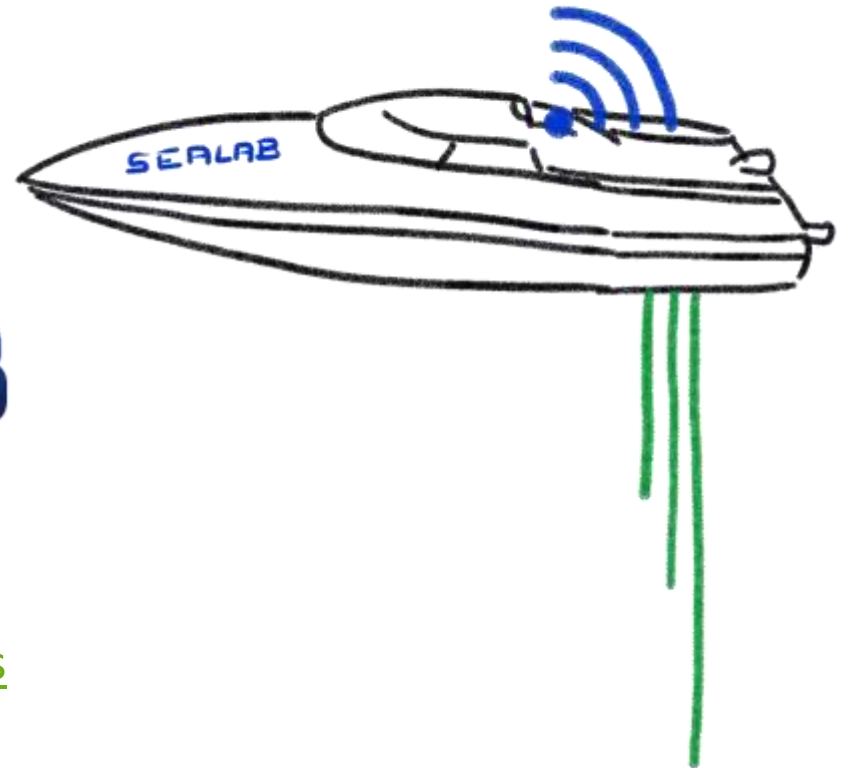
- Check: <http://www.indrops.es/noticias/>





# THANK YOU!

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Further information: [www.indrops.es](http://www.indrops.es)

Contact us in [sealab@cetmar.org](mailto:sealab@cetmar.org)