

# AquaDig

Digital Platform for Shellfish Inshore Maintenance Based on Microelectronic Environmental Sensors and IoT Devices

## Consortium

- Inova DE GmbH, Germany
- Go Limpets Lda, Portugal
- Institute for Systems and Robotics (ISR), Portugal

## Sector

AGRICULTURE

## Duration

**12**  
MONTHS

## Challenge

The distribution of live seafood for human consumption requires tight quality control. Water quality parameters of live seafood distributors are commonly kept at the same conditions, regardless of the number of animals per tank, which demand heavy operational costs without need. Also, the only thing that is measured is water temperature, and even then, seldomly.

From the moment of catch or harvest, seafood needs to be controlled and kept alive for delivery to the consumer. Mortality during maintenance and transport is high, greatly reducing the product's value

## DIATOMIC Support

DIATOMIC did not only supported us financially, but also with experts in the field that guide us to a broader solution. The exchange with the other participants was also a huge help in growing our solution to a higher maturity degree.

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 761809.



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## Solution

AquaDig is a game-changer for live seafood distributors across Europe. It is a smart solution that implements a digital layer that monitors and optimizes equipment operations, provides food safety, as well as traceability reports resulting in reduced costs and lower mortality of the seafood.

By monitoring the key parameters of the installation, such as water temperature, water flow, oxygen, nitrates, pH levels, and the energy consumption of the separate equipment, we can better optimize the operational costs – the target is 20% less electricity.

For additional traceability during transport, AquaDig equips a transport van to monitor temperature and oxygen until delivery to the client and wirelessly synchronize with our platform. This further brings innovative predictive maintenance capabilities lowering the risk of malfunction that would otherwise endanger the seafood in the water tanks.

We aim to reduce by at least 10% mortality during maintenance and transportation

## Lessons Learned

- A higher focus on reporting traceability is desired, as is a plug-and-play solution to offer SMEs in the agrifood sector.
- It was challenging to get all the equipment working on time for the experiments and collecting data to train the machine learning algorithms.
- Hard work, perseverance and fruitful collaboration between all involved partners is crucial to overcome all the obstacles.

## TRL & Adopters

TRL level at the beginning of the experiment: **4**

TRL level at the end of the experiment: **7**

Number of early/first adopters raised during the experiment: **1**

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## Timeline

The concept was analysed by all three partners to design the optimal solution that would address the key pain points in the fisheries. For the first two months, our main focus was on the architecture and hardware necessary to achieve our Key Performance Indicators. We developed and implanted the solution at the pilot site (Madeira Island) and started testing it with the regional market. The project concluded in April 2020 with the pilot demonstrations.

## Stakeholders

All three partners were involved in the experiments: Inova DE, Go Limpets and ISR. To follow closely how the system behaves.

## End Users

Seafood traders are the target users of our development, and the ones to gain the most from the optimization of their processes.

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## Key Results

We learned the importance of reporting and traceability associated with the optimization aspects of the platform. We started to develop that module with more direction and dedication to usability.

## Impact

The project allowed us to develop a targeted solution to a specific vertical in the agriofood industry: the fisheries. The traceability aspects inherent to IoT platforms were now leverage with optimization strategies that positively affect the bottom-line of the food trading companies. We managed our experiments to demonstrate that we can save energy costs and reduce animal mortality with our approach.

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## Testimonials

“AquaDig supported by DIATOMIC enabled us to create a unique solution to support fish and seafood traders. It has brought the power of IoT, Artificial Intelligence and traceability together.”  
— Vitor Vieira, Managing Director at Inova DE

“The AquaDig platform allows us to control the installation like never before. From remote control of the installation to complete overview of our products, it is an added-value for our business.”  
— Bruno Bento, Managing Director at Go Limpets

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