



W • S E N S E

COMPANY PROFILE

CONFIDENTIAL IN COMMERCE

IOT ⊕

WSense raise €9M for underwater wireless communication 'harnessing the ocean's untapped potential'

WSense, an Italian IoT startup has developed underwater wifi for critical infrastructure monitoring and environmental protection. The €9 million funding will boost its international expansion.

The spin-out from Sapienza University in Rome has raised a €9 million funding round which was led by SWEN Blue Ocean, CDP Ventures, RunwayFBU, Axon Partners Group, Katapult Ocean, CoreAngels Climate and Moonstone also got in on the investment action.

<https://tech.eu/2023/10/23/wsense-raises-eur9m-for-underwater-wireless-communicatio/>



<https://www.youtube.com/watch?v=SM3NXKzhIKA&feature=youtu.be>

COMPANY KEY FACTS

- **Headquarters:** Rome, Italy
- **Commercial Operations:** since 2017
- **Business description:** deep-tech company, born as a spinoff of Sapienza University in Rome, specialized in underwater monitoring and communication systems, based on patented technologies that have pioneered the enablement of the **Internet of Underwater Things (IoUT)**. WSense's technologies are at the forefront of underwater wireless networking, enabling multi-modal secure wireless communications and networking among submerged and surface sensing and robotic platforms.
- **Number of FTEs:** 50+ people located mainly in Italy and Norway

OFFICES



KEY VERTICALS AND SOLUTIONS

Key verticals: Energy, Oil & Gas, Offshore Renewables, Critical Infrastructure and Environmental Monitoring

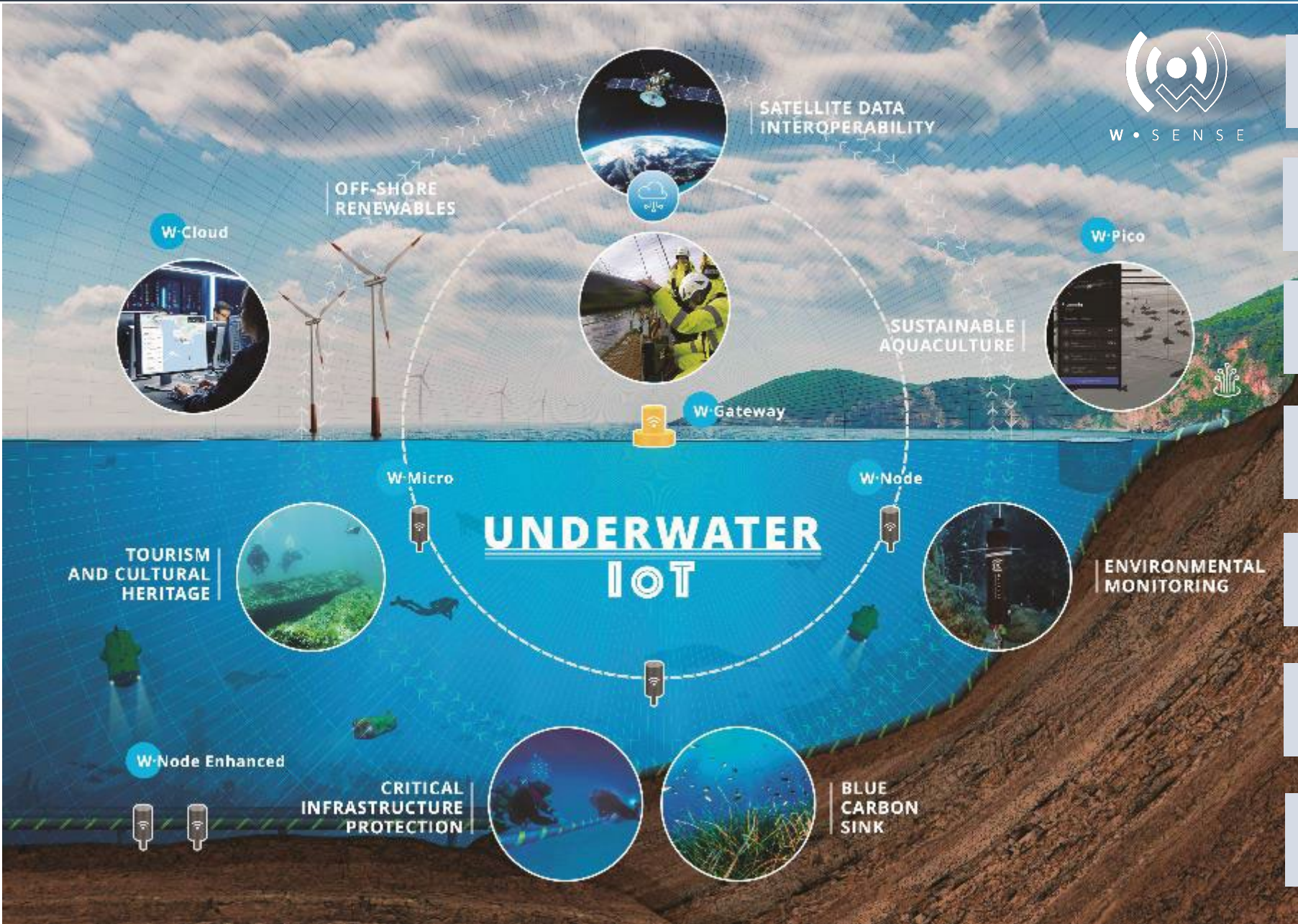


Key solutions include:

- **Underwater Wireless Network Infrastructure** (design, deployment and management of nodes and gateways, Underwater Network Robotic Systems)
- **Cloud Monitoring Platform and Dashboard** for real time gathering and visualization of data
- **System Integration** of 3rd party sensors and or other devices/systems

CUSTOMERS & PARTNERS





Cables & Pipelines

Carbon Capture Storage

OffShore Energy

Critical Infrastructures

Aquaculture

Cultural Heritage

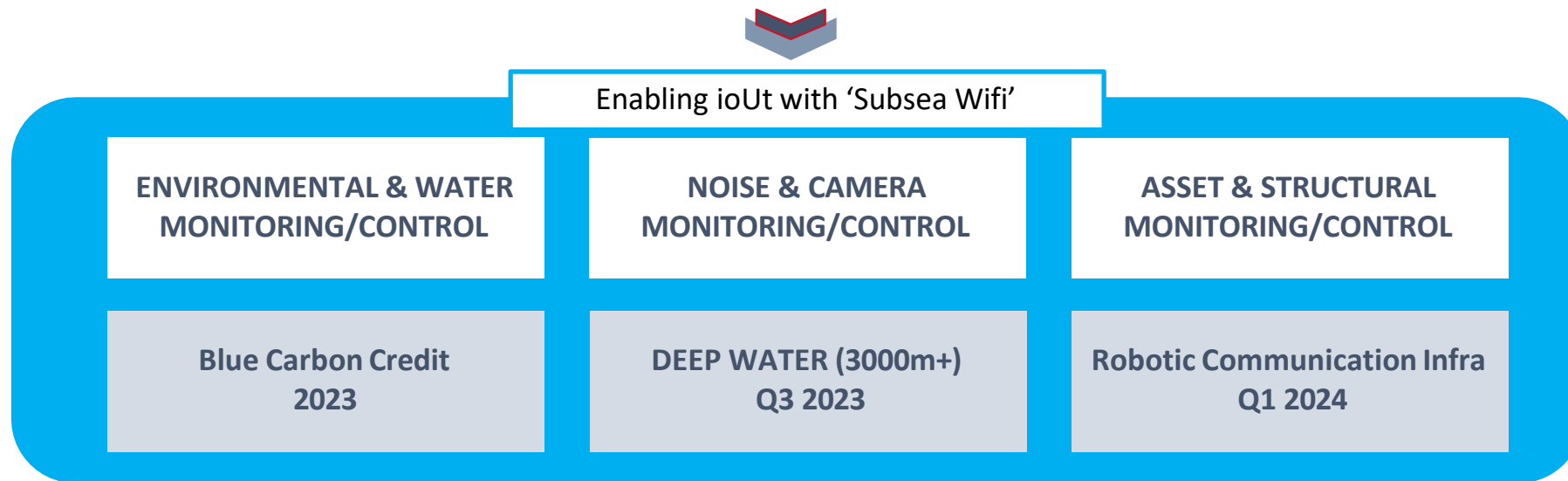
Robotics, AUVs Comms



WSense SOLUTIONS



Underwater wireless Mesh networks (**patented**), multimodal (acoustical/optical) enabling Internet of Underwater Things (ioUt)



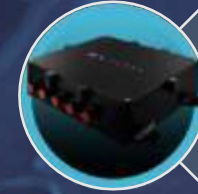
MAIN FEATURES



- Real time Bidirectional communication
- Easy integration to any vendor's sensors and devices
- Interoperability and long-lasting autonomy (years)
- Cost effectiveness



W-Cloud: highly customizable cloud-based data collection and visualization platform for data analytics



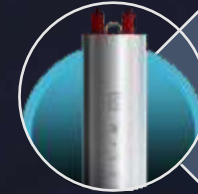
W-Gateway: bridge between underwater and terrestrial networks



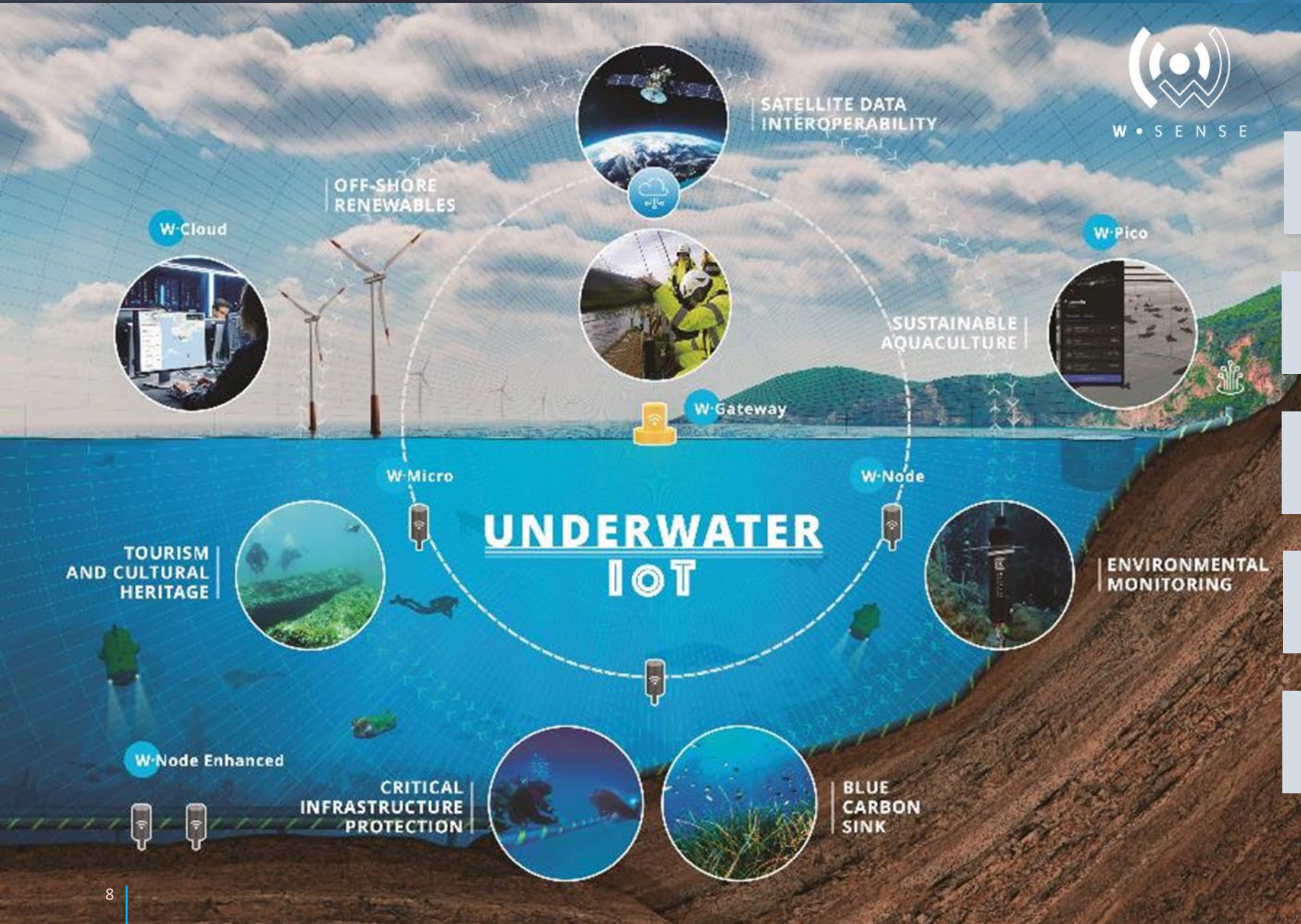
W-Mesh: patented multi protocol underwater adaptive networking & multivendor interoperability layer for wireless data reliability and security



W-Node: underwater multi-sensor node with acoustic modem for shallow water



W-Node Enhanced: underwater multi Sensor node for Deep water and onboarded AI



Cableless for large area coverage

Support of emerging standards

High performance, highly reliable

Underwater GPS and Cyber Security

Satellite data integration

- Large area coverage (tens of km)
- Support of emerging standards
- High performance, highly reliable
- Underwater GPS and Cyber Security
- Multi-Vendor Interoperability
- Low power, long lasting (years)



PATENT titled "POLICY MAC" - "Method and device for dynamical protocol selection" Priority No.102015000062624 granted on 16.03.2018

- ✓ EPO no. 3363183 granted
- ✓ USPTO No. 10659570 granted on 19.05.2020

Patent titled "CARMA" - "Method for managing in an adaptive and joint way the routing policy and the retransmission policy of a node in an underwater network, and means for its implementation" Priority no. 10201500006262 granted on 04.04.2018

- ✓ EPO No. 3289799 granted on 27.11.2019
- ✓ USPTO Nr. 10581533 granted on 03.03.2020
- ✓ Patent also granted in Israel, Japan, Chile, Russia, Australia, Cina. Patent also filed in Canada and various countries in Asia.

Industrial Design IP protection of WSENSE 3D Graphical User Interface: International Design Registration no. DM/214843 granted 12.04.2021.

- ✓ Granted in Europe UK and Norway. Filed in Chile and Canada



WSENSE owns patents on how to develop effective and reliable underwater wireless networks.





CHIARA PETRIOLI

PhD, Full Prof, Founder and CEO

Patent author and R&D Labs Director. Innovation awards winner: NT100 Top Social Global Techs changing our lives; Inspiring Fifty Italy; ACM N2Women 2019 Stars in Communications and Networking, #EUWomen4Future 2021



DANIELE SPACCINI

PhD, Co-founder and Chief Innovation Officer

Decade experience in complex R&D projects, Patent author. Leads a team of 15+ engineers implementing complex industrial projects. Wsense representative in NIAG 190 and NIAG SG243.



STEVE GREENLAND

Chief Sales Officer

Broad range of experience in the Oil and Gas industry, through to midstream and on to downstream processing. Led business all over the world, with a strong commercial background and overall annual orders Budget in the range of 50MUSD.



COSIMO PALMISANO

PhD, Director Operations

15+ years results-focused entrepreneur with extensive experience coordinating operations in innovative manner to drive revenue generation and business growth in international markets. ML/AI expert for Industrial IoT with experience in applying predictive statistical models on big data. Raised \$47M in previous startup



SALVATORE SARDO

President Board of Directors

Executive with 40+ years in the ICT, Telco and Energy sectors: ENI COO; Saipem Board Member; Snam Board Chair; Senior Executive Vice president TIM; CEO CDP Immobiliare and CDP Chief Corporate Operation Officer. Awarded Commendatore dell'Ordine al Merito della Repubblica Italiana (2008) and Grande Ufficiale dell'Ordine al merito della Repubblica Italiana (2011).



CLAUDIO LA TORRE

CFO / Strategic and Corporate Development

15+ years M&A experience mainly in the Telco & Technology industry, with senior leadership roles in corporate (Ericsson), consulting (EY), Venture Capital (Enea Tech) and several startup/scaleups, Italy and international.

SELECTION OF FORMER EMPLOYERS



+50 talents including PhD (1/3), post Doc, Subject Matter Experts, Advisors in Italy and International



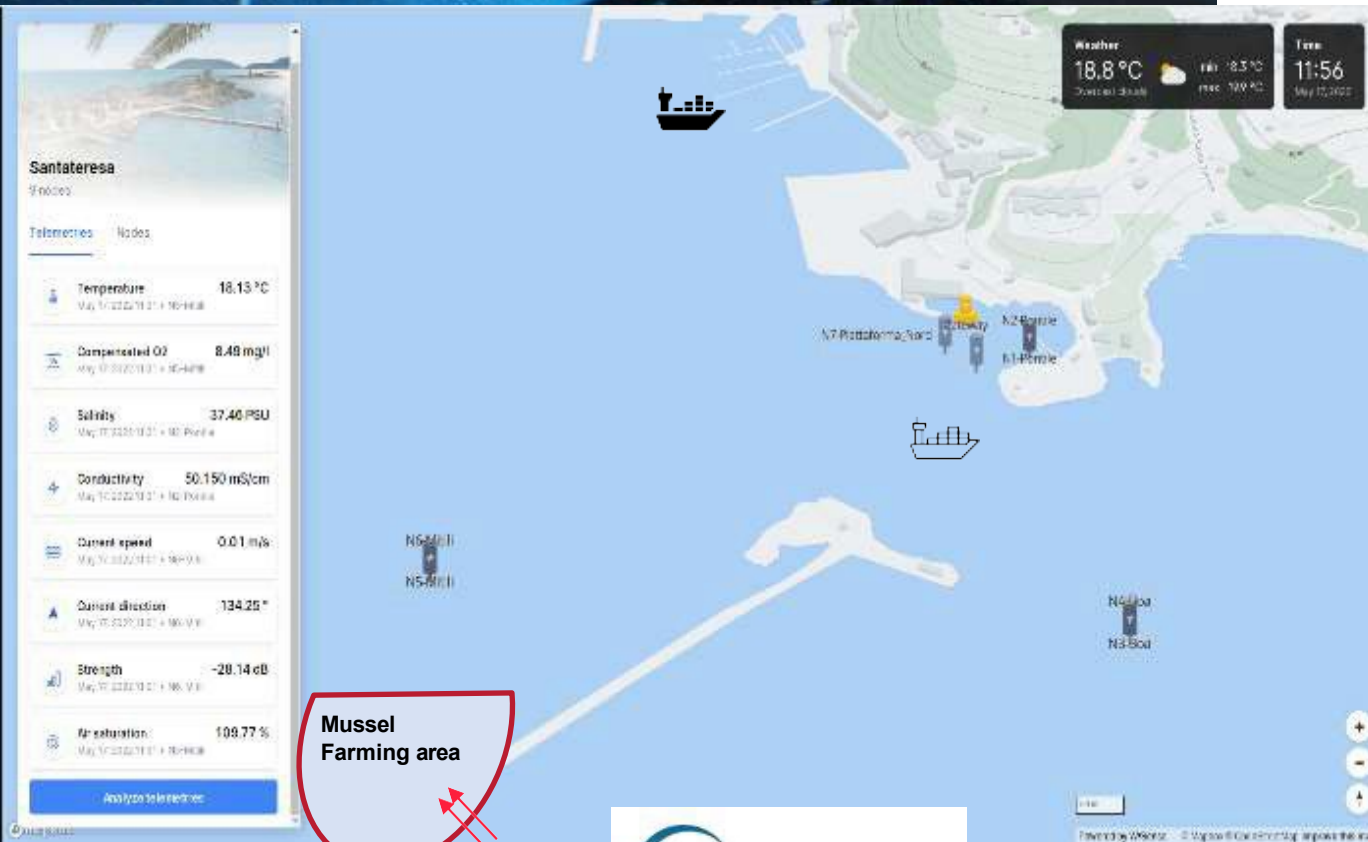
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**Relevant
Use Cases**



REFERENCE EXAMPLE: SMART BAY

Real Time Environmental Monitoring in GOLFO di LA SPEZIA



SMARTBAY

Bay had been suffering due to temperature changes and bacteria build ups for many years without clear understanding of the issue. Scientists are also studying the impact of artificial reefs and mussel farming on CO2 absorption underwater with a restricted farming area further upstream. Previously

- ❑ Single point solution buoy for monitoring

WSENSE SOLUTION:

Replace buoy point solution with underwater mesh network

- ❑ Was able to identify and reduce pollutants that were causing hundreds of thousands of damage to inventory
- ❑ Have resulted into high quality dense data to understand risk to the ecosystem
- ❑ Have reduced the cost of monitoring while achieving a higher accuracy and quality of data protection
- ❑ In a shared eco-system it was critical to getting different wider and better data for all partners (harbor, authority, scientists, marine parks, mussel farmers)
- ❑ Demonstrated need of in situ monitoring to improve satellite remote sensing data

Source: Dr. C. Lombardi, ENEA Research Scientist, Lab of Biodiversity and Ecosystems Services member and leader of the Smart Bay project

Limiting Environmental damage by providing a real-time early warning system against environmental damage and spills in a busy bay area. Safeguarding water quality critical for the authorities and protecting marine farming businesses & community

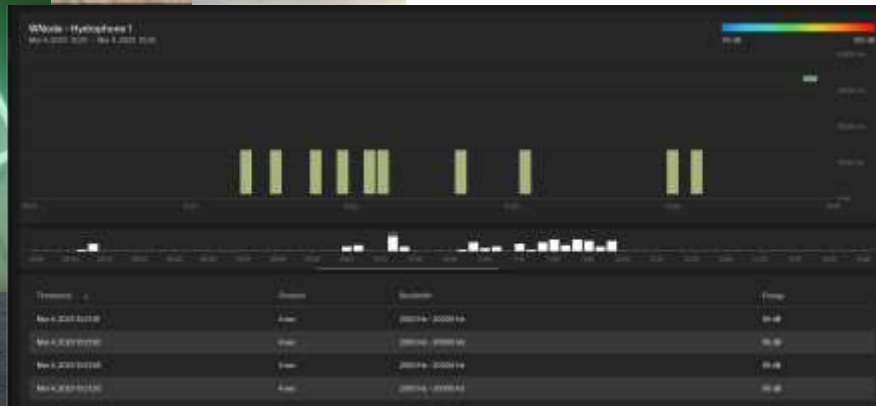
WSENSE's IoUT system installed in the Bergen and Donna areas, in pilots with Aanderaa Xylem.

Client Issue:

- Aquaculture - millions of dollars of fish farming and direct measurement of fish welfare
- Very costly to monitor Bergen and Donna areas in terms of currents, noise and water quality. Good quality data in real time and from different depth is critical
- Current system which was cabled (regularly broke) and not easy to adapt as needs for monitoring change as further regulation is incoming.
- Polar region monitoring

WSENSE SOLUTION:

- Underwater mesh networking overcame obstacles such as underwater hills that provided stable and flexible data monitoring solutions which doesn't require costly cabling systems
- Network could easily be relocated without an impact to data collection
- Able to easily change position and distance between monitoring units since you are not tied to a fixed cable length.



Replacing inflexible cabled solution with a Subsea Wifi network— saving the customer Millions of Euros in opex costs whilst quickly adding new IOT sensors without retrofitting costs (i.e. noise monitoring) to meet new regulations

VIDEO TF1

<https://www.tf1.fr/tf1/jt-20h/videos/italie-les-volcans-engloutis-de-sicile-70972769.html>

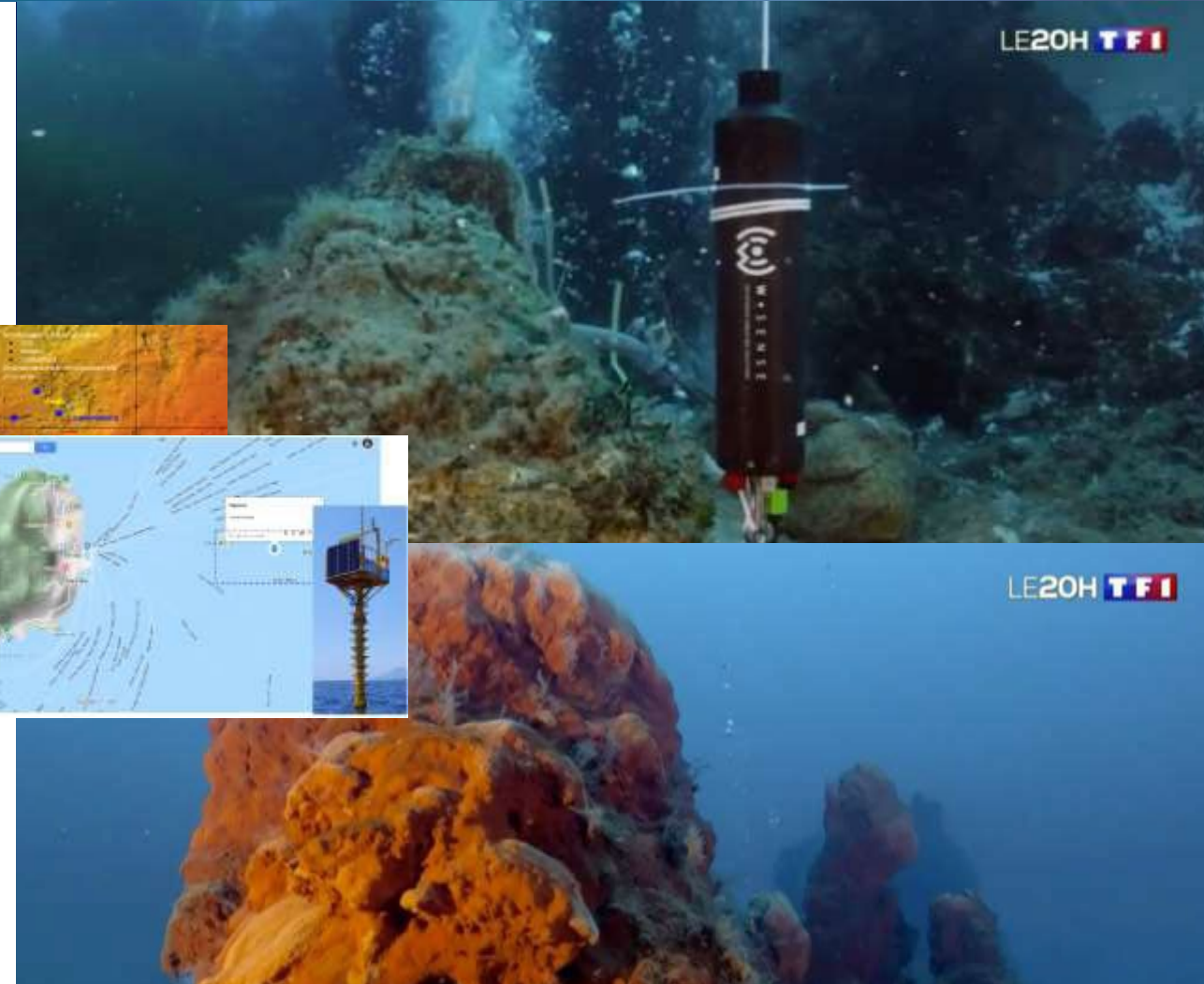
WSENSE's Subsea Wifi system installed in the heart of an underwater volcano on coast of Italy

Client Issue:

- Active volcanoes off the coast provide major risk to coast areas
- Protecting the Coastal towns by having an early warning system for Tsunami and eruptions
- Surface level solutions are insufficient for the data required to create a real 'alert mechanism'

WSENSE Solution:

- Provides real-time data and monitoring of hazardous gases, methane and currents (CO₂), salinity, and volcanic activity.
- National Institutional of Geo-chemistry monitoring real-time data is helping build models critical for understanding the risk of eruptions and create early warning systems.
- The solution may be the difference between life and death mission critical decision-making



LE20H TFI

LE20H TFI

Early warning system for volcanoes. Critical for safety and coastal monitoring for eruptions and activity. Reading multi parameters deep in the water. Wnode is highly heat resistant and robust.

<https://www.bbc.com/travel/article/20200713-baiae-a-roman-settlement-at-the-bottom-of-the-sea>

Video "Preserving Baiae", minute 3:30

BBC, RAI Superquark

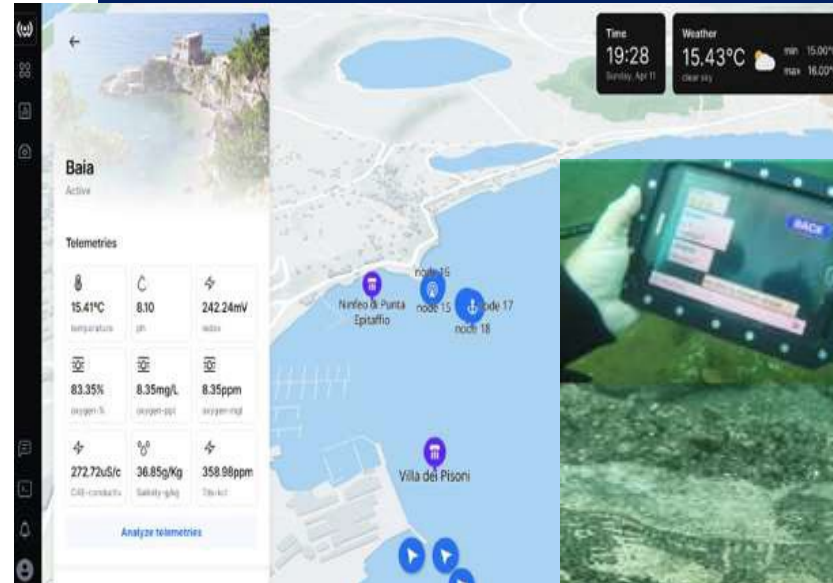
WSense system for real-time water quality and live camera feeds to protect underwater cultural sites

Client Issue:

Historical underwater site has immense financial and cultural value and was prone to theft
Water quality monitoring in the area is critical to maintaining the assets underwater

WSense Solution:

- Provides real-time camera footage of the protected site. Surveillance and detection against unauthorised visitors
- Wsense Subsea Wifi allows for connected divers and visitors ensuring safety, security and opportunities to central command center to communicate with divers underwater
- Touristic enriched experience when visiting the site



Underwater chat & Connected Divers



Compressed Images sent underwater



COP26 success story; Best practice for OMC MEMBER STATES EXPERT GROUP
"Strengthening cultural heritage resilience for climate change"





Saipem signs agreement with WSense for development of communication networks for underwater drones (Oct 2021)

<https://www.saipem.com/en/media/news/2021-10-04/saipem-signs-agreement-wsense-development-communication-networks-underwater>



Saipem entrusts Wsense to make IOUT happen. Joint product out Q3 2023. Target critical infrastructure and deep ocean technology.



Wsense at REPMUS22 in Portugal (Sep 2022)

We had successful digital communications over 2 km in two different serials using our JANUS acoustic modem during the DISSUB (rescue operations related to submarine in distress) operations.

The operations involved heterogeneous assets from NATO CMRE, Portuguese and Italian Navies and Italian companies, enabling the digital exchange of Automatic Identification System (AIS) and emergency messages, as well as chatting with the submarine crew!

Wsense is providing safety/ security projects with NATO with a JANUS e2e encryption wifi underwater technology



W • SENSE

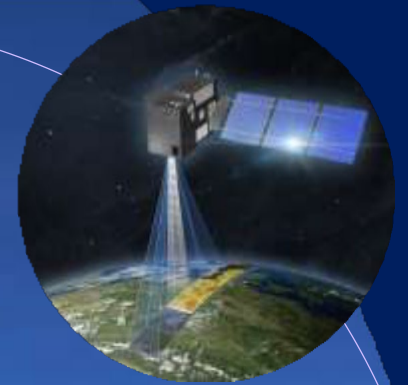
THE FUTURE OF OFFSHORE ENERGY

Advanced monitoring and intervention via distributed underwater sensing and robotic technologies

WCloud,
Remote
Alerting



Satellite data
integration



Noise
Monitoring



Marine Protected
Area Sensing

Digital Twin,
Asset
Maintenance



Wireless Underwater Network

Underwater
Infrastructure
Monitoring



AUV Predictive
Maintenance



Blue Carbon
Credits





www.wsense.it