A S T R A L

iFishIENCi

ONLINE WORKSHOP

FROM DATA INTEROPERABILITY TO DATA SPACES IN THE AQUACULTURE DOMAIN

Join us a 14:30 CET on Tuesday, 28th February

AGENDA

14:30 - 14:50 - Introduction
Franck Le Gall (EGM)

14:50 - 15:10 - BlueCloud : The open science platform for collaborative marine research
Anton Ellenbroek (FAO)

15:10 - 15:30 - PANGAEA: Data publisher for earth & environmental science
Astrid Wittmann (Leibniz ZMT)

15:30 - 15:50 - The ISO 128777:2011 standard
Petter Olsen (Nofima)

15:50 - 16:10 - GREAT (Green Deal Data Space)
Nevena Raczko (IDC)

16:10 - 16:30 - Pathway toward a EU data space for aquaculture (panel discussion)
Elisa Ravagnan (NORCE)

Introduction

Franck Le Gall,

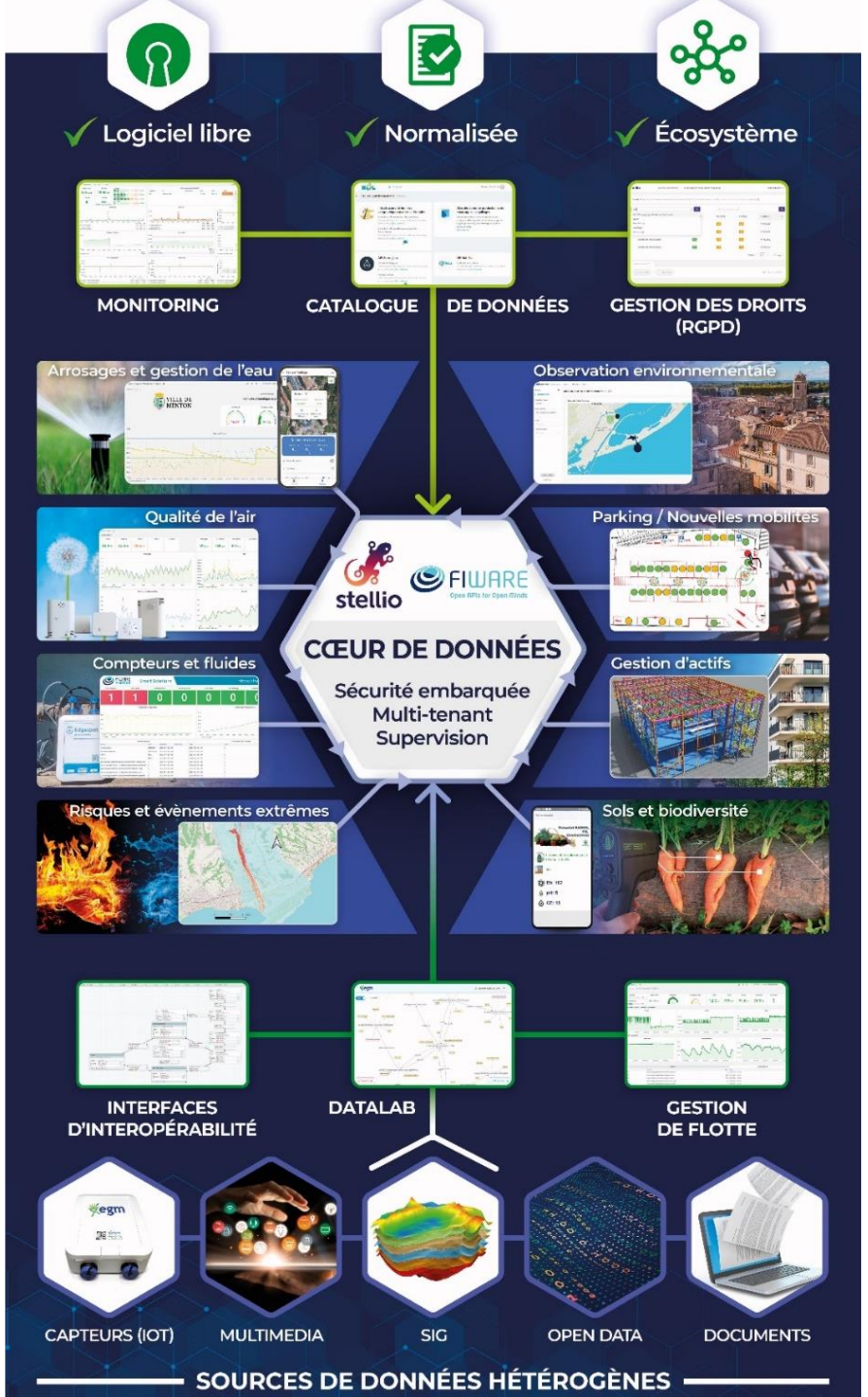
EGM CEO
ETSI ISG CIM Chair
FIWARE Water Msc Chair
ICT4Water, Intelligent systems co-chair

28 February 2028

GENERAL APPROACH @EGM

Deployment of open decision support solutions

Open Solutions
=
open-source +
ETSI
standardisation



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Intelligent Fish feeding through Integration of ENabling technologies and Circular principle

Franck Le Gall
EGM

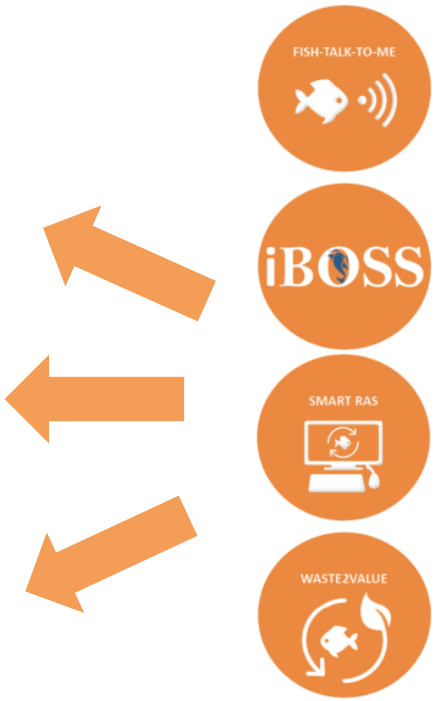
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 818036

Call: H2020-BG-2018-2020
Topic: DT-BG-04-2018-2019

iFishIENCi solutions for sustainable growth

- Environmental limitations
  - Waste from aquaculture
  - Genetic interactions with wild populations
- Feed sustainability
  - Efficiency of feeding (5-?% uneaten)
  - Alternative feed ingredients
- Disease and parasite problems
  - Emerging new diseases especially viruses
  - Outbreaks of existing diseases
  - Sea lice of salmon
- Impacts of climate change on aquaculture
- Economic costs of modern production system
- Societal acceptance

iFishIENCi Products



All Atlantic Ocean Sustainable Profitable and Resilient Aquaculture

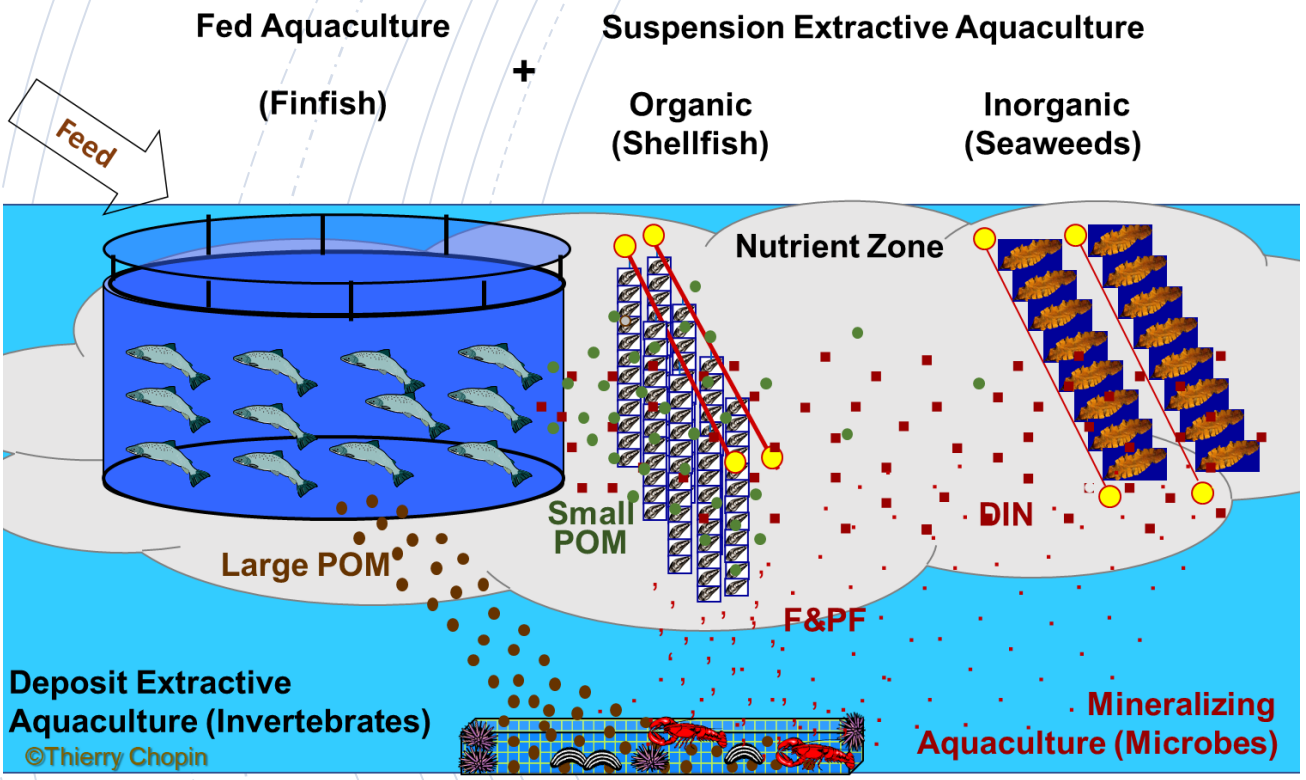
H2020 ASTRAL:
A collaborative ecosystem for IMTA aquaculture in the Atlantic

Franck Le Gall (EGM)

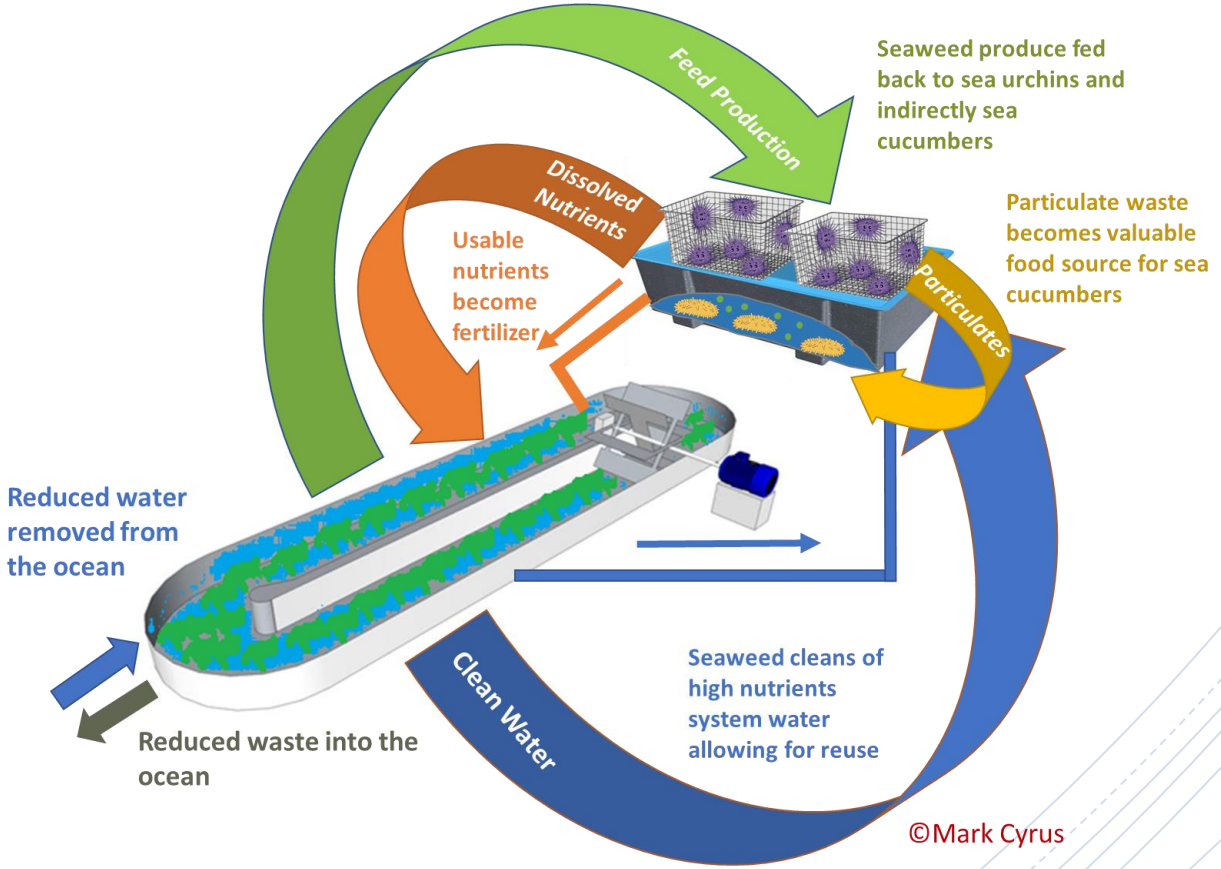
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 863034.

Integrated Multi-Trophic Aquaculture (IMTA)

Open system



RAS system



ASTRAL Pool of Technology Innovations

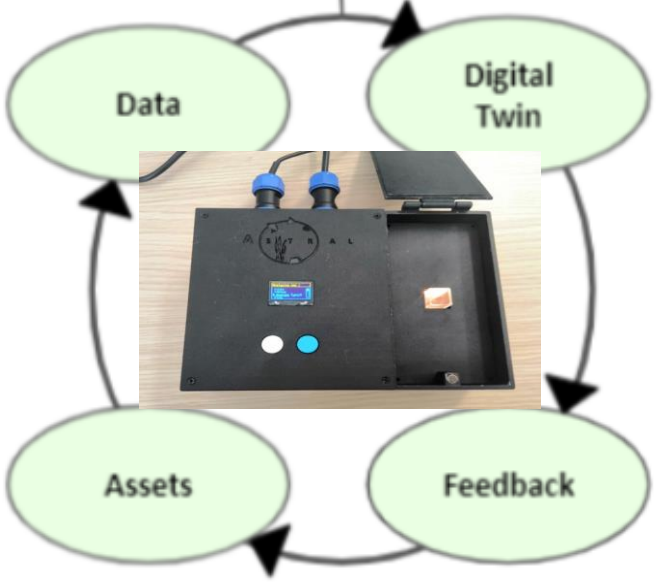
ASTRAL AIDAP
Artificial Intelligence Data Analytics Platform

+ Environmental proxy
+ Animal welfare
+ Microplastic

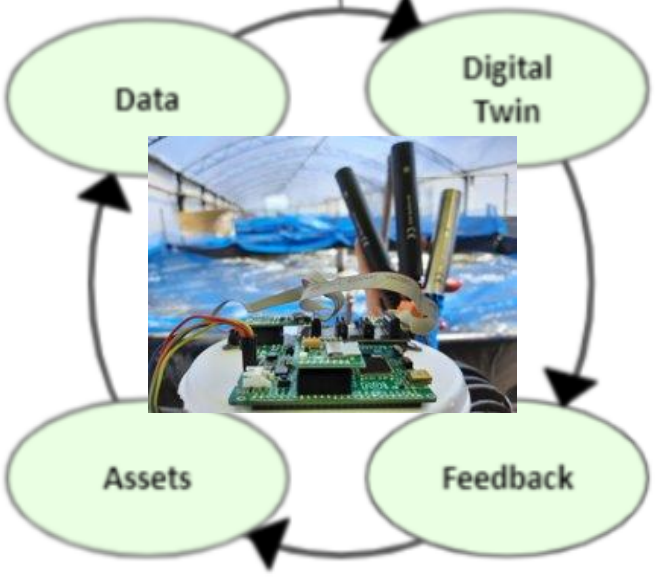
+ Physico-chemical variables
+ Essential water quality variables

+ Biomass estimation
+ HAB monitoring

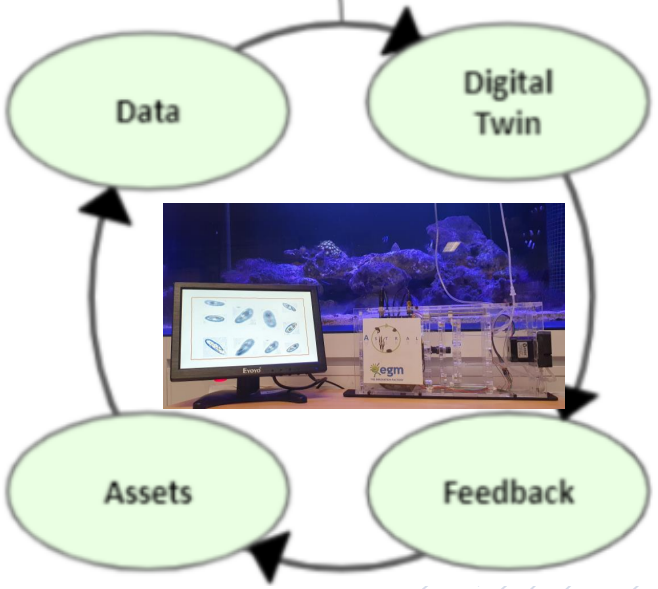
Biosensors & Spectrometers



Low cost IoT kits

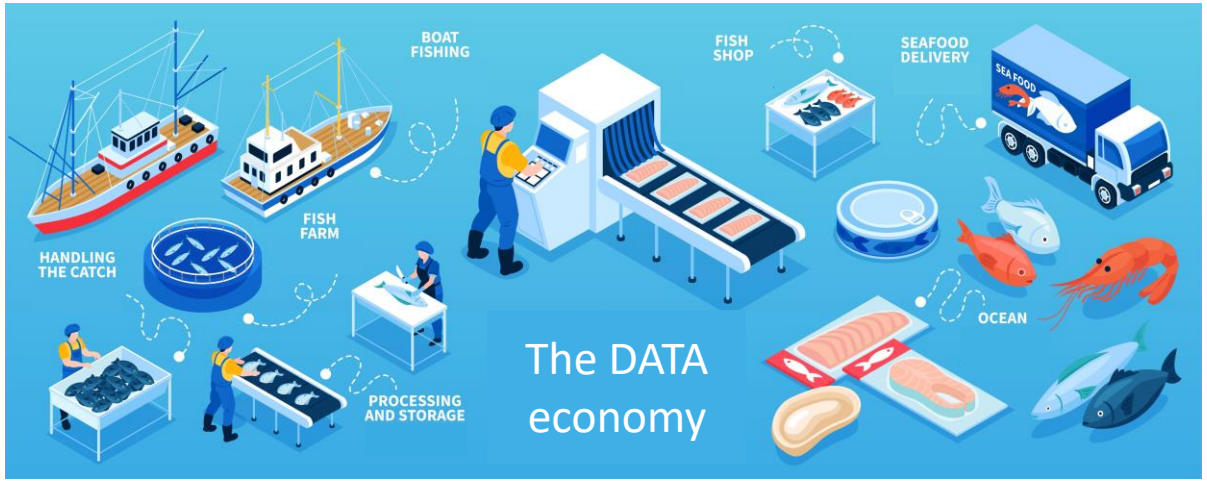


Vision sensors

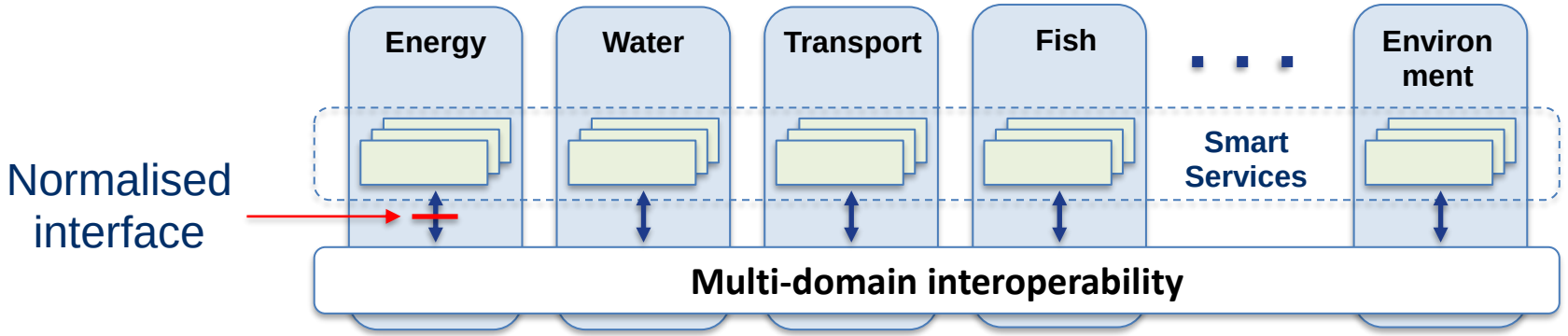


The Royal Society, Digital technology and the planet: Harnessing computing to achieve net zero Issued: December 2020 DES7035 ISBN: 978-1-78252-501-1

NEED FOR CROSS DOMAIN INTEROPERABILITY



- Organizations in different domains can exchange data based on a common contextual information management layer
- Authorization and access control policies govern who can access what and when (data sovereignty)
- Organizations can monetize the data they offer (data economy)



ACHIEVING INTEROPERABILITY

Definitions		Examples
Resolves issues with understanding the meaning of data ("the substance")	SEMANTIC INTEROPERABILITY	The context is specified (eg medical) and makes it possible to understand that the observed temperature of 37°C is normal
Resolves data encoding and formatting ("shape") issues	SYNTACTIC INTEROPERABILITY	The JSON structure of the messages makes it possible to identify the data fields
Solves the technical problems of connection between 2 systems	TECHNICAL INTEROPERABILITY	2 systems exchange content in MQTT

THE NGSI-LD SPECIFICATION AS A BASIS IN BOTH PROJECTS

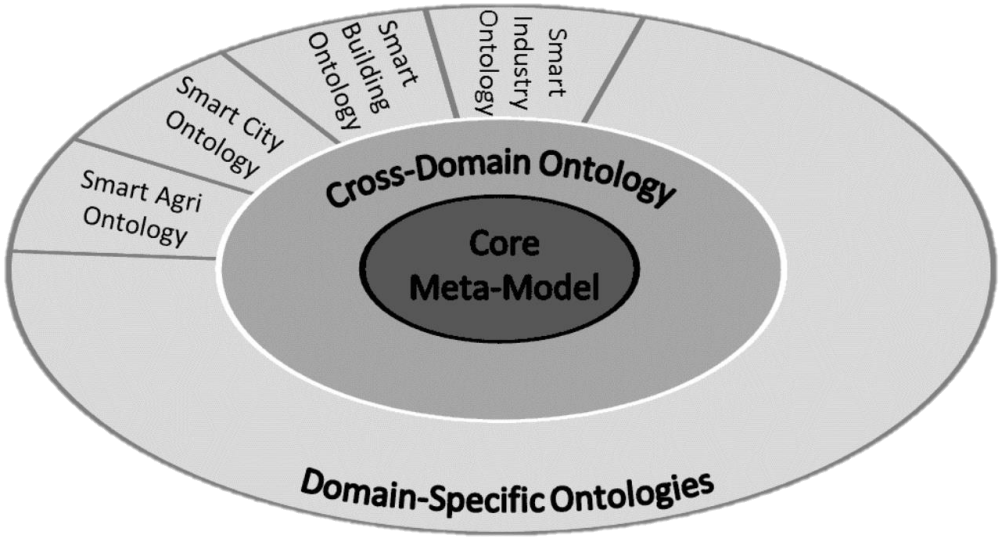
- A specification created by ETSI, in constant evolution
- A RESTful API to manage and interact with the information context
- A “cross-business” data model to promote interoperability
  - Based on an Entity - Property - Relationship graph
  - Allows to define a common language
- Version 1.6.1 released, version 1.7.1 in draft
- More information: https://www.etsi.org/committee/cim

META MODEL DEFINITION

Principles

Definition and sharing of common models

- Controlled via the definition of a JSON schema
- Accompanied by concrete examples
- For the purpose of scalability
- Online guide



FINDABLE ACCESSIBLES INTEROPERABLES REUSABLE

OPEN-SOURCE IMPLEMENTATION

3rd party clouds

Visualisation

Grafana

SuperSet

Models

Video analysis

Echo sounder

Fishmet

Feeding optimiser

Security

Keycloak

DataCore

stellio

FIWARE

OPEN APIs FOR OPEN MINDS

Connectors (data import/export)

http API

MQTT

FTP

CSV

feeder

Edge

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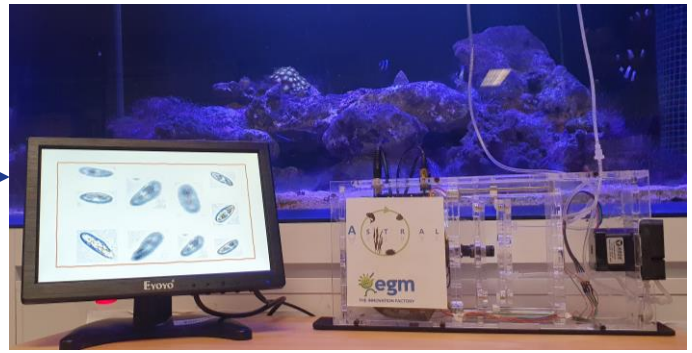
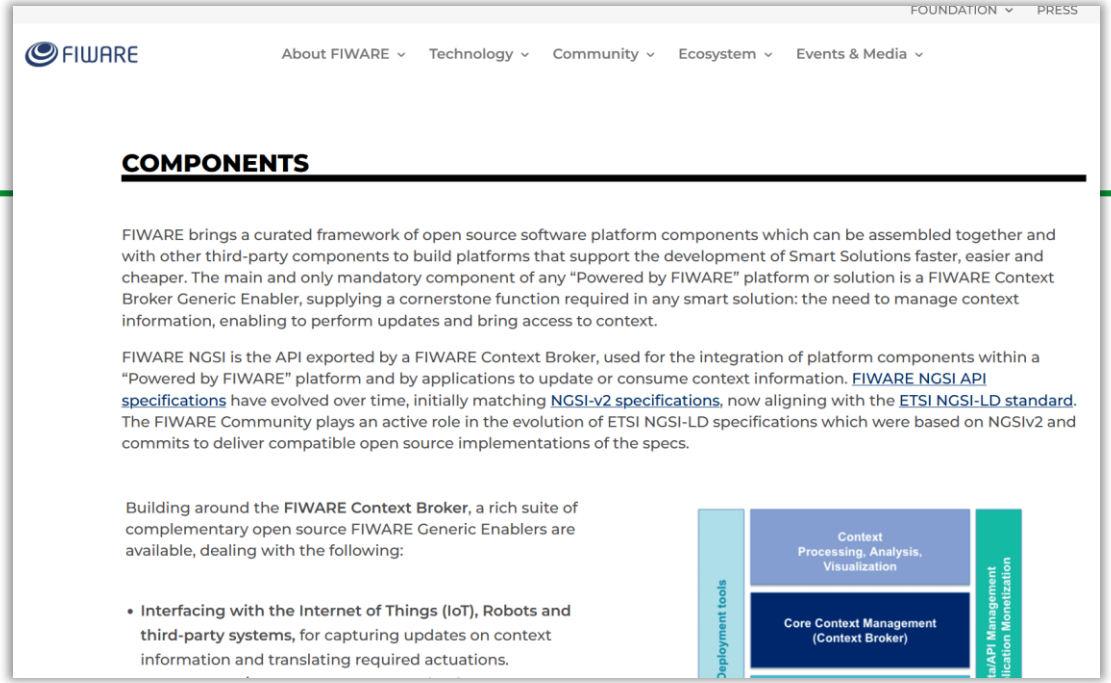
ASTRAL

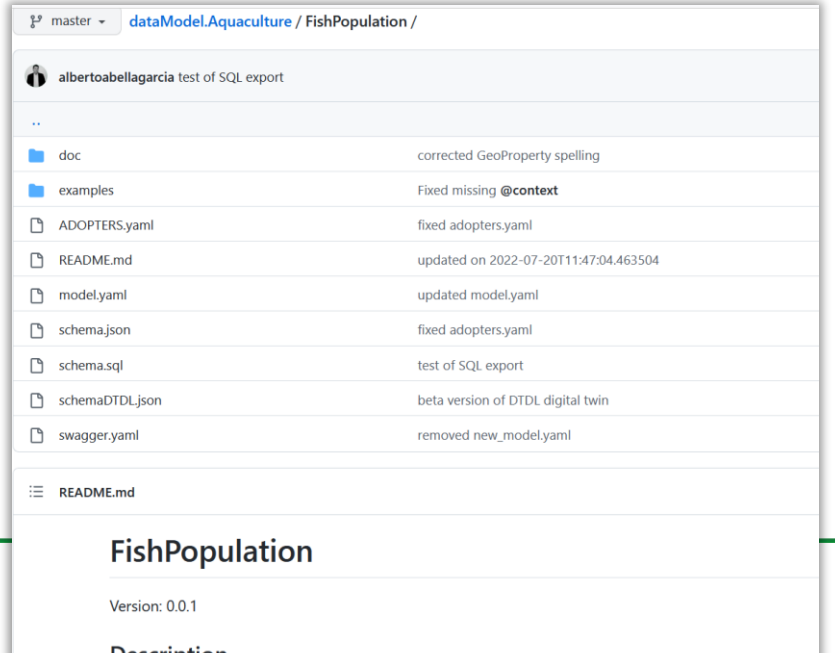


OUR CONTRIBUTIONS

- **Open-source : [FIWARE catalog]**



- **Data models : [community data model sharing]**



Thank You!

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