

# LifeWatch ERIC: mission and recent developments



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Online Bioinformatic Platforms to support Metabarcoding and Metagenomics research and Applications |  
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# Where the concept of ESFRIs comes from?



# Research Infrastructures

FOSTER COLLABORATION



PROVIDE OPPORTUNITIES



PROMOTE SUSTAINABILITY



SHARE KNOWLEDGE & RESOURCES



TACKLE SOCIETAL CHALLENGES



MAKE SCIENCE HAPPEN



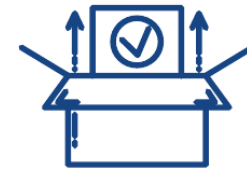
PROMOTE INNOVATION



CROSS BORDERS



DELIVER BIG RESULTS



# \_Types of Research Infrastructures

Different types of Research Infrastructures:



**SINGLE SITED  
RESEARCH  
INFRASTRUCTURES**



**DISTRIBUTED  
RESEARCH  
INFRASTRUCTURES**



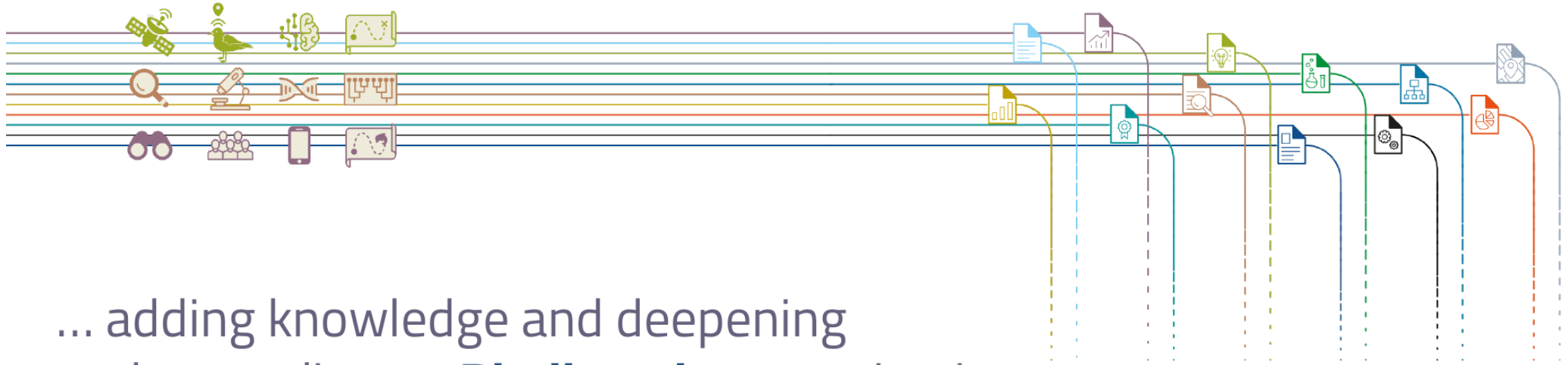
**E-SCIENCE  
RESEARCH  
INFRASTRUCTURES**

# Who we are

**LifeWatch** is the **European Infrastructure**  
supplying e-Science research facilities to  
scientists ...



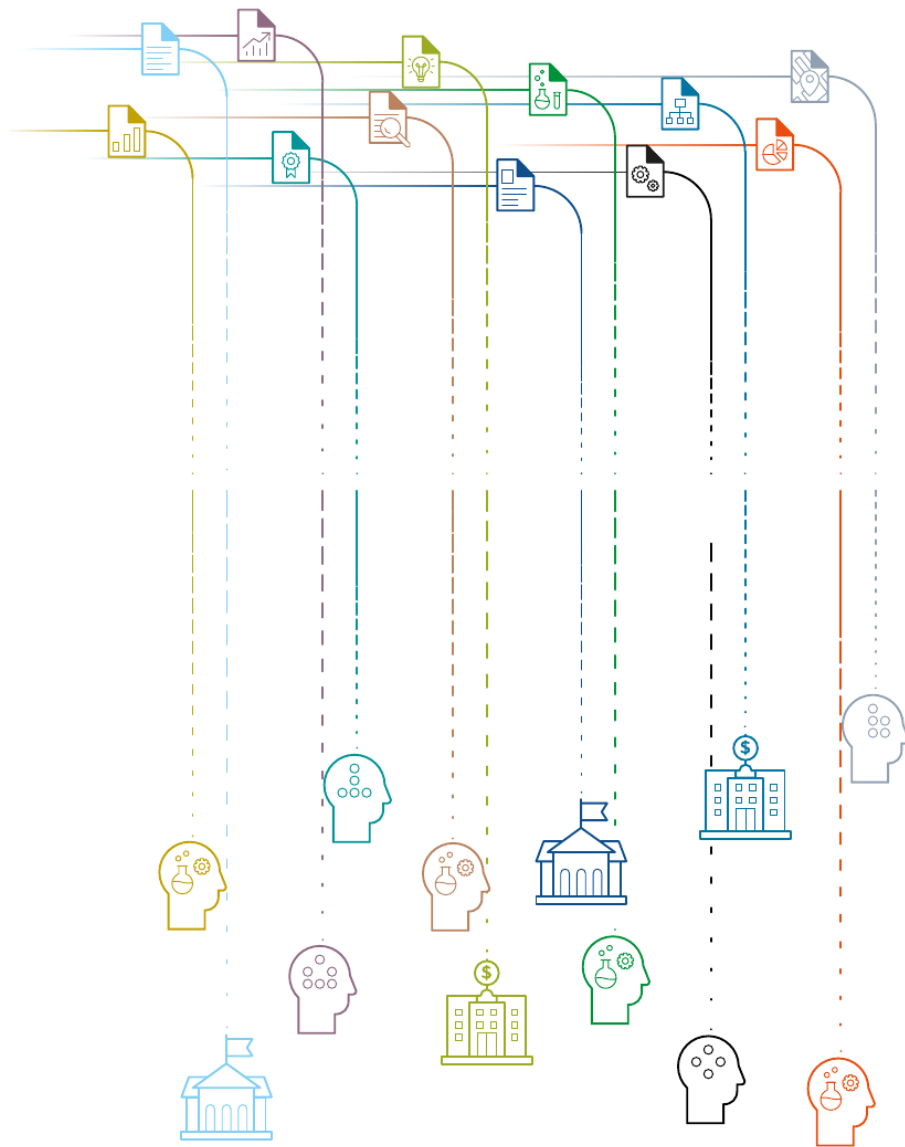
# Who we are



... adding knowledge and deepening understanding on **Biodiversity** organisation and **Ecosystem** functions and services ...

# Who we are

... in **support** of our **societies** to address the **key planetary challenges**.



**LifeWatch ERIC's mission** is to be a worldwide provider of content and services for the Biodiversity research community by:





# Mission

- Offering new opportunities for large-scale scientific development;
- Enabling accelerated data capture with innovative technologies;
- Supporting knowledge-based decision-making for biodiversity and ecosystem management;
- Providing training, dissemination

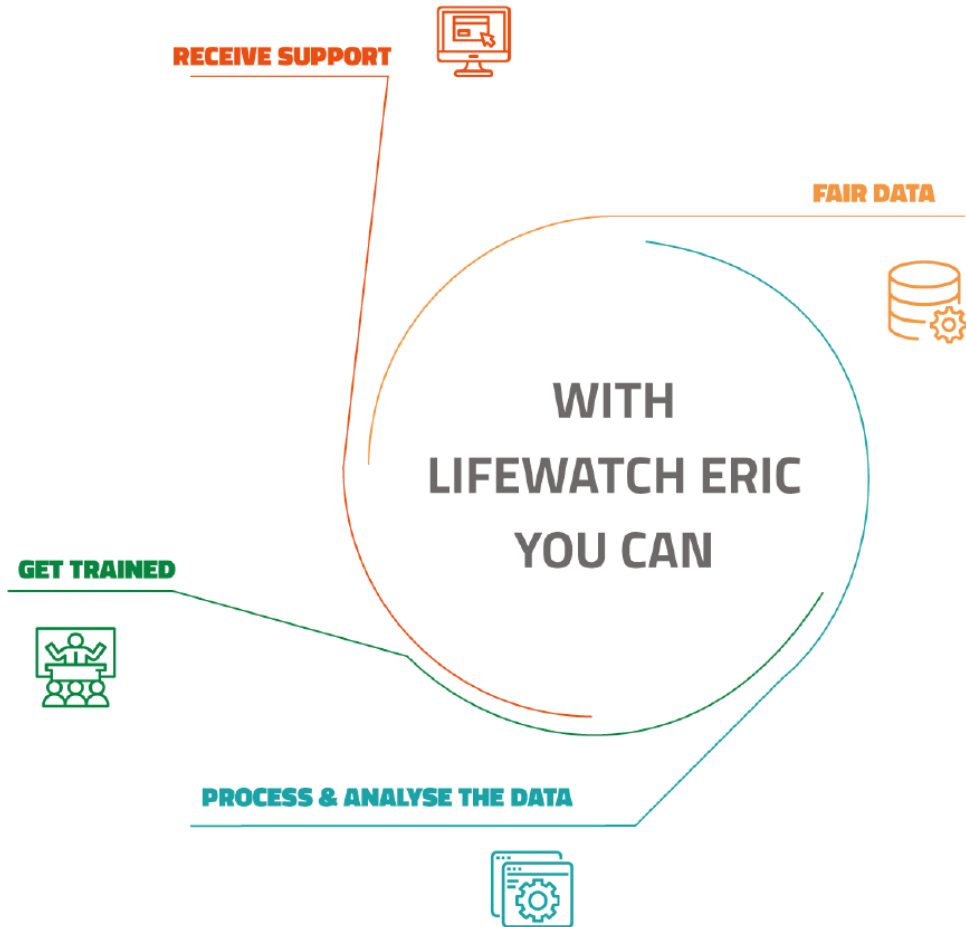




# LifeWatch ERIC in a nutshell:

<https://www.youtube.com/watch?v=m4n-cAcgpl0&feature=youtu.be>

# \_What we do | User Driven Approach



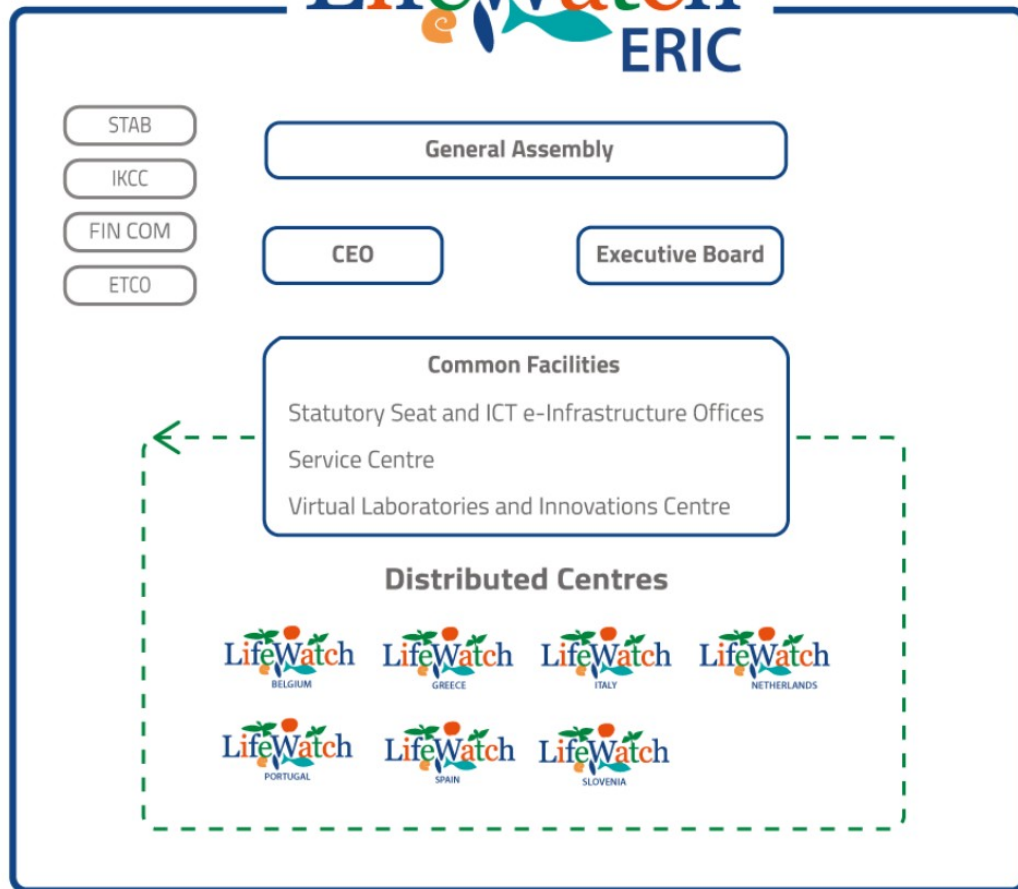
Provide access to data collected at a global level and offer ICT services, tools, storage capacity and computational power to transform information into synthetic knowledge

# What we do | Connecting researchers

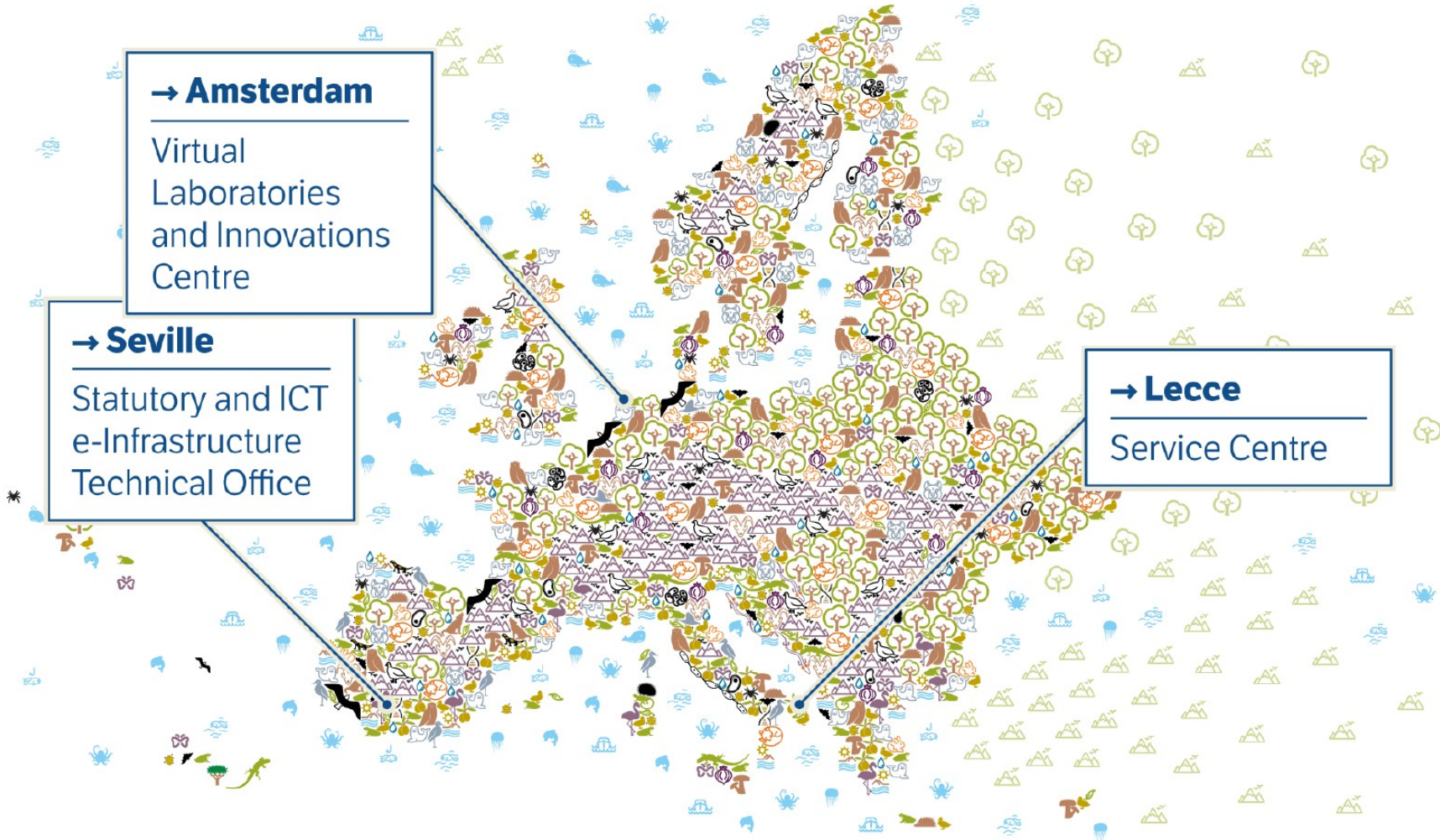
Federate distributed physical observatories, research and institutional environment management centres, and bring together scientific communities into a single accessible web space



# How we work | Governance



# How we work | Common Facilities



→ **Amsterdam**

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Virtual  
Laboratories  
and Innovations  
Centre

→ **Seville**

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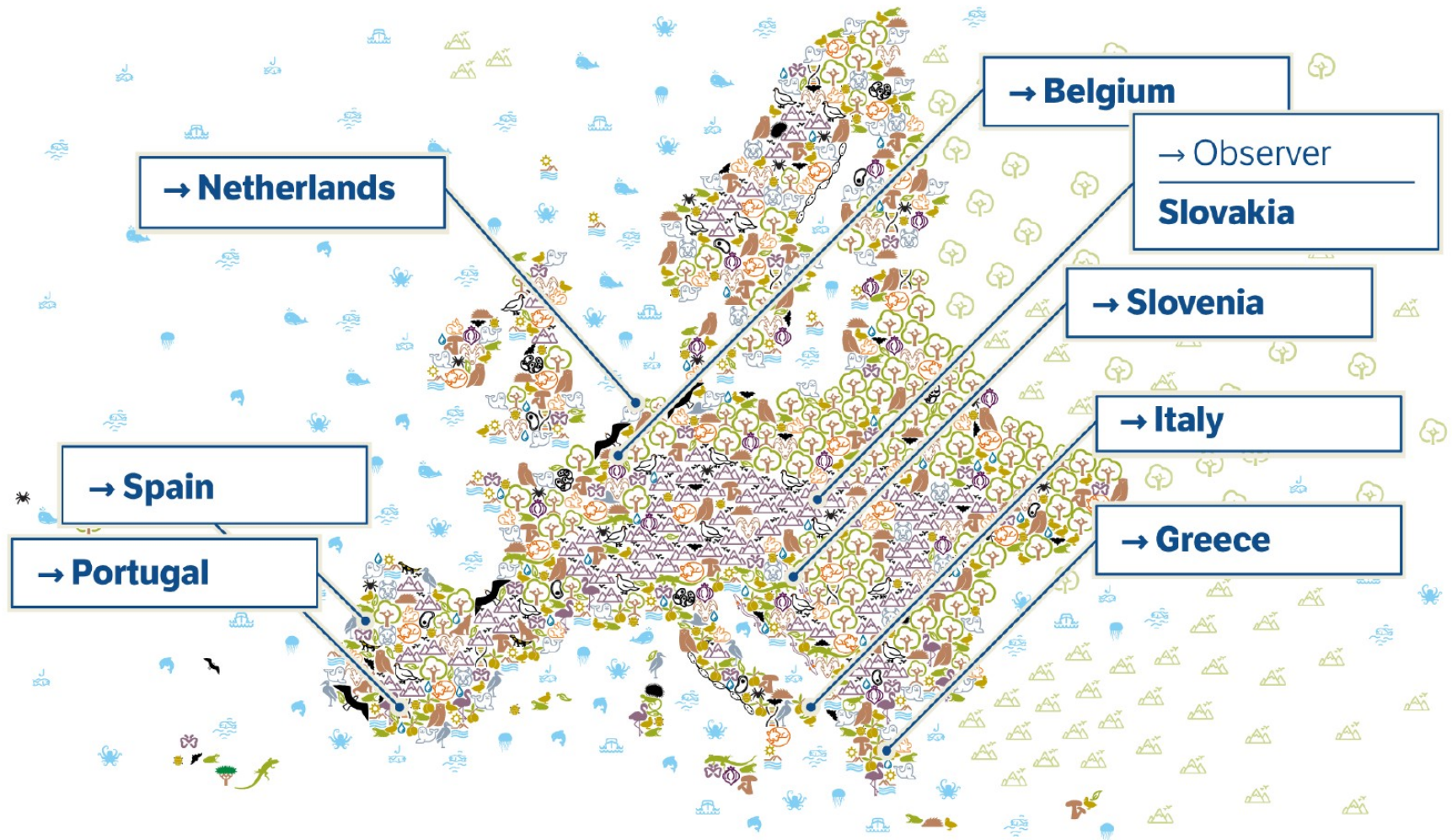
Statutory and ICT  
e-Infrastructure  
Technical Office

→ **Lecce**

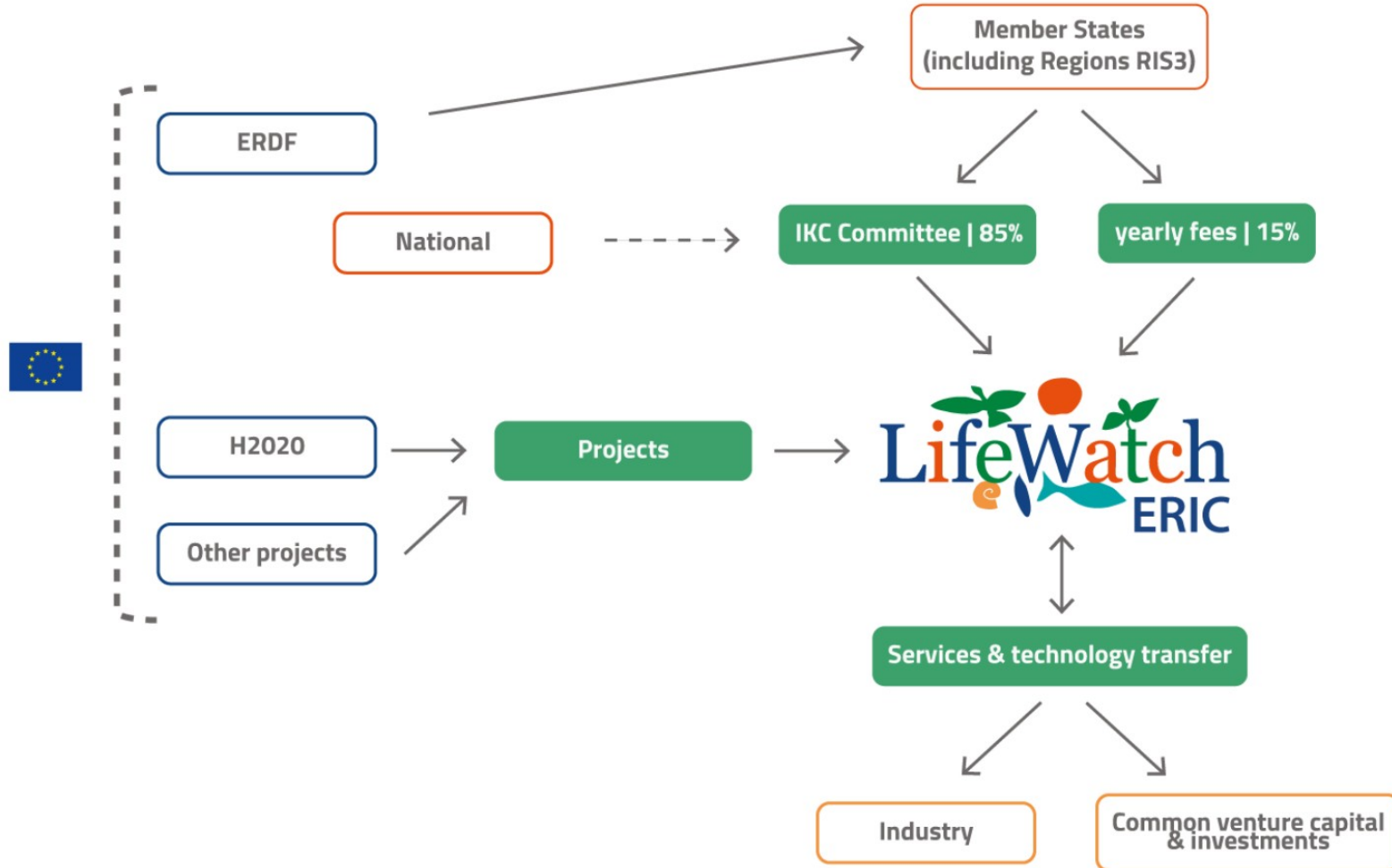
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Service Centre

# How we work | National Nodes

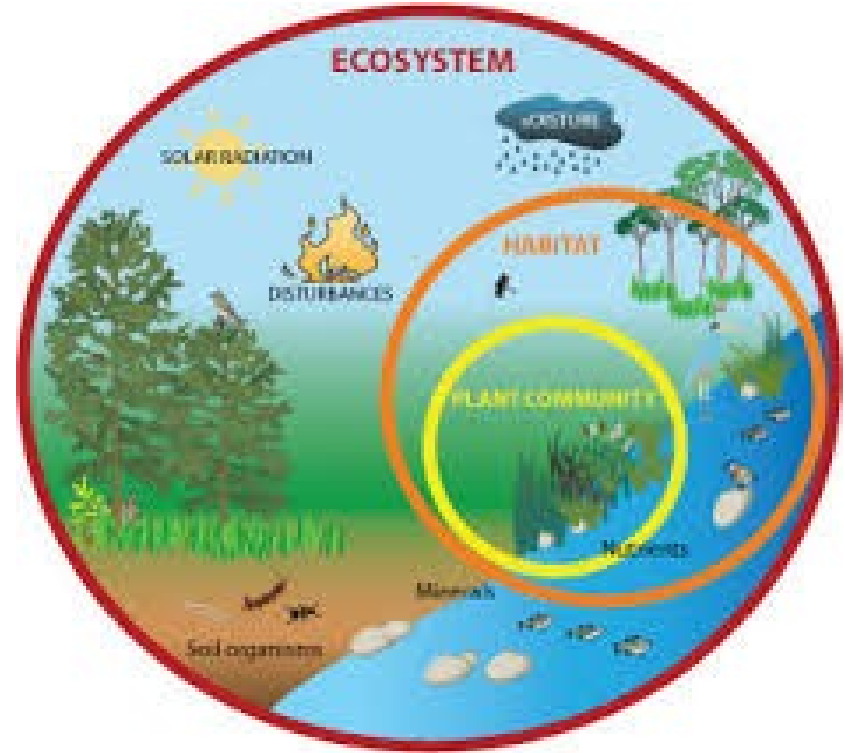


# How we work | Governance





# Aren't they complex enough?



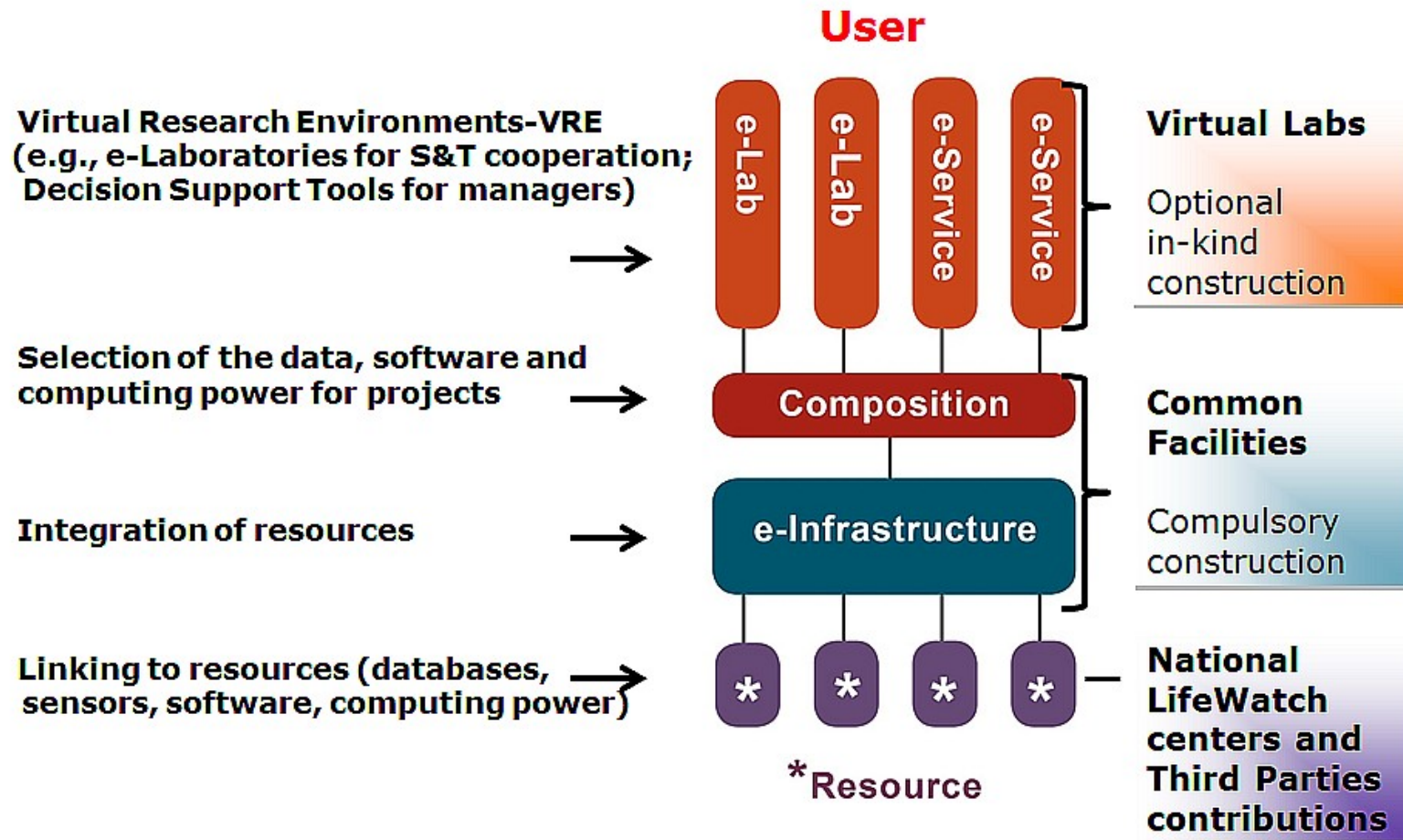


## The common theory by E.O. Wilson

**Consilience: The unity of knowledge.** *"Literally a 'jumping together' of knowledge by the linking of facts and fact-based theory across disciplines to create a common groundwork of explanation."*

**Synthetic biology:** Looking for knowledge stemming out of evidence from as many disciplines in biology as possible to understand and explain the complex systems in order to sustainably use the resources of our planet.

# LifeWatch ERIC: Development



# LifeWatch ERIC: Development The concept of a VRE



# LifeWatch ERIC Internal Joint Initiative | NIS

- Involve the LifeWatch ERIC National scientific communities, key international research groups and other European research Infrastructures with related interests and running activities; and,



A1. Catalogues of resources



A2. Architecture requirements



A3. FAIR VRE



A4. Documentation & training

- Make this an example of the functioning of the LifeWatch ERIC e-Infrastructure through its dissemination and outreach activities.



A5. Networking engagement



A6. Validation cases



A7. Communication & dissemination



A8. Coordination



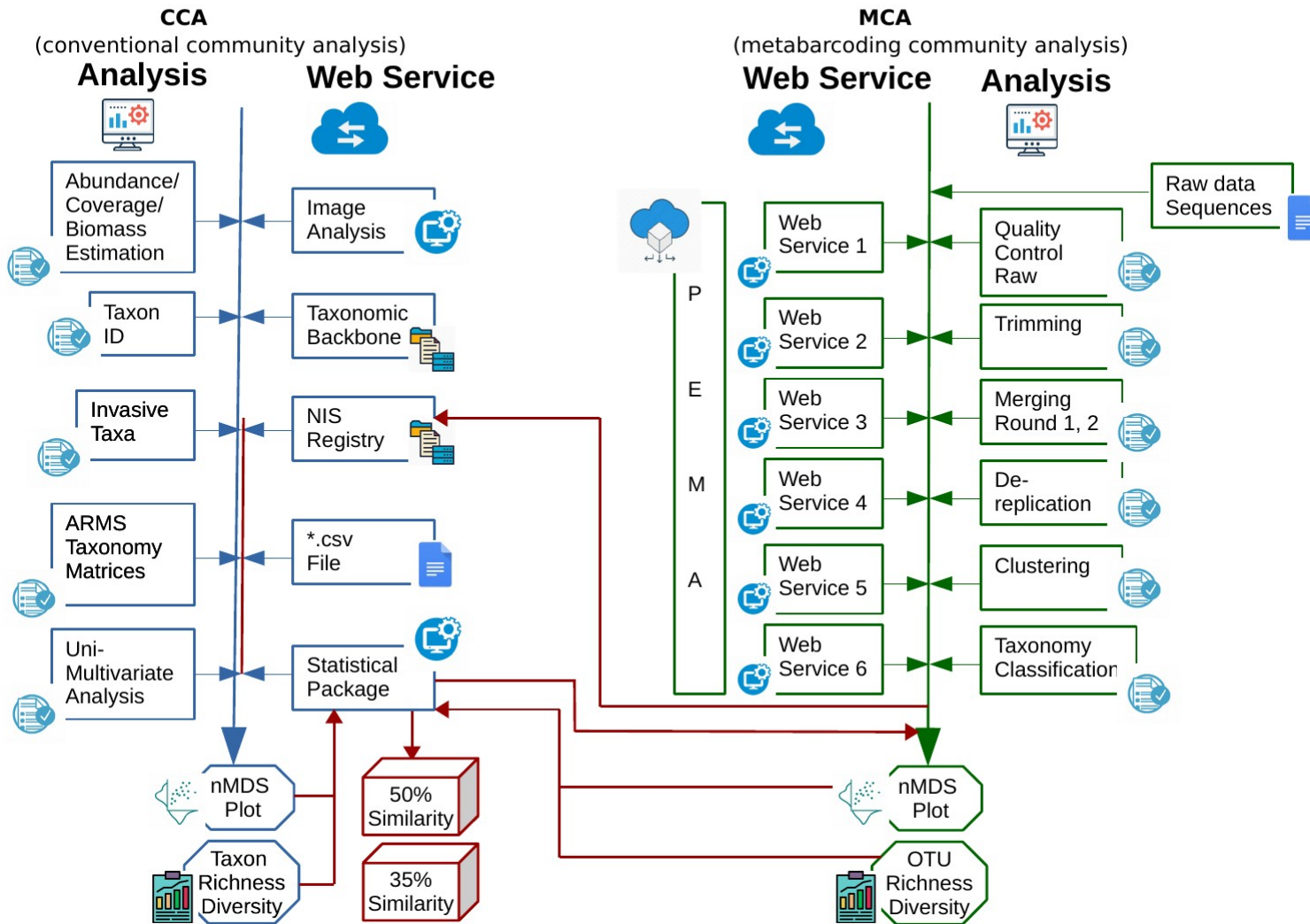
# LifeWatch ERIC: Recent developments - the IJI

**So far:**

1. First Dahlem Workshop completed – Seville, 14-18 October, 2019;
2. Second Dahlem Workshop completed – Rome, 02-06 December, 2019;
3. Use cases have been identified;
4. Teams have been formed – both scientific and ICT – and interact;
5. Workflows have been designed;
6. A scoping paper is on the way;

# Workflows : Analyses & Services

## Use case 4: ASSEMBLE+ ARMS





# LifeWatch ERIC: Challenges - Scientific

## **Modelling Biodiversity on Earth:**

- Mapping of diversity, biomass, productivity and socio-economics (including Ecosystem Services)
- Patterns, processes and consequences from change
- Prognosis under certain scenarios



# LifeWatch ERIC: Challenges - Infrastructure

## VRE: Virtual Research Environment

- e-Services (electronic services)
- vLabs (virtual laboratories)
- Computational capacity and storage unlimited space

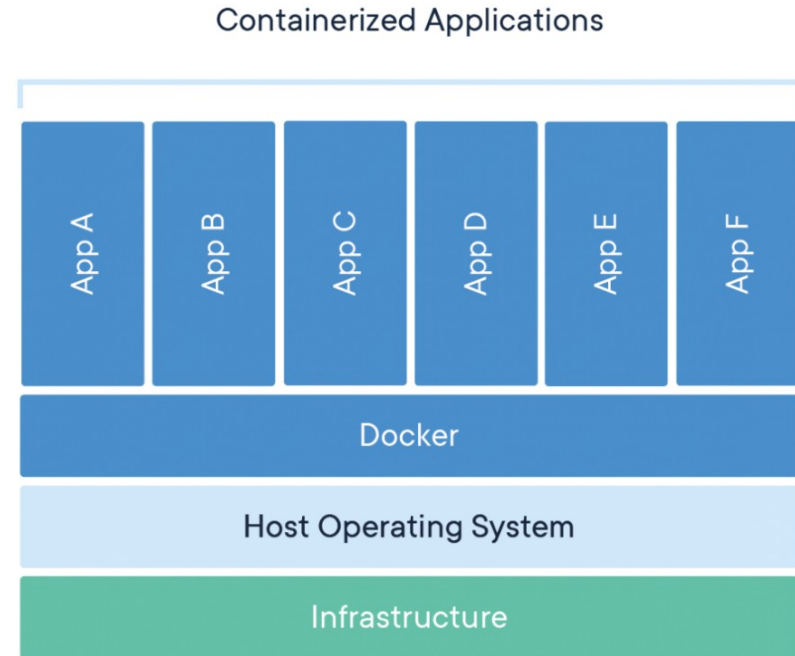




# LifeWatch ERIC: Challenges - Infrastructure

## VRE: Virtual Research Environment

- “Incubation chambers” for tech developed in Projects
- Transparency in scientific research practice



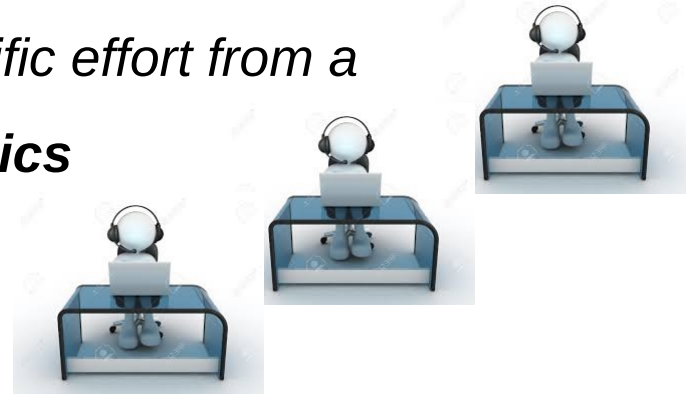


# LifeWatch ERIC: Challenges - Culture

*“...to **turn scientists’ attitude** from working in isolation in a **single-core PC and with licensed software** into using and benefiting from an **ecosystem of web services publicly available** on the web site of the **LW RI** with huge **data management effort and support, storage capacity and computational power**, which provides them not only with the capability to scale up their research interests and work on **global hypotheses** but it ensures **transparency, repeatability and attribution** for their endeavor.”*

# LifeWatch ERIC: Challenges - Culture

*“...This change would direct most of the scientific effort from a single-core brain (SCBs) operation or **brain-etics***



*to high-performance brain network synthesis (HPBNs) or **brain-omics**.”*





# LifeWatch ERIC: Our next priorities

- **Develop** LW ERIC **common facilities** in a fully **operational** mode;
- Construct and operate the urgently needed **distributed and federated infrastructure** in order to **integrate, organically link** and make all the **web services** developed by the national biodiversity centers available through a single stop-over spot;
- **Bring back** and unite the much **fragmented scientific** and other type of **biodiversity and ecosystem functioning user communities** to their natural home, the LifeWatch ERIC Research Infrastructure; *LifeWatch ERIC Science Week (Ljubljana, Slovenia) & Summer School (NIS; Grand Paradiso, Italy); !*



**Thank you all for your attention!**

Questions?

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Many thanks to Sara Montinaro for the preparation of many of the slides!