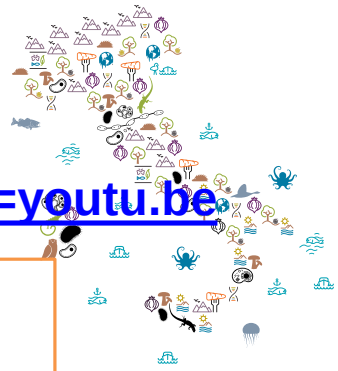
LifeWatch
e-Science European Infrastructure
for Biodiversity and Ecosystem Research

LIFEWATCH niche in the Biodiversity and Ecosystem research and potential synergies with **EMPHASIS**

Giorgio Matteucci
CNR-ISAFOM
Member of LifeWatch-ITA Management Committee

https://www.youtube.com/watch?v=mFPA0R9OXvw&feature=youtu.be



The Italian plant phenotyping landscape and the other international initiatives

5 - 6 September 2018, Metaponto - Matera

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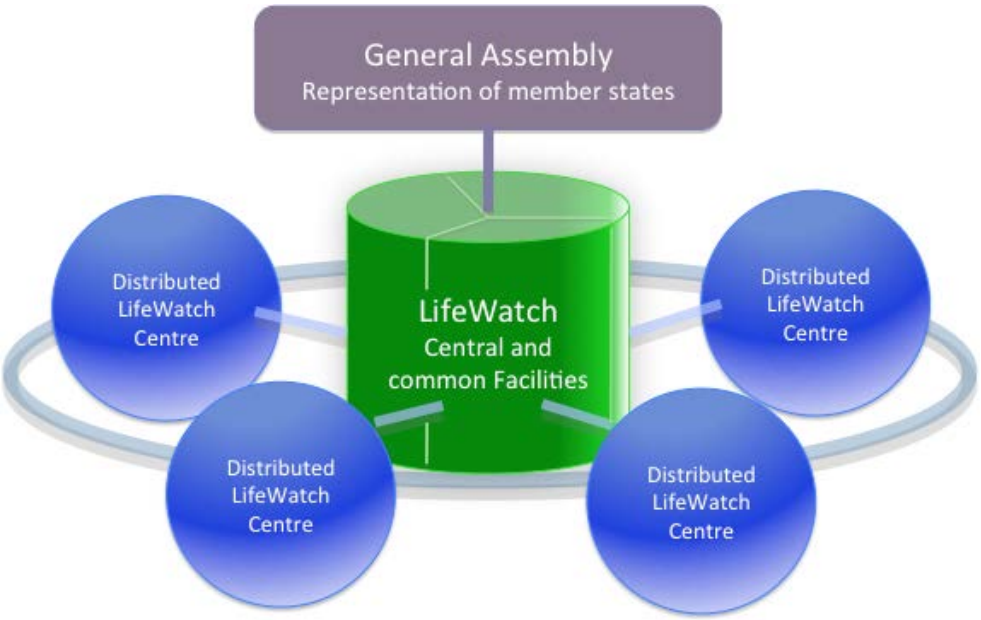
LIFEWATCH- ERIC

LifeWatch-ERIC was formally instituted as ERIC in March 2017.
LIfeWatch-ERIC is based in Seville Spain is hosting the Statutory Seat



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Phen-Italy EPPN 2020 EMPHASIS

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MISSION

LifeWatch is the European Infrastructure supplying **e-Science research facilities** for scientists adding knowledge and deepening understanding **on Biodiversity organisation and Ecosystem functions and services**, with the goal of supporting our societies in addressing the key planetary challenges.

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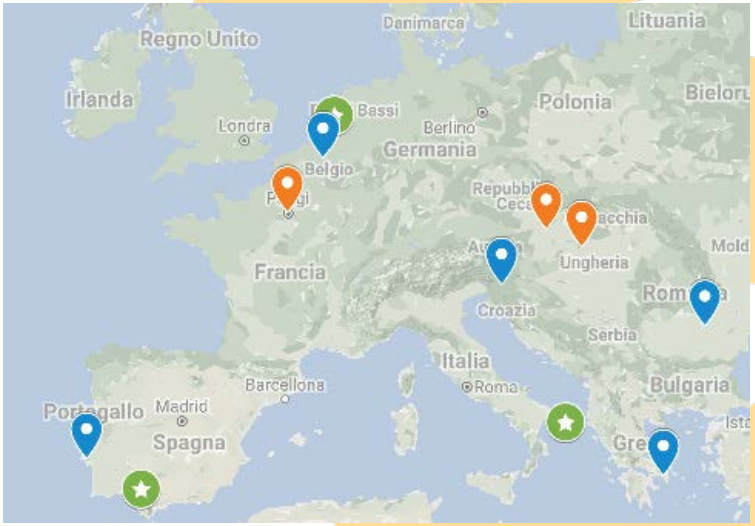
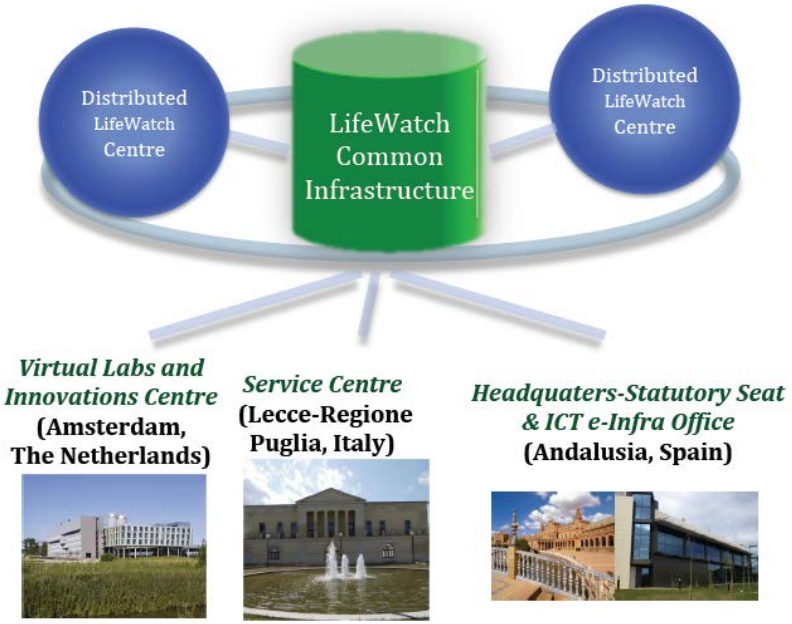
LifeWatch-ERIC operates through its Common 'central' Facilities and Thematic Centres.





Its national networks (BE, EL, ES, IT, NL, PT, RO, SI) include a large and representative component of academic and research institutions and national authorities.

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Phen-Italy · EPPN 2020 · EMPHASIS

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LIFEWATCH

LifeWatch-ERIC is:

⇒Community driven: allowing to run frontier research on biodiversity and ecosystems;

⇒Data driven: real infrastructure are the data available;

⇒ICT driven: most advanced technology for big data aggregation, analysis & modelling.

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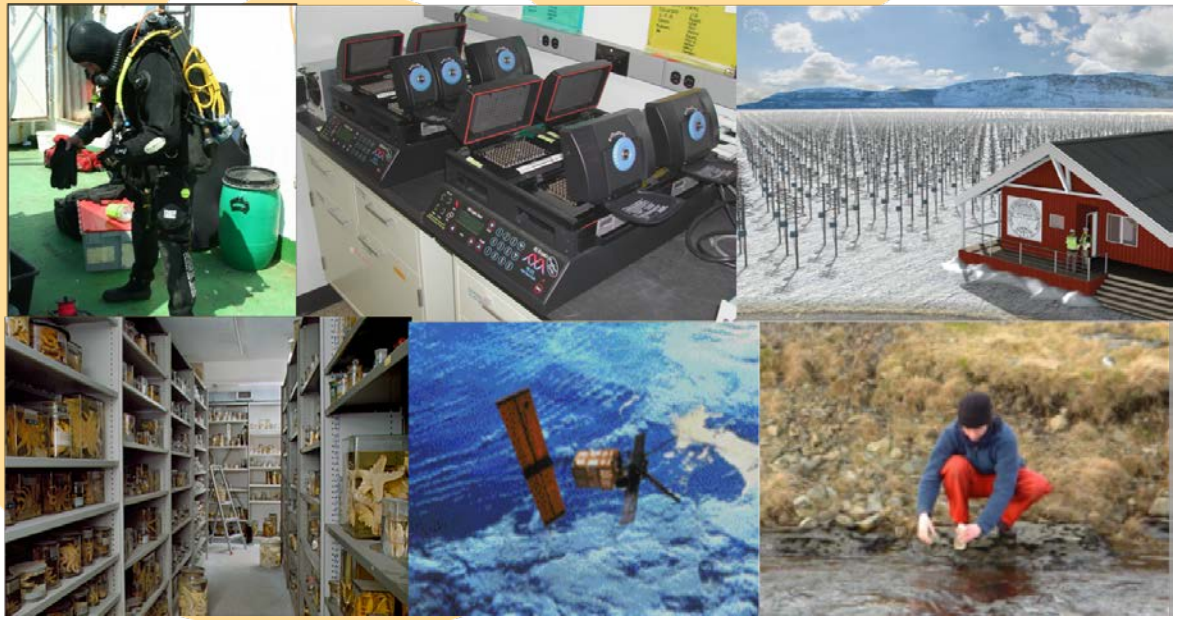
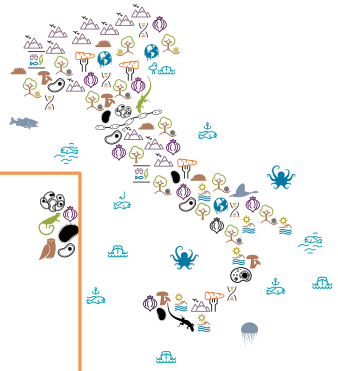


THE REQUIREMENT

Bringing facilities from observation systems, biodiversity observatories and physical infra-structures in a same e-Science Research Centre.



The Italian plant phenotyping landscape and the other international initiatives

Phen-Italy

European Plant Phenotyping Network EPPN 2020

EMPHASIS

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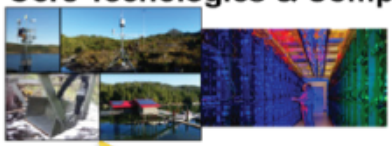
LIFEWATCH

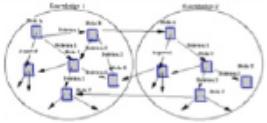
Computer and Biological sciences Data accessibility & integration

Computer Science

Core Tecnologies & Computation



Semantics



Tools & Orchestrator

Apps

Data

LifeWatch e-infrastructure

Biological Science

Question requirements

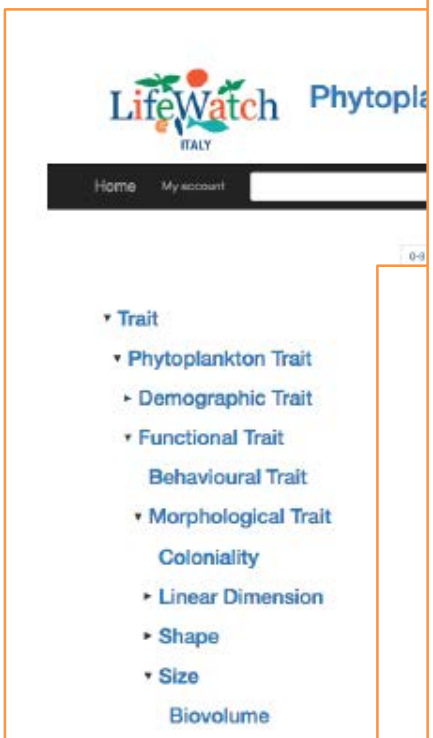
Providing data
Validating facilities

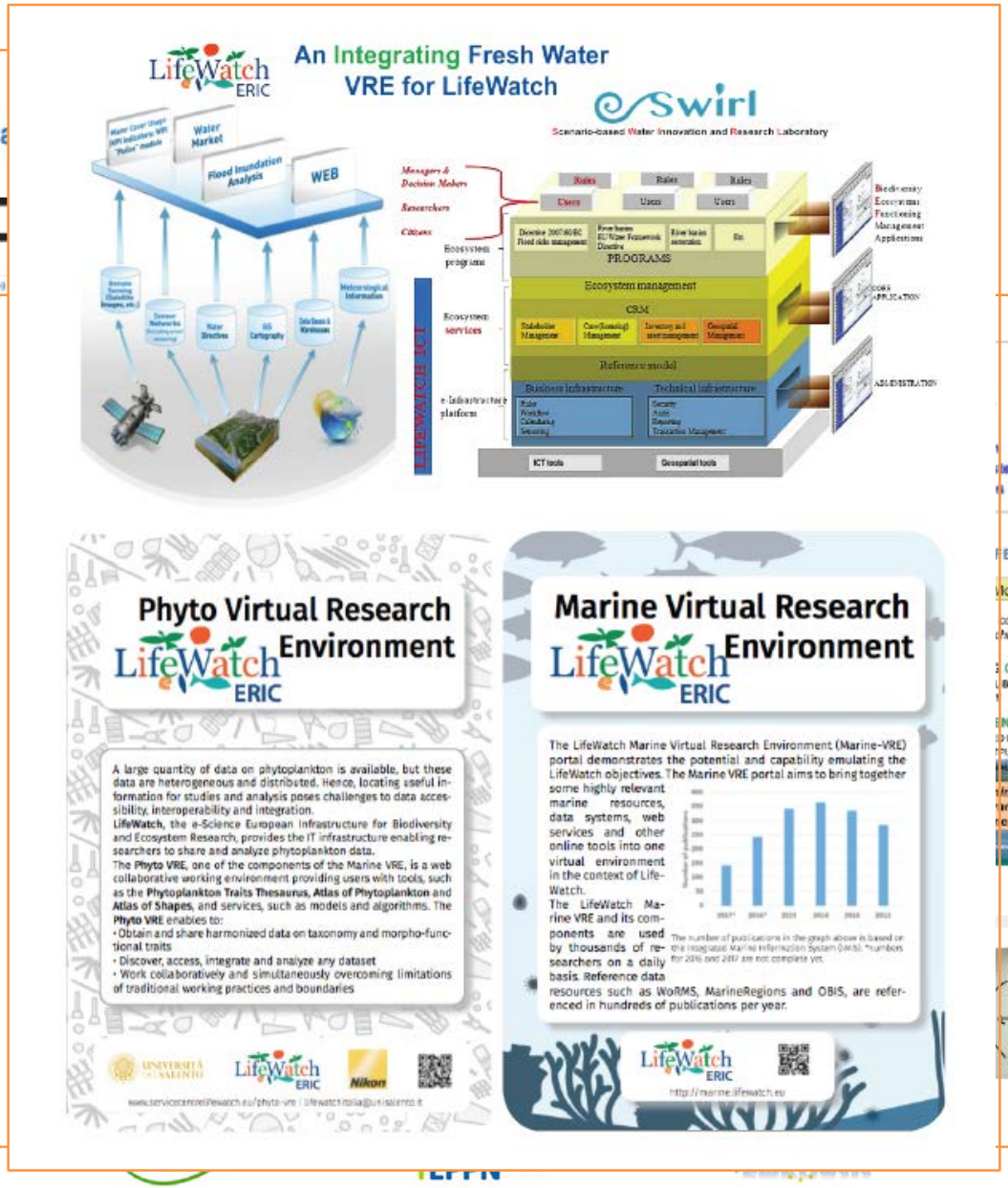
Running experiments
Building new knowledge

Deepen understanding
Supporting policy

LifeWatch community

PRODUCTS AND SERVICES





BIODIVERSITY RESEARCH SPACE

- Describing
- **Understanding**
  - **Maintenance of diversity under limiting conditions**
    - **Biodiversity organisation and coexistence relationships**
  - **Biodiversity architecture**
    - **Conflicting evidences on biodiversity organisation**
  - **Ecological meaning of biodiversity**
    - **Ecosystem functioning, services and human benefits**
- Managing

LIFEWATCH

Many different data types, grains, scales and sources needed …….

…..highly *heterogeneous* (structural and semantic differences)

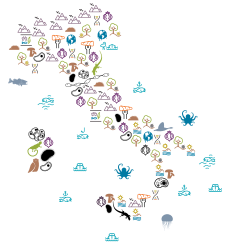
Heterogeneity costraints:

- **Discovery**
- **Integration**
- **Re-usability**

What do we need?

- **Harmonization**
- **Standardization**

for sharing information and revealing its full potential

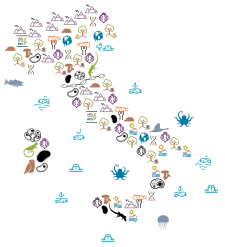


Semantic Technology

Controlled vocabularies

Thesauri

Ontologies



LIFEWATCH and EMPHASIS

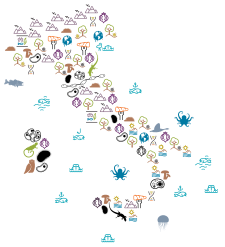
Phenotyping: functional traits of plants (but not only)

Information that can (must) be «added» to taxonomy

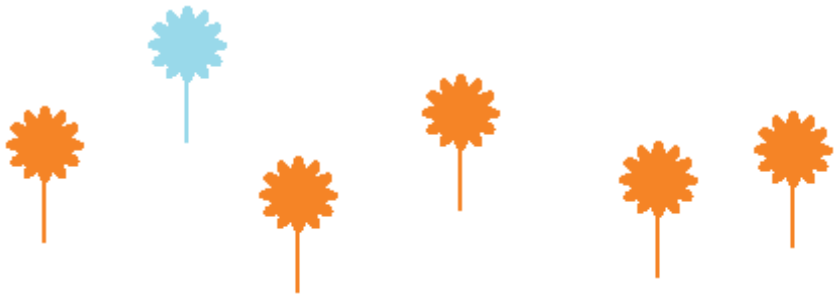
Response of plants to drivers (including stress)

Connection to «omics»: e.g. expressions of RNA-DNA during life

LifeWatch can provide tools for connections/elaborations



Biodiversity is life
Biodiversity is our life



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