



UNIVERSITÀ
POLITECNICA
DELLE MARCHE

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**Marine monitoring and
intervention: where Europe is
and where the industrial-
academic researches are going**

**Preservation of
Natural resources, Innovation and Robotics
for the development of the economy
in the Adriatic-Ionian Region**

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RESEARCH & INNOVATION
TO DRIVE THE
GREEN DEAL

#EUGreenDeal
#ResearchImpactEU



European
Commission

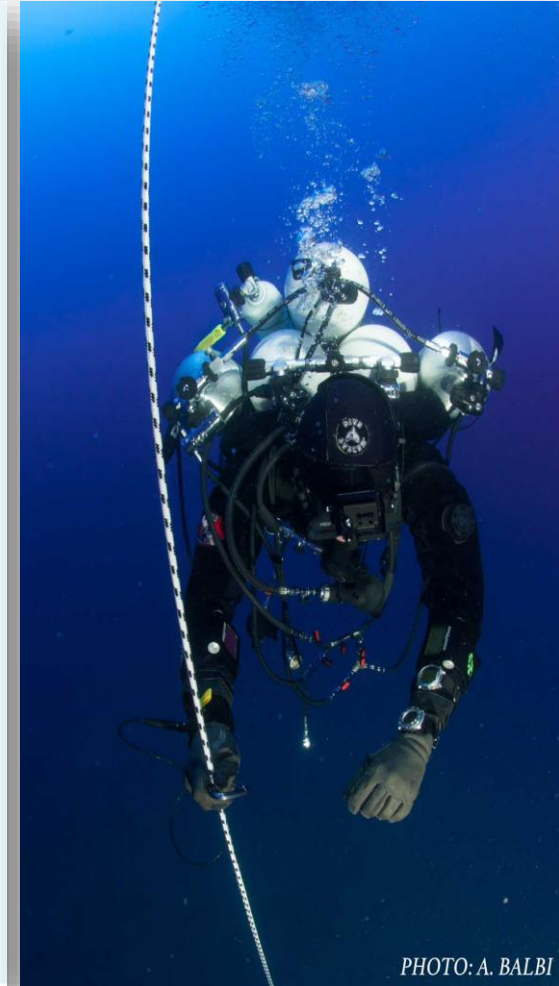


PHOTO: A. BALBI



Marine monitoring and intervention. The multiple uses of the sea

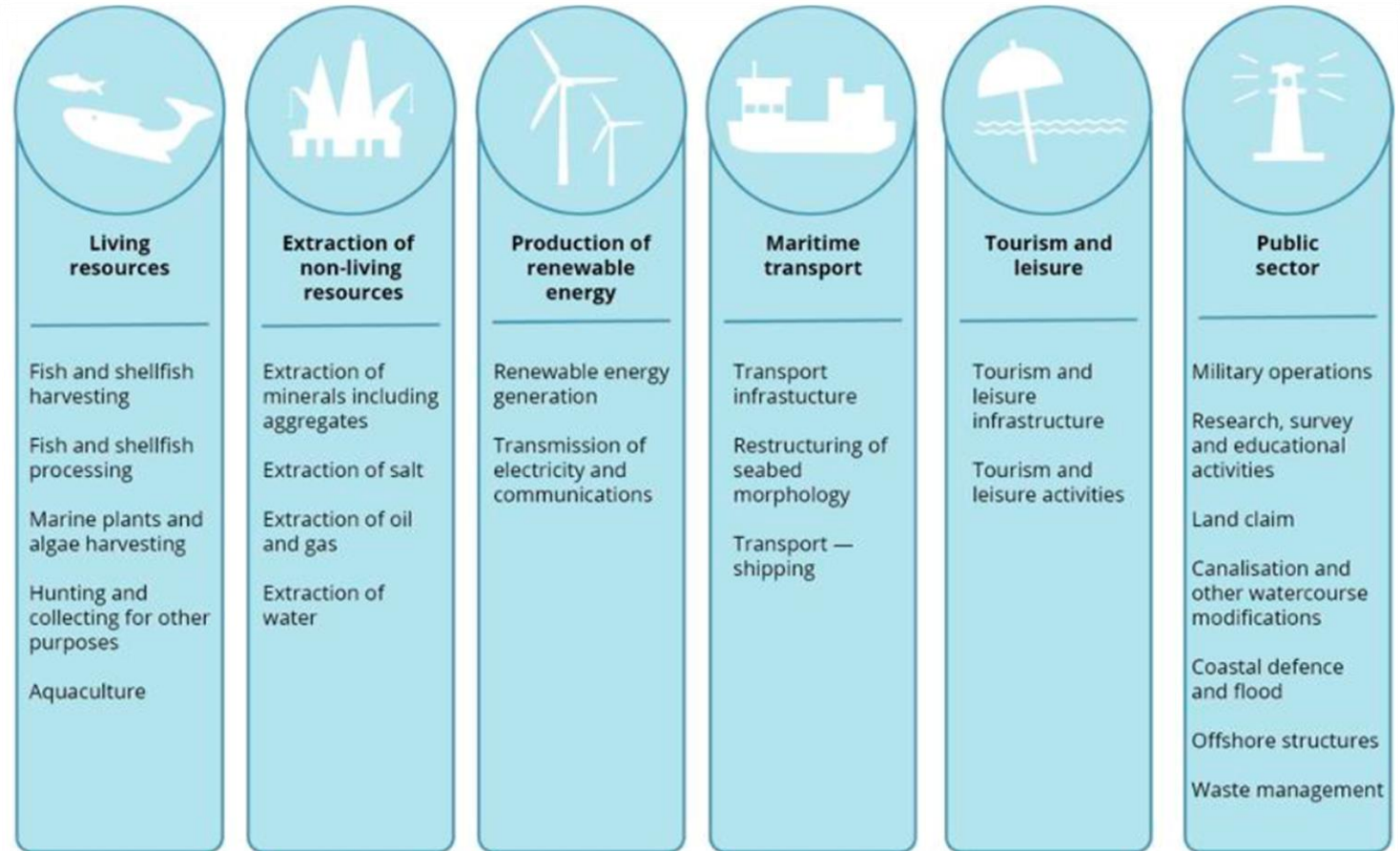


Figure 3 – The multiple uses of the sea²⁰





- Transparent & **Accessible Seas** and Oceans: Towards a Digital Twin of the Ocean - [LC-GD-9-3-2020](#)
- Innovative land-based and offshore **renewable energy** technologies and their integration into the energy system - [LC-GD-2-1-2020](#)
- Testing and demonstrating systemic innovations in support of the **Farm-to-Fork Strategy** - [LC-GD-6-1-2020](#)
- **Restoring biodiversity** and ecosystem services - [LC-GD-7-1-2020](#)
- Green airports and ports as multimodal hubs for sustainable and **smart mobility** - [LC-GD-5-1-2020](#)
- Solutions to detect, identify, counter and protect against mobile **manned, unmanned or autonomous** underwater systems (including those operating **at very high depths**) - [EDIDP-UCCRS-MUAS-2020](#)





SUSTAINABLE

GOAL 14: LIFE BELOW WATER

14 LIFE BELOW WATER



BY: MARGREET DE HEER

MOST OF THE PLANET'S SURFACE IS **WATER!** HERE'S WHAT WE MUST DO TO PROTECT THE OCEANS:

1. REDUCE AND PREVENT POLLUTION



2. PROTECT ECOSYSTEMS



3. END OVERFISHING AND ILLEGAL FISHING

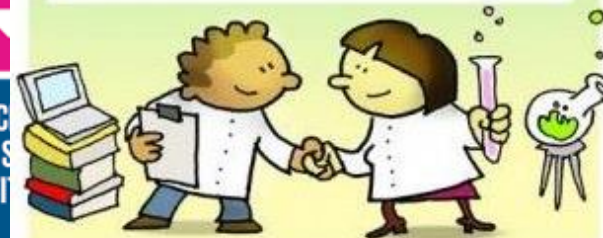


4. HELP FISHING COMMUNITIES TO DEVELOP SUSTAINABLE FISHING PRACTICES



5. SCIENTIFIC COOPERATION

- TO INCREASE KNOWLEDGE
- TO IMPROVE TECHNOLOGIES
- TO MINIMIZE OCEAN ACIDIFICATION



6. MAKE AND MAINTAIN INTERNATIONAL LAWS

AGREEMENTS





Engineering Faculty

CYBERSECURITY

AUTOMATION

DATA MINING
& AI

DII
Department of
Information
Engineering

MECHATRONICS

MISSION AREAS:

Climate-neutral
and smart cities

Soil health and food

Healthy oceans,
seas, coastal and
inland waters

Cancer

Adaptation to climate
change, including
societal transformation

DIISM
Department of
Industrial
Engineering and
Mathematical
Sciences

ENERGY

MATERIALS

#HorizonEU



European
Commission

FLUIDODYNAMICS

DICEA
Construction, Civil
Engineering and
Architecture

EROSION

Science Faculty

Citizen Science

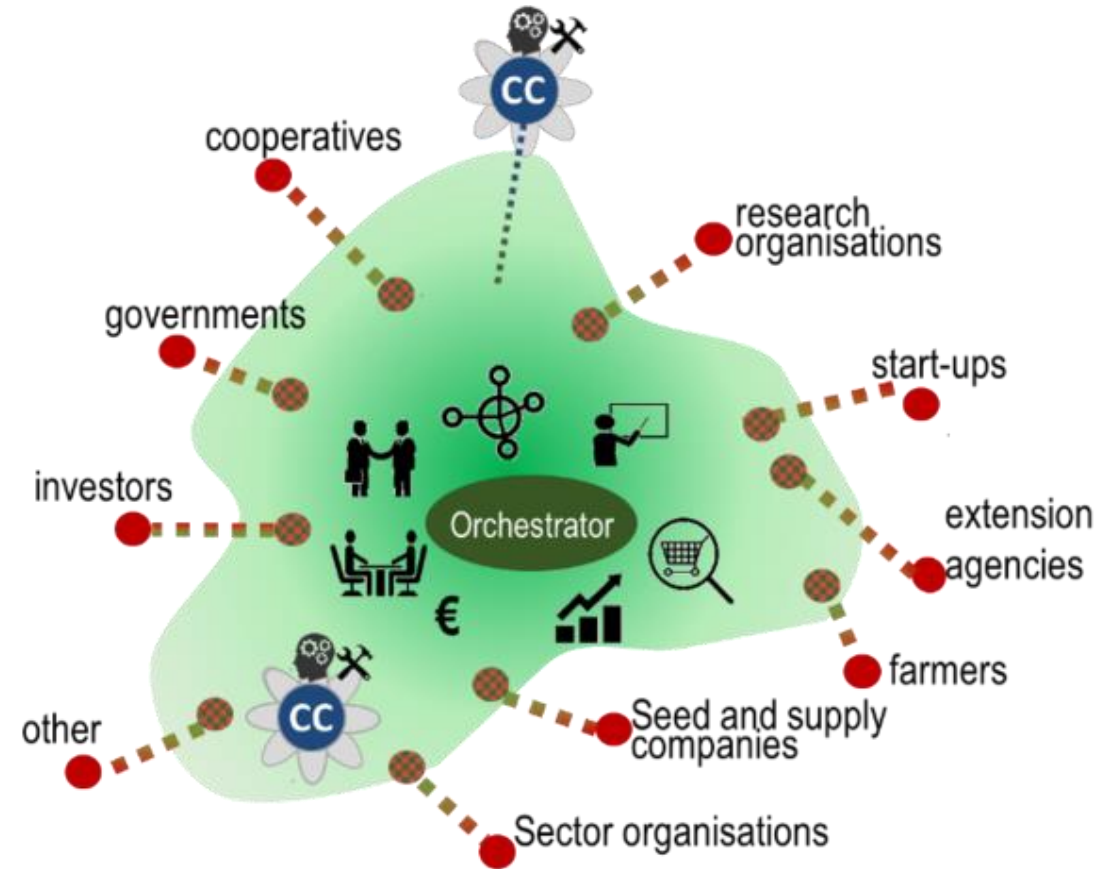
DISVA
Department of Life and
Environmental Sciences

Sustainable Fish feeds
innovative ingredients

Marine Protected
Area management

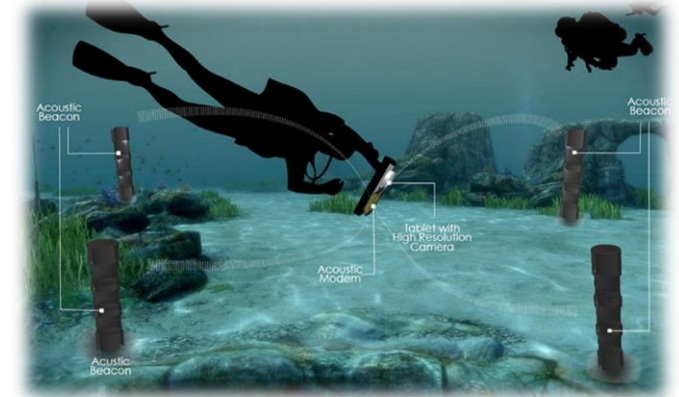
Feed and Safety:
insects for aquaculture

- DIH should help companies in the region become more competitive by improving their **business/production processes** as well as products (and services) by means of digital technology
- Every DIH will have its own specialization, in line with the **smart specialisation** (S3) priorities of a region.
- **Networking** of DIHs, provides shared competences. If not available within the regional DIH may be found in another DIH



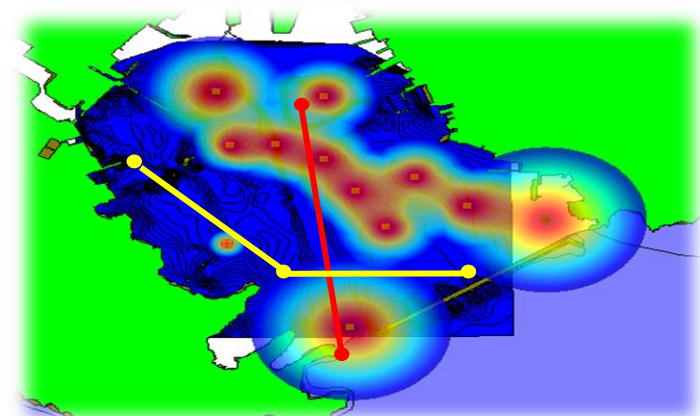
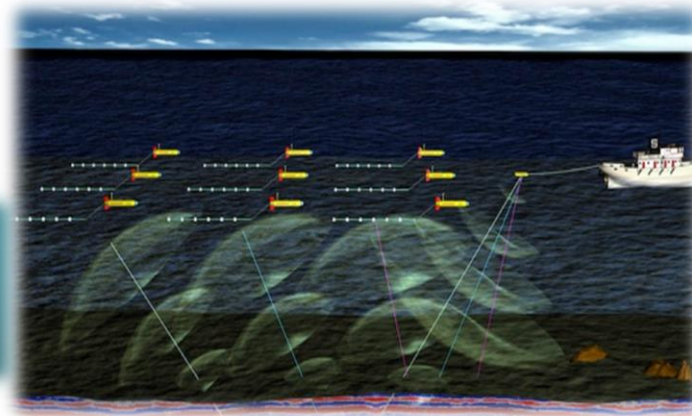
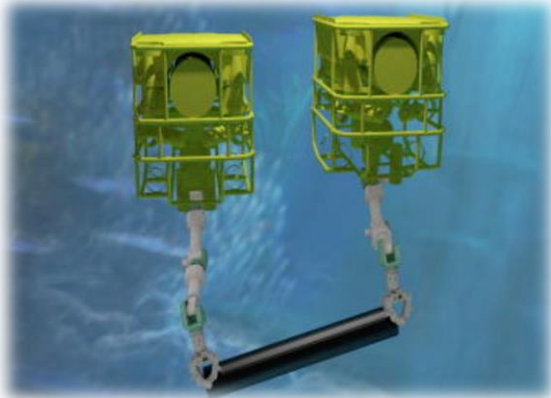
Marine Robotics and Field Applications

Human Machine Interfaces for inspection and real-time documentation



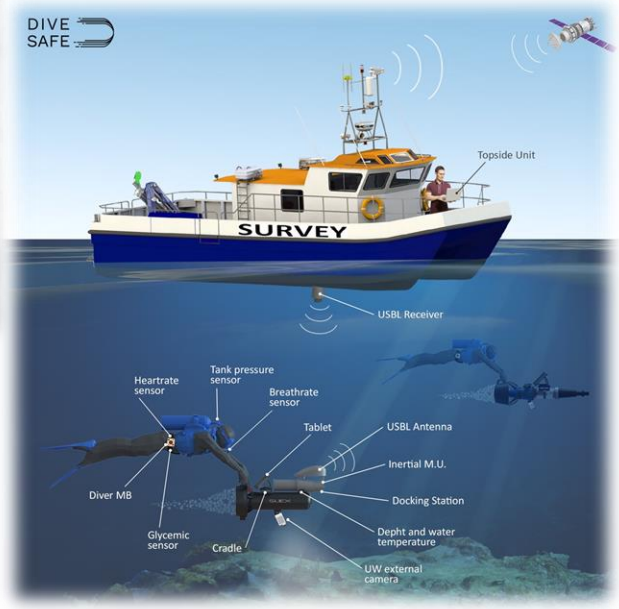
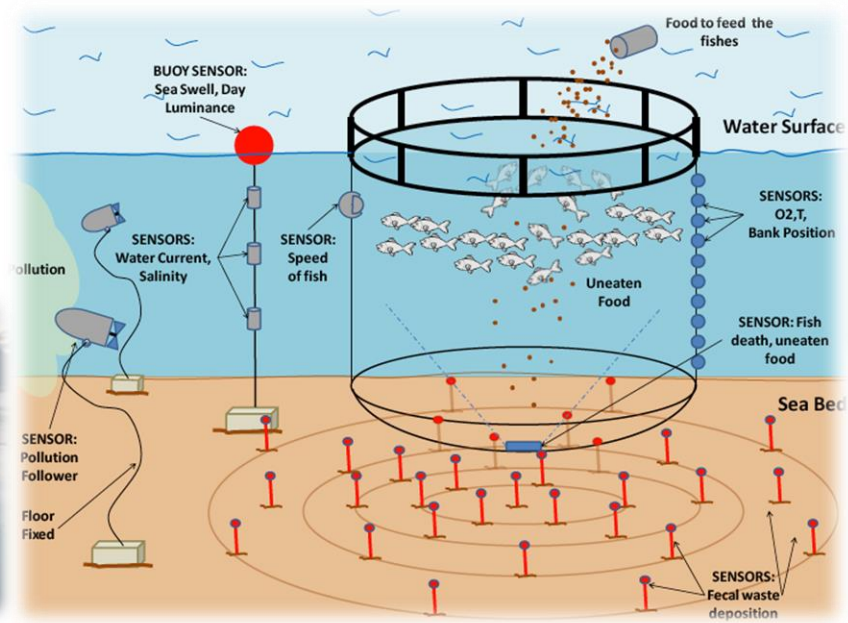
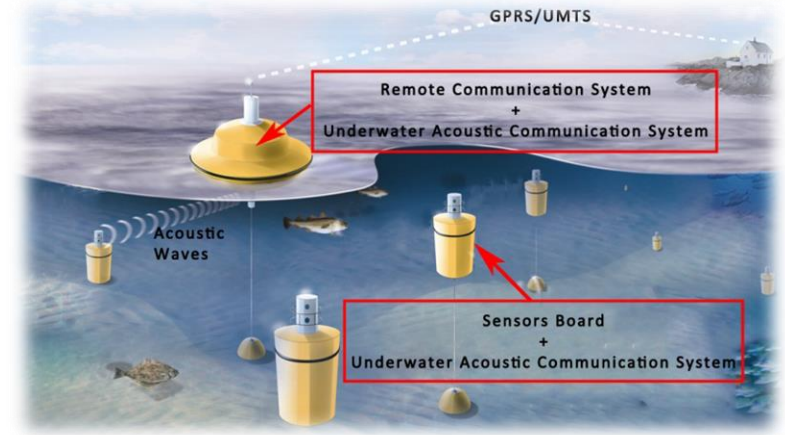
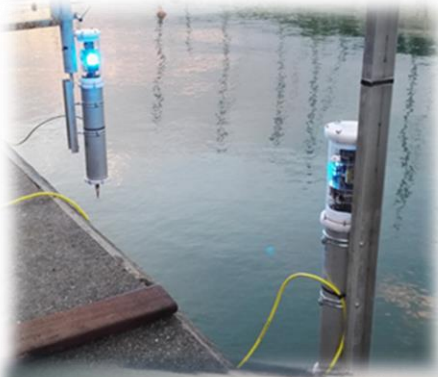
Marine Robotics and Field Applications

Artificial Intelligence, Intervention, Energy
Harvesting and Multi-Agents Mission Planning



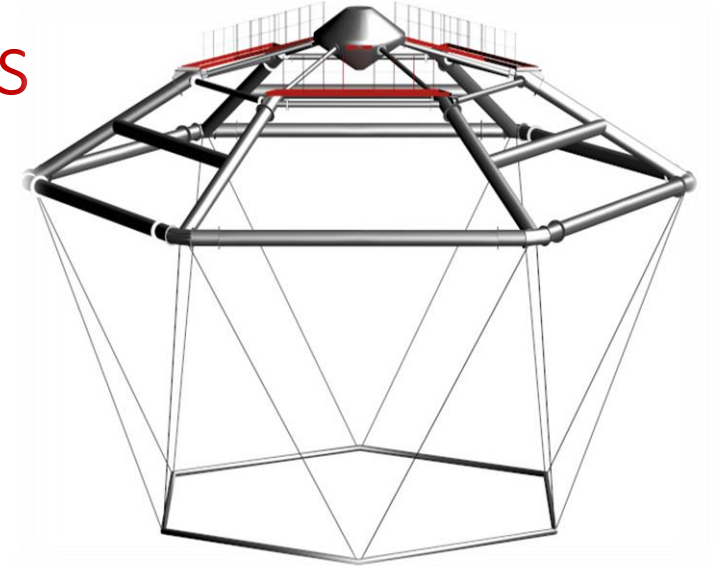
Marine Robotics and Field Applications

Localization, Communication, MPA and Cultural Heritage



Marine Robotics and Field Applications

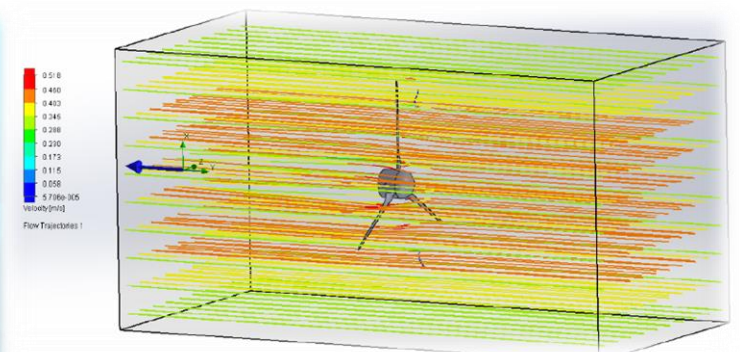
Aquaculture, Water Analysis and Energy Harvesting



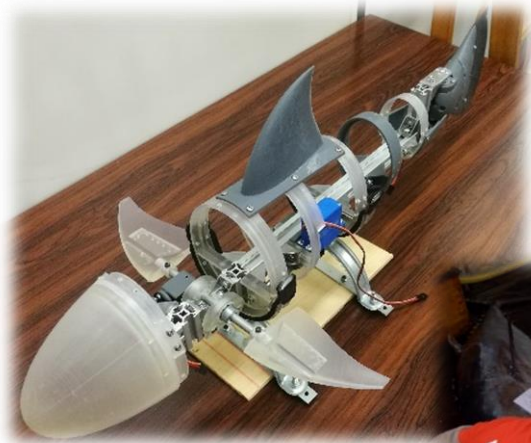
<http://projects.dimes.unical.it/nemo>



Fish Farm Test Site



Marine Robotics, Educational Robotics, Ocean Literacy



ERL Emergency 2019 La Spezia - <https://www.cmre.nato.int/>

MareBOT – www.marebot.it

Web Link -> [Educational Robotics Projects](#)

FabLEARN Italy – www.fablearn.it

Ocean Hackathon -> https://www.campusmer.fr/Ocean-Hackathon_-3567-0-0-0.html

- **MERCES** project is focused on the restoration of different degraded marine habitats
- **FutureEUAqua**. Future growth in sustainable, resilient and climate friendly organic and conventional European aquaculture
- **EUMarineRobots** - Marine robotics research infrastructure network
- **Green Bubbles** is a Marie Skłodowska-Curie (RISE) project dedicated to recreational SCUBA diving
- **BioMedaqu**. Aquaculture meets Biomedicine: Innovation in Skeletal Health research
- **DWC - DIGITAL-WATER.city** - Leading urban water management to its digital future



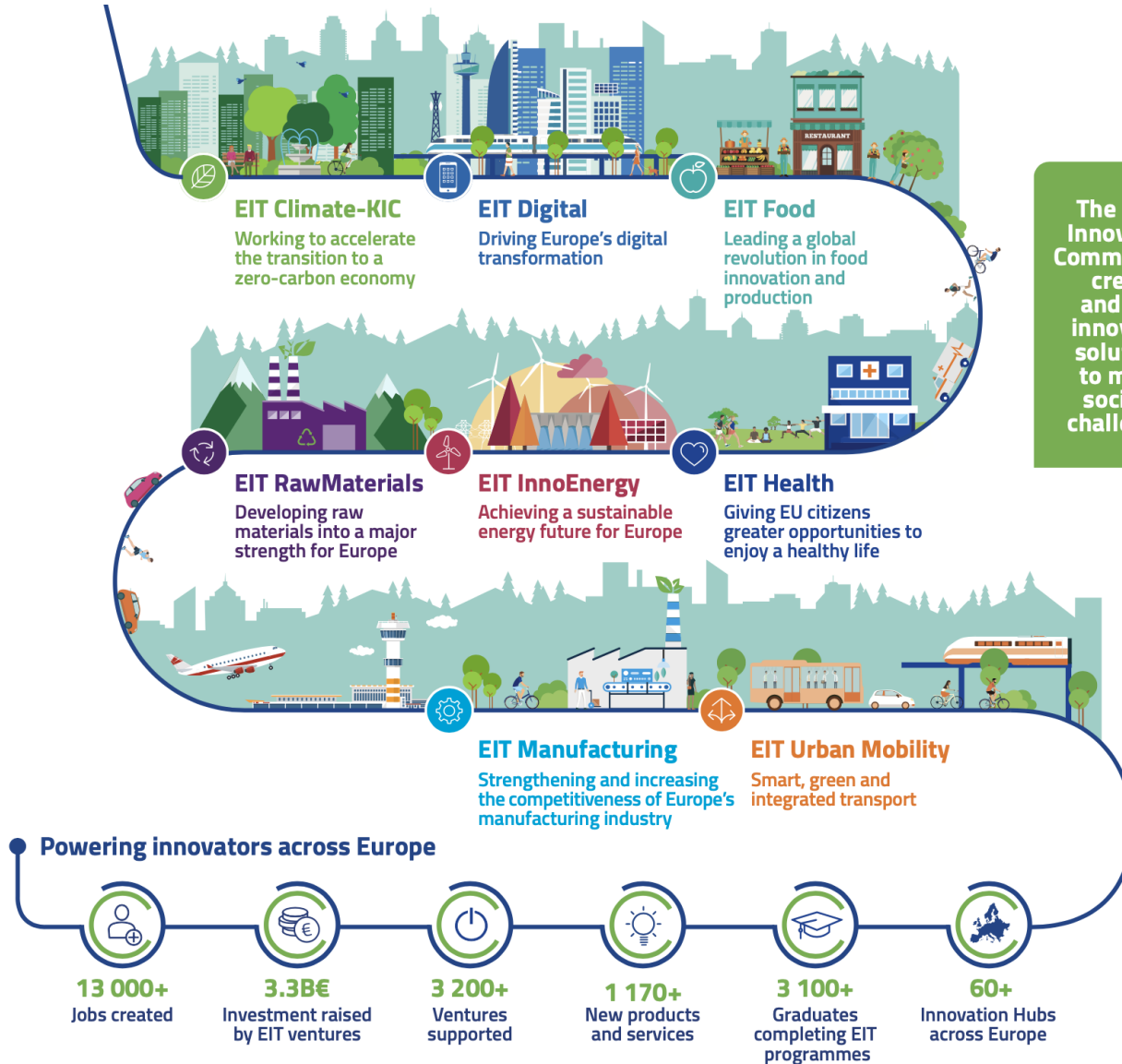
Marine monitoring and intervention. UNIVPM EU Projects

- **EPHEMARE** - Effetti ecotossicologici delle microplastiche negli ecosistemi marini - JPI Ocean
- **RESPONSE** - Toward a risk-based assessment of microplastic pollution in marine ecosystems - JPI Ocean
- **IDEM** - Implementation of the Marine Strategy Framework Directive to the Deep Mediterranean sea
- **Lab4Dive** - Mobile Smart Lab for Augmented Archaeological Dives
- **DiveSafe** - Integrated system for scientific and environmental underwater surveys, with advanced health & safety features
- **MiningImpact 2** - Environmental impacts and risks of deep-sea mining
- **AFRIMED** - Algal Forest Restoration in the Mediterranean Sea
- **ADRIGREEN** – Green and Intermodal solutions for Adriatic airports and ports
- **REMEMBER** – Restoring the Memory of Adriatic ports sites. Maritime culture to foster Balanced tERritorial growth
- **AdSWiM** - Managed use of treated urban wastewater for the quality of the Adriatic Sea



Marine monitoring and intervention

European Institute of Innovation & Technology (EIT)



The EIT's Innovation Communities create and find innovative solutions to major societal challenges

What is the EIT?

The European Institute of Innovation and Technology (EIT) drives innovation in Europe by supporting entrepreneurs, innovators and students across Europe to turn their best ideas into reality.

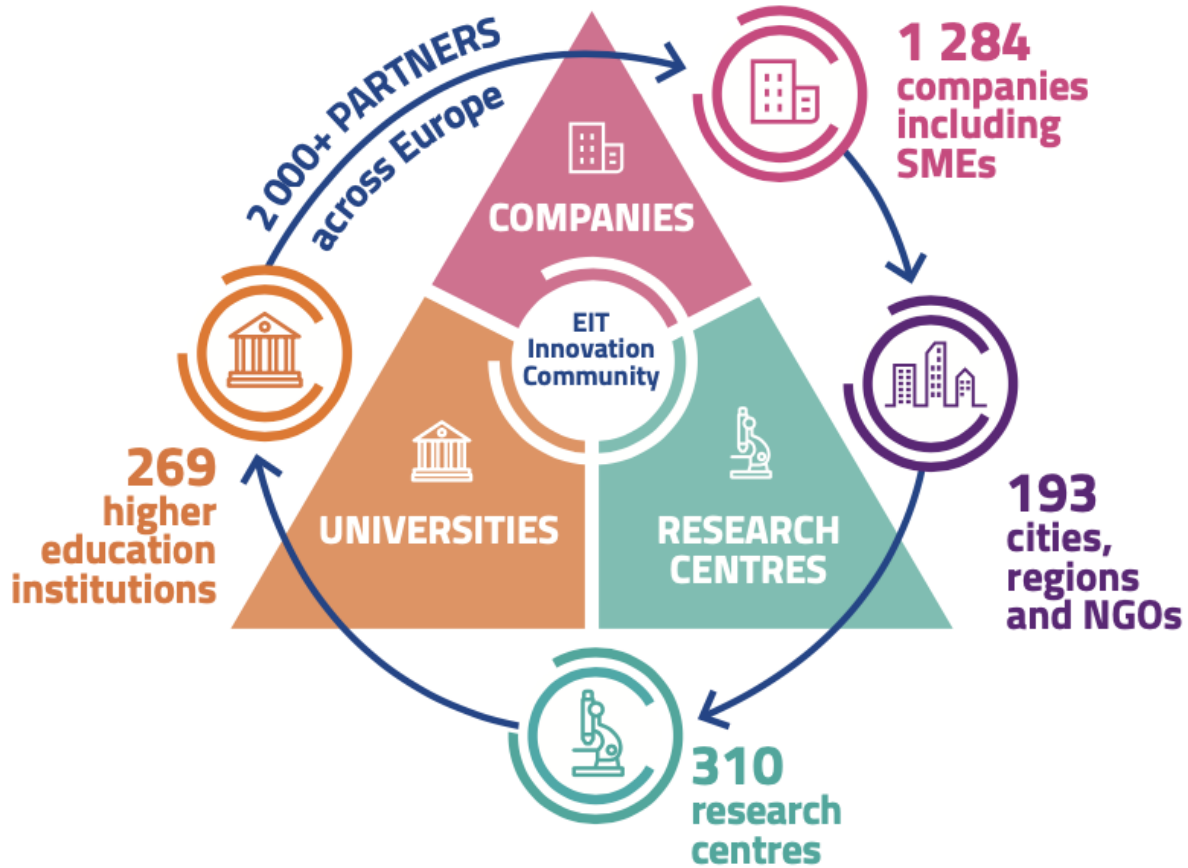
How does the EIT work?

- Trains a new generation of entrepreneurs
- Develops innovative products and services
- Power start-ups & scale-ups



Marine monitoring and intervention Cooperation and Sinergy

Europe's largest innovation community



Thank you



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