PREP4BLUE Knowledge Transfer Online Showcasing Module Demonstration

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PREP4BLUE
METHODS AND TOOLS FOR MISSION OCEAN & WATERS

A 'Mission Restore our Ocean and Waters' initiative.

Funded by the European Union, through its Horizon Europe Program, Grant No. 101056957 (PREP4BLUE). Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or of the granting authority, the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

PREP4BLUE Objectives

PREP4BLUE's objective is to support the R&I goals of the 'Mission: Restore our Ocean & Waters' and facilitate its successful implementation, especially during this first phase (2022-2025). Through a series of pilots at the Mission's demonstrator or 'Lighthouse' sites, PREP4BLUE will develop tools, guidelines and methodologies to be used by stakeholders on all Mission funded projects. This co-creation approach will optimise and create synthesis across Mission activities and solutions, ensuring cohesion and connectivity across sectors, and between European citizens and stakeholders.

Programme:
HORIZON-MISS-2021-OCEAN-01

Duration:
June 2022 – May 2025

Budget:
€4,997,690

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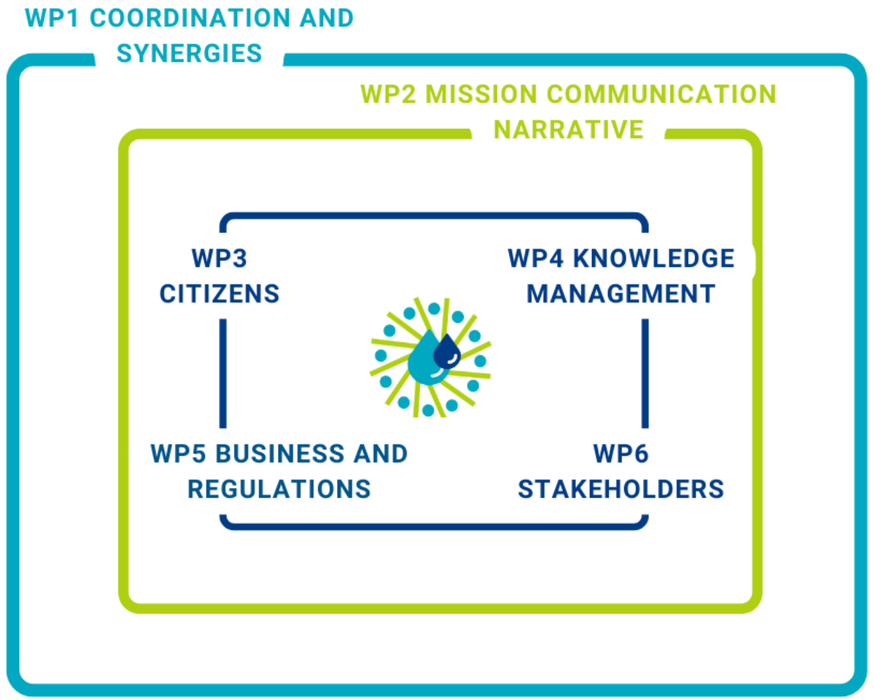
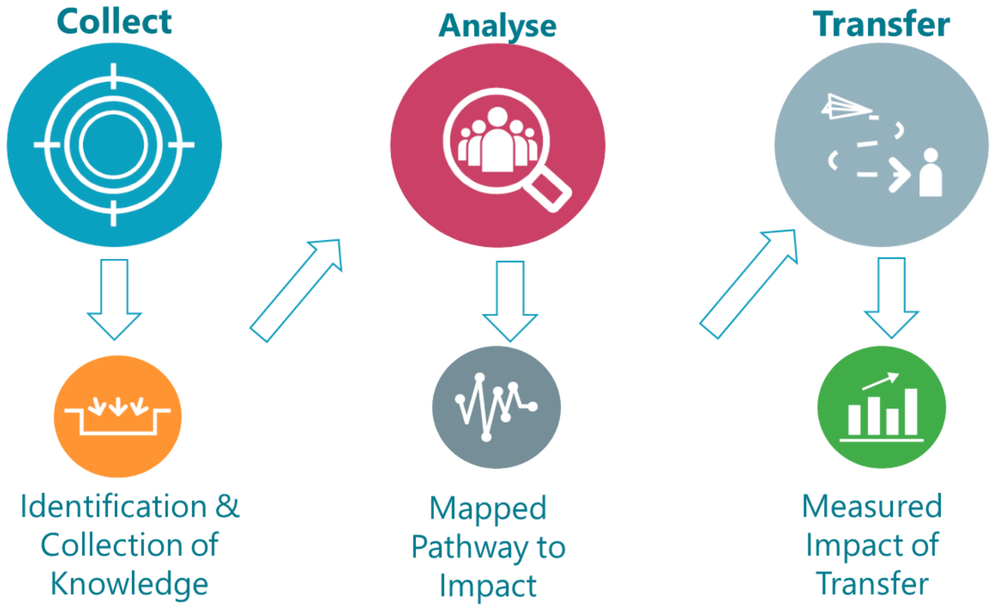
PREP4BLUE Knowledge Management

Knowledge Management in PREP4BLUE



Knowledge Transfer Methodology by ERINN Innovation



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Knowledge Transfer Online Showcasing Module

Identification & Collection of Knowledge

Mapped Pathway to Impact

Measured Impact of Transfer

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PREP4BLUE Knowledge Transfer Online Showcasing Module

Cystoseira meadows mapping in the Mediterranean Sea: comprehensive georeferenced database.

Project website

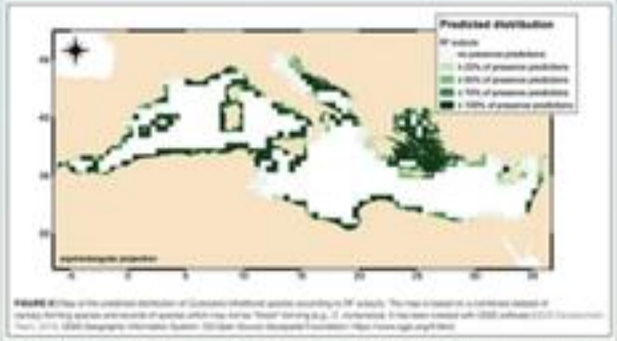
AFRIMED

Background Description

Cystoseira sensu lato assemblages are being considered as habitats of critical importance for the EU (Directive 92/43/EEC, Annex I, included in "Rocky reefs") and as indicators to assess ecological status in the context of the Water Framework Directive (WFD; Directive 2000/60/EC). There is a growing focus on the status of macroalgal forests from both a conservation (Annex II of the Barcelona Convention, COM(2009)0085FIN) and a restoration (with MERCES and AFRIMED projects) perspective to better understand the possibilities for reversing current declining tendencies through active restoration in the Mediterranean Sea. However, there is a lack of quantitative and standardised information on the distribution and temporal trends of the state of Mediterranean communities, due to the scarcity of available data (few studies have been conducted) and the use of different approaches for the various works conducted, which make it difficult to compare them.

Technical Description

The georeferenced database of Cystoseira was produced embedding catalogued grey literature, systematic review papers, EDONet (European Marine Observation and Data Network), previous database produced by FP7 EU project CoCoNet (Grant agreement no: 287844) and new data acquired from CARLIT (CARtography of LITtoral and upper-sublittoral benthic communities) monitoring program; however, data are missing for some areas (east and south). To overcome the lack of information, a Habitat Suitability Model (HSM) was developed by means of 55 predictor variables (geomorphologic, environmental and anthropogenic) using the Random Forest Machine Learning technique (789059 AFRIMED KDc). This database goes beyond the state of the art as it collects various datasets and improves them with a new predicting model (HSM, 789059 AFRIMED KDc) to identify suitable areas for 20 Cystoseira species (here the list) where data were not available as well as the above mentioned predictor variables that include, among others, factors related to anthropogenic pressures e.g. Artisanal fishing, Human impact to marine ecosystems and pollutants. The Habitat Suitability Model output, showing suitable areas for Cystoseira species across the Med, is described in the figure below.



The georeferenced map is accessible to all and has been used for restoration actions (TRL 9) also usable through the "Business clubs" organized by the AFRIMED project. The georeferenced map is contained in a scientific paper.

Potential Impact And Applications

The database has potential commercial exploitation in that it may be uptaken by enterprises operating in marine restoration to determine which areas satisfy the requirements for restoration measures based on historical data and prediction model according to geomorphological features. Other than that, the main use that can be made is to provide policymakers with an overview of areas both for restoration activity but also to implement new protected areas since macroalgal forest provide several key ecosystem functions (nursery, feeding, etc.) and services (fishing, leisure, etc) that enhance biodiversity in the area in which they are located. Other possible applications include pre-assessments on carrying out restoration measures and assessments related to spatial planning. The map was created by considering geomorphological variables such as soil type, environmental variables such as temperature or pH, and anthropogenic variables such as distance from ports or the presence of tourists; it thus provides us with information on the different characteristics that describe the areas of the Mediterranean Sea. It is therefore possible to know where stress factors are present that can be removed or mitigated, to make the area suitable for restorative actions, suggesting to interested parties where to act and in so doing, reducing the economic expenditure for ineffective actions. These possible applications of the map contribute directly to the first Mission objective, to "Protect

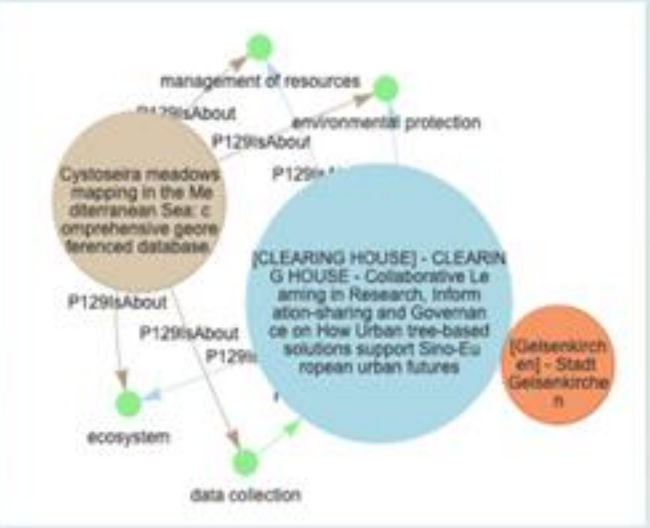
Readiness level TRL 9 - Actual system proven in operational environment

Potential Stakeholders

Search stakeholders...

Stakeholder	Matches	Common terms	Actions
Stadt Gelsenkirchen	4	+ data collection + ecosystem + management of resources + environmental protection	View Graph
Nova Scotia Community College	3	+ exchange of information + biodiversity + data collection	View Graph

Found 50 potential stakeholders



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Ontology and Semantic Network

Ontology

generalised representation
knowledge in a particular domain

Concepts
Propteries
Relations

Semantic Network

a way to implement an ontology

Ontology with
real Data

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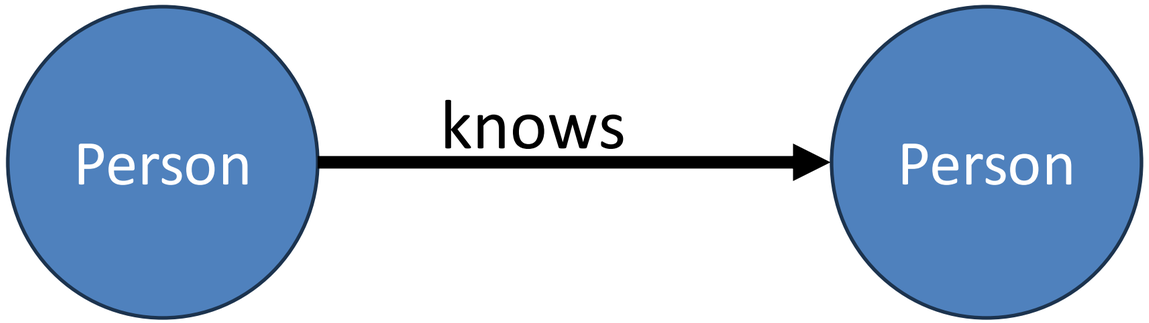
Example: FOAF

FOAF (an acronym of **friend of a friend**) is a machine-readable ontology describing persons, their activities and their relations to other people and objects. Anyone can use FOAF to describe themselves. FOAF allows groups of people to describe social networks without the need for a centralised database.



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Precision model to map chlorophyll-a concentration in shallow water for the shellfish aquaculture industry.

Project website

NewTechAqua

Background Description

The estimation of chlorophyll-a (Chl-a) concentration in coastal waters still has some difficulties in comparison to oceanic waters due to the more complex optical properties and to the high spatial variability of the coastal environment. Atmospheric and scale corrections are necessary to remotely and accurately estimate Chl-a concentration in coastal waters, which is of main importance to evaluate the viability (based on the environmental status of water masses) of integrating bivalve (i.e., mussel) aquaculture systems in marine spatial plans; the objective of these carrying capacity models is to adapt the production to the ecological conditions of the area.

Technical Description

A shellfish farm may exceed the ecological carrying capacity when the removal of phytoplankton biomass exceeds the renewal, resulting in a phytoplankton depleted water mass. To comply with the Aquaculture Stewardship Council (ASC) on bivalve aquaculture standards, the renewal time of each area has to be shorter than the clearance rate time. Thus, NewTechAqua, through a series of sampling cruises (n = 17) for over a year (September 2020 to October 2021) in the northern (n = 9) and southern (n = 8) embayment of the Ebro Delta (eastern Iberian Peninsula), developed a highly innovative methodology to increase the accuracy of forecasting Chlorophyll-a concentration models to estimate

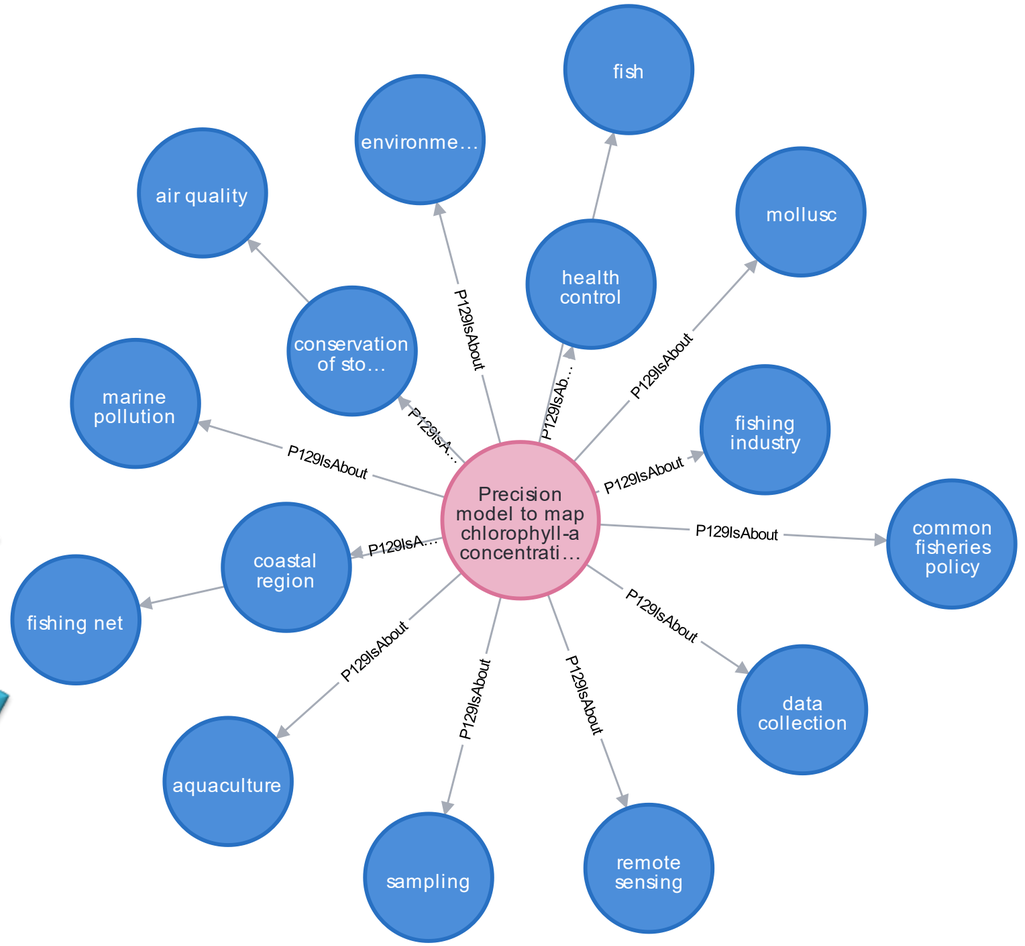
Readiness level

Project

- NewTechAqua

EuroVoc Keyword Extraction

EuroVoc Keyword Extraction



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Sensors for LArge scale HydrodynaMic Imaging of ocean floor

What?

Summary	LAkHsMI will develop a new bio-inspired technology to make continuous and cost-effective measurements of the near-field, large-scale hydrodynamic situation, for environmental monitoring in cabled ocean observatories, marine renewable energy and port/harbor security. We will design, manufacture, and field test prototype smart sensor cables that measure differential pressure and temperature on the ocean floor and enable high resolution imaging of the surrounding volume in space and time, is simple, inexpensive and has very low power cons can be connecting with existing cabled ocean observatories. The technology is inspired by the biophysics of fish hydrodynamic sensing. The technology is scalable from meters to possibly hundreds of kilometers and allows a high sampling
Project Id	635568
Funding Source	RIA
Programme	H2020

EuroVoc Keyword Extraction

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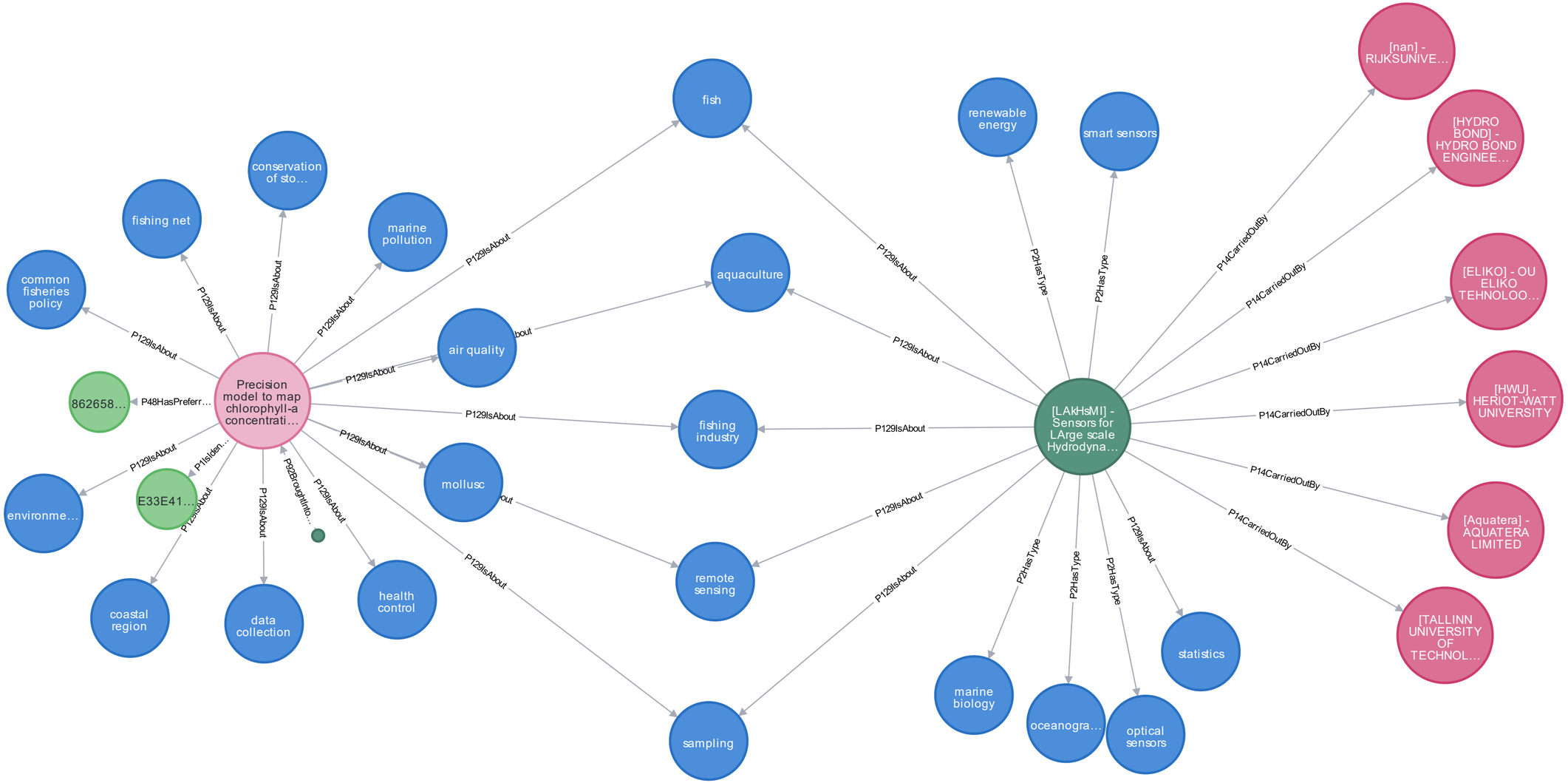

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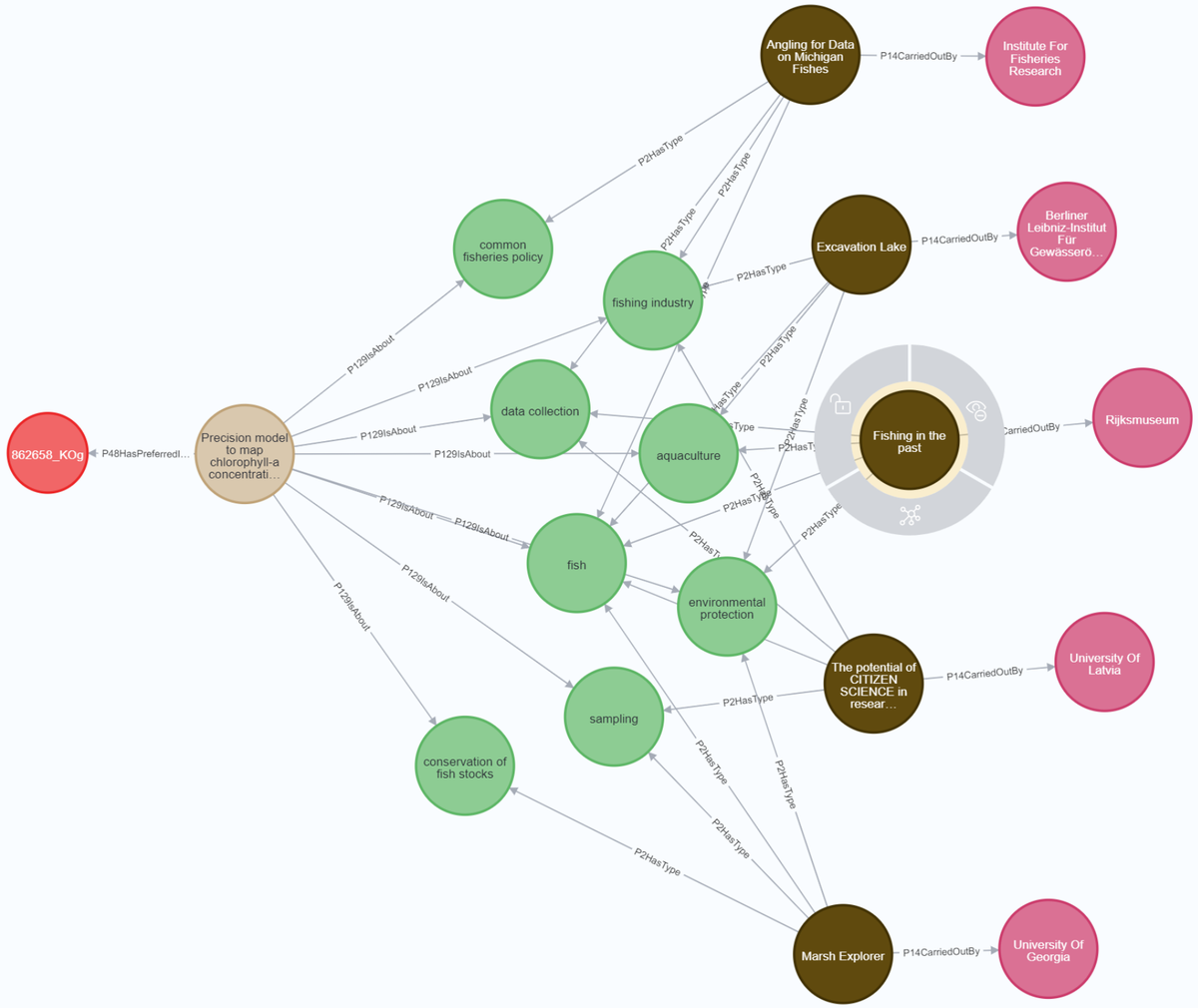

Fishing in the past

What?

General Aim	Performance
Aim	Identify fish species on paintings, to gain information on biodiversity and commercial use of fish species.
Description	Identify fish species on paintings, to gain information on biodiversity and commercial use of fish species.
Number Of Participants	> 1000
Level Of Participation	Distributed intelligence
Category	History
Topic	Identifying Fish In Historical Catch

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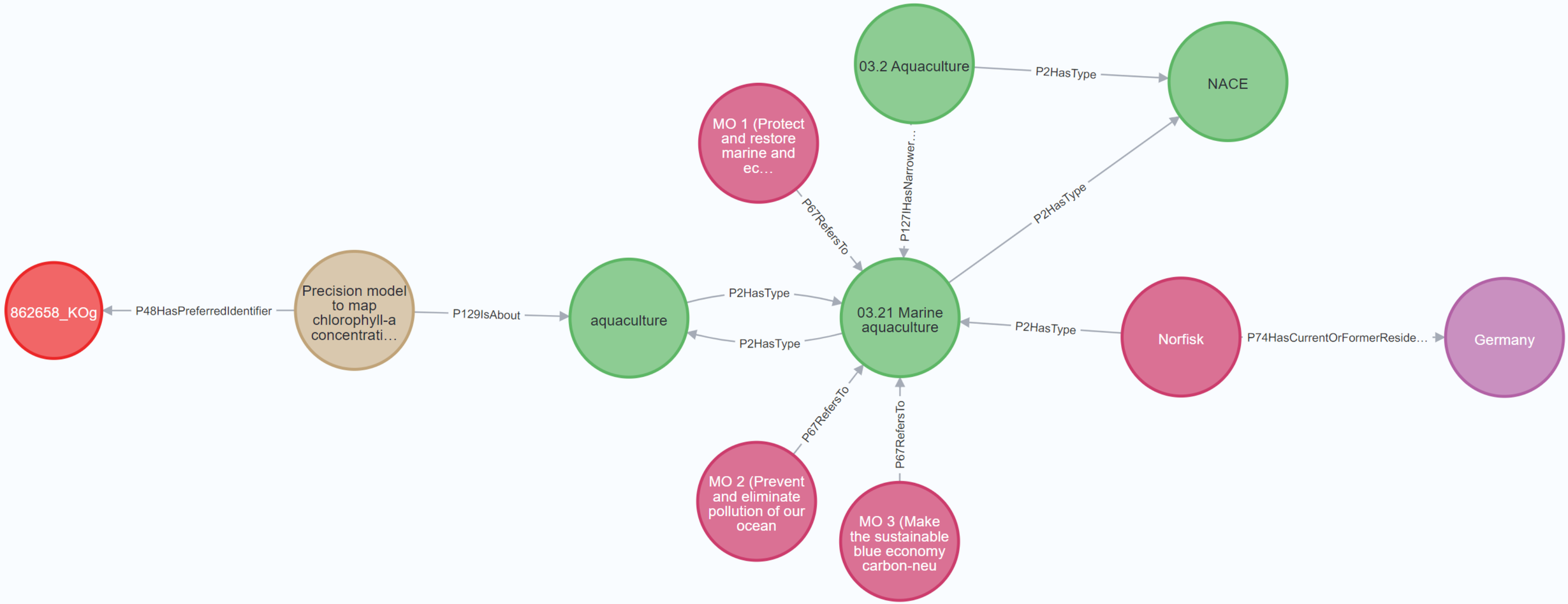

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