

“Descripción y Objetivos de la Infraestructura”

***Subdirección General de Relaciones Internacionales
Secretaría de Estado de I+D+i
Ministerio de Economía y Competitividad***



MINISTERIO
DE ECONOMÍA
Y COMPETITIVIDAD

**“Reunión Annual Seguimiento Nodo GBIF.ES”
Real Jardín Botánico-CSIC
Madrid-España, July 13th 2016**

LifeWatch is a European e-Science distributed Infrastructure focused on how to measure the impact of Global Change issues on Earth **Biodiversity and Ecosystem Research.**

Ecosystems



Species



Time and evolution



Scale



DNA,
proteins
and genes



addresses the big environmental challenges and support knowledge-based strategic solutions to environmental preservation.

BEF

Climate
change

Habitat
Fragmentation
/loss

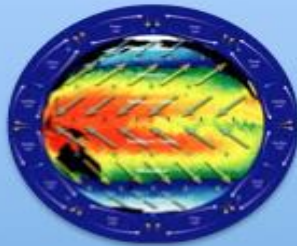
Species
invasions

Compound
impacts

Hot Ecological Topics
(The Big Five)



oceanic and
atmospheric
processes



Climate system
as driver of
change



Biological
processes,
biodiversity and
ecosystems



Substrate of
lithosphere and
hydrosphere

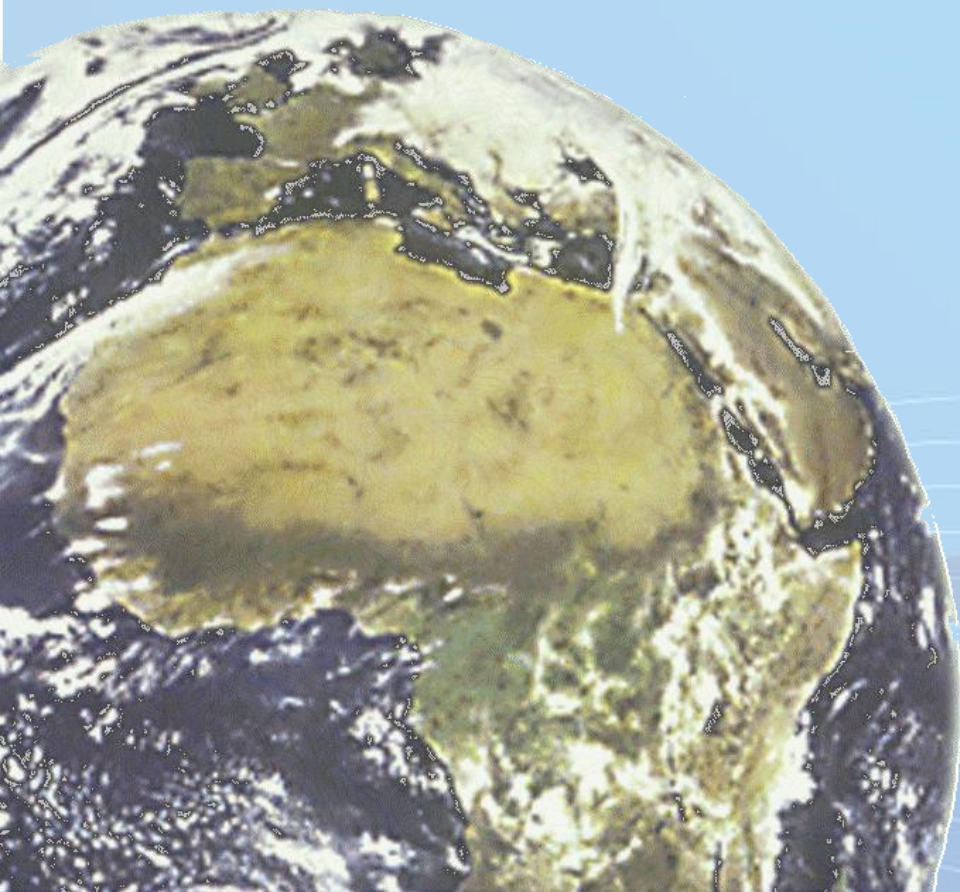
Earth as a single complex and coupled system

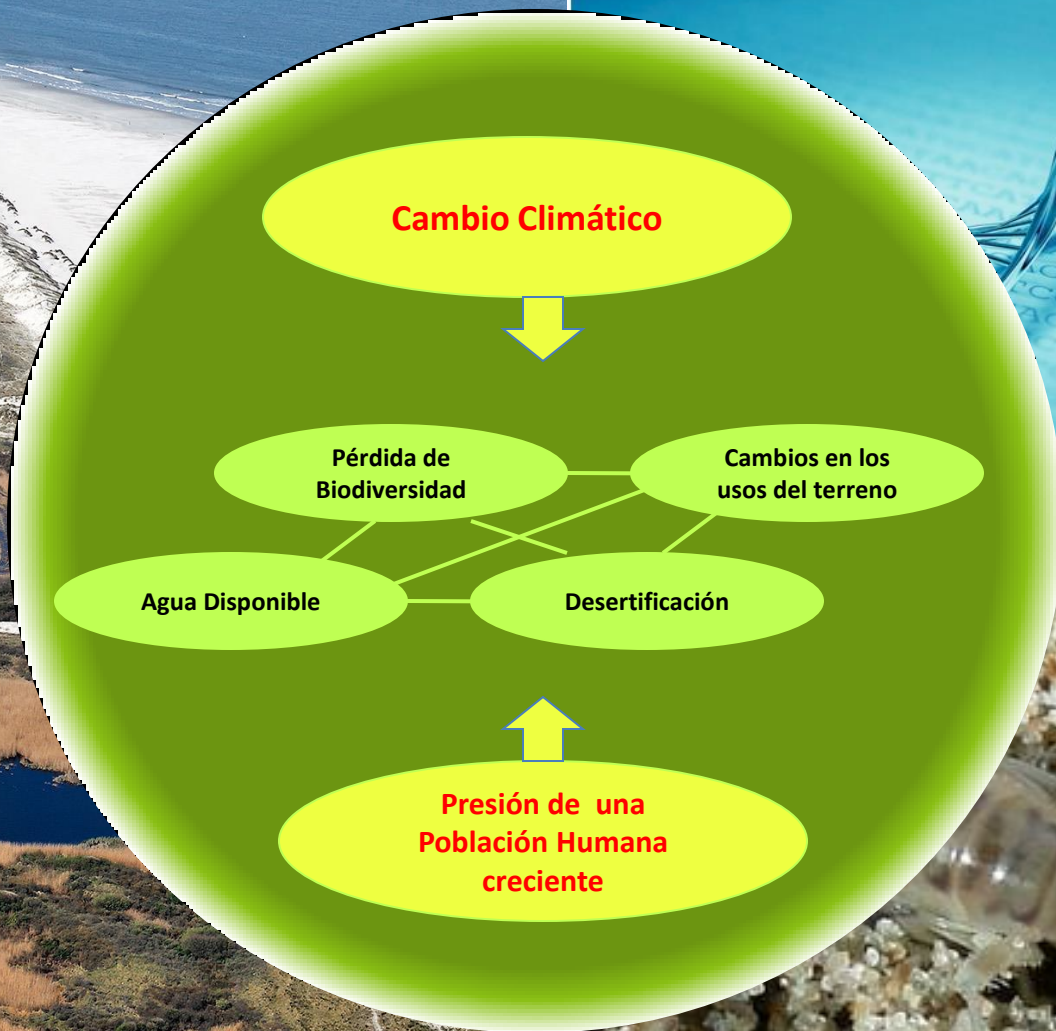
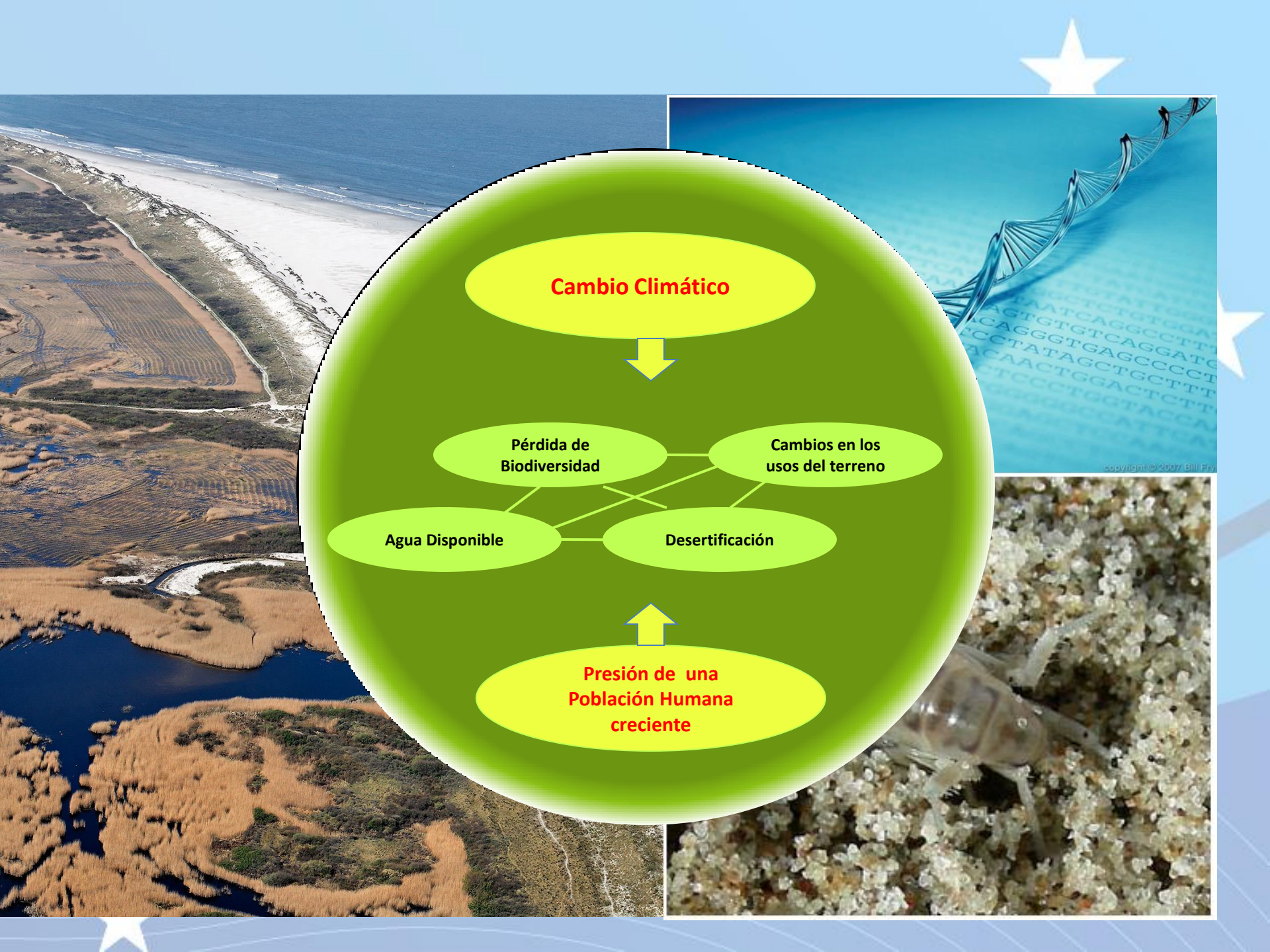
Challenges


CRECIMIENTO SOSTENIBLE:

Necesitamos
COMPRENDER:

- Los límites/umbrales críticos medioambientales y “**resilencia**” de los ecosistemas
- Relación entre BIODIVERSIDAD & **SERVICIOS** ESENCIALES ECOSISTÉMICOS



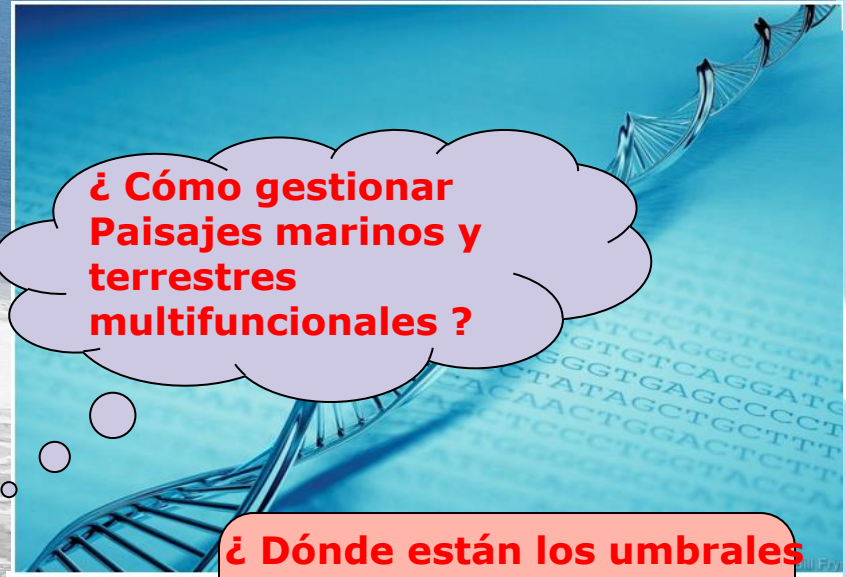




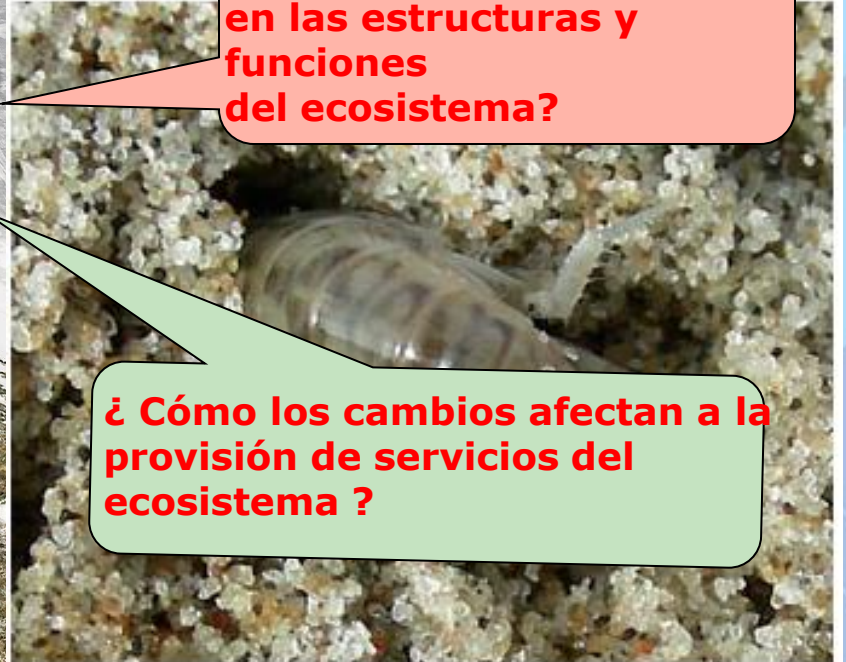
¿ Qué acciones adoptar para garantizar una sostenibilidad a largo plazo ?

¿ Nos podemos adaptar al cambio global ?

¿Cuál es el impacto de los cambios en el clima, contaminación y usos del terreno y mar sobre la Biodiversidad ?



¿ Cómo gestionar Paisajes marinos y terrestres multifuncionales ?



¿ Dónde están los umbrales en las estructuras y funciones del ecosistema?

¿ Cómo los cambios afectan a la provisión de servicios del ecosistema ?



doing what IPCC did for Climate Change for biodiversity

Nagoya – 2010 – CBD targets

The mission of the Strategic Plan is to “take effective and urgent action to **halt the loss of biodiversity** in order **to ensure that by 2020 ecosystems are resilient and continue to provide essential services**, ...

THE GL
SYSTEM



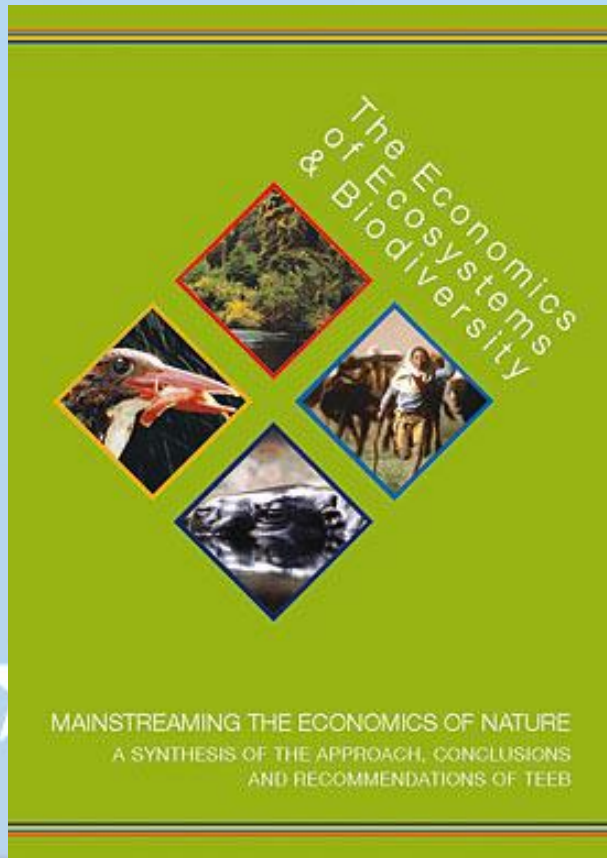
EARTH OBSERVATIONS

GEO BON

**Biodiversity
Observation Network**

**Implementation plan to
2015**

The ECONOMICS of Ecosystems and Biodiversity (TEEB) - 2010



IT IS NECESSARY:

✓ **Provisioning SERVICES**

✓ **Regulating SERVICES**

✓ **Supporting SERVICES**

✓ **Cultural SERVICES**

STRATEGY REPORT
ON RESEARCH
INFRASTRUCTURES



ROADMAP 2016

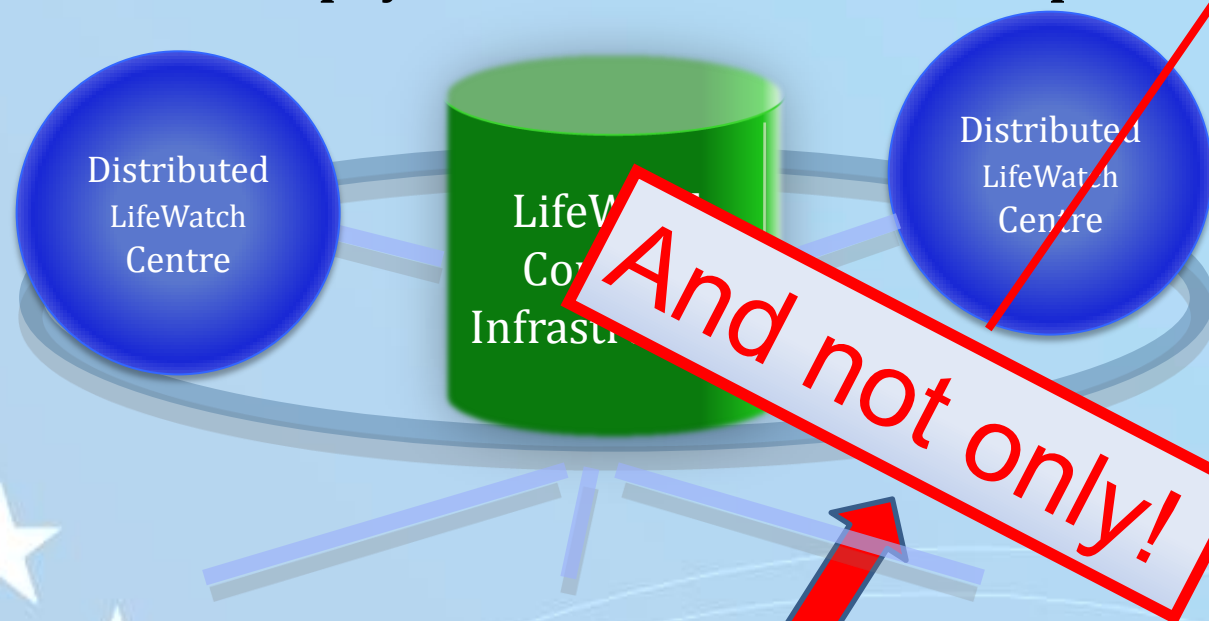
ESFRI Projects & Landmarks 2016 recently published by European Commission.

LifeWatch ESFRI considered as an ENVIRONMENT strategic one.

http://ec.europa.eu/research/infrastructures/pdf/esfri/esfri_roadmap/esfri_roadmap_2016_adopted.pdf



To this end, **LifeWatch** is cooperating with “**distributed**” Centres in cooperating countries (including their **REGIONS**). These Centres are developing and operating virtual and physical media and other components.



Virtual Labs
(Amsterdam,
The Netherlands)



Service Centre
(Lecce-Regione
Puglia, Italy)



**Headquarters, Statutory Seat
& ICT e-Infrastructure**
(Andalusia, Spain)



TYPE: distributed

COORDINATING COUNTRY: ES

MEMBER COUNTRIES: BE, EL, ES, IT, NL,
PT, RO ^{*} March 7th, 2016 update

PARTICIPATING COUNTRIES: FI, FR, HU,
NO, SE, SI, SK

TIMELINE

- ESFRI Roadmap entry: 2006
- Preparation phase: 2008-2011
- Construction phase: 2011-2016
- Operation start: 2016

ESTIMATED COSTS

- Capital value: 66 M€
- Operation: 10 M€/year

HEADQUARTERS

Statutory Seat: Seville (ES)
Common facilities: ES-IT-NL

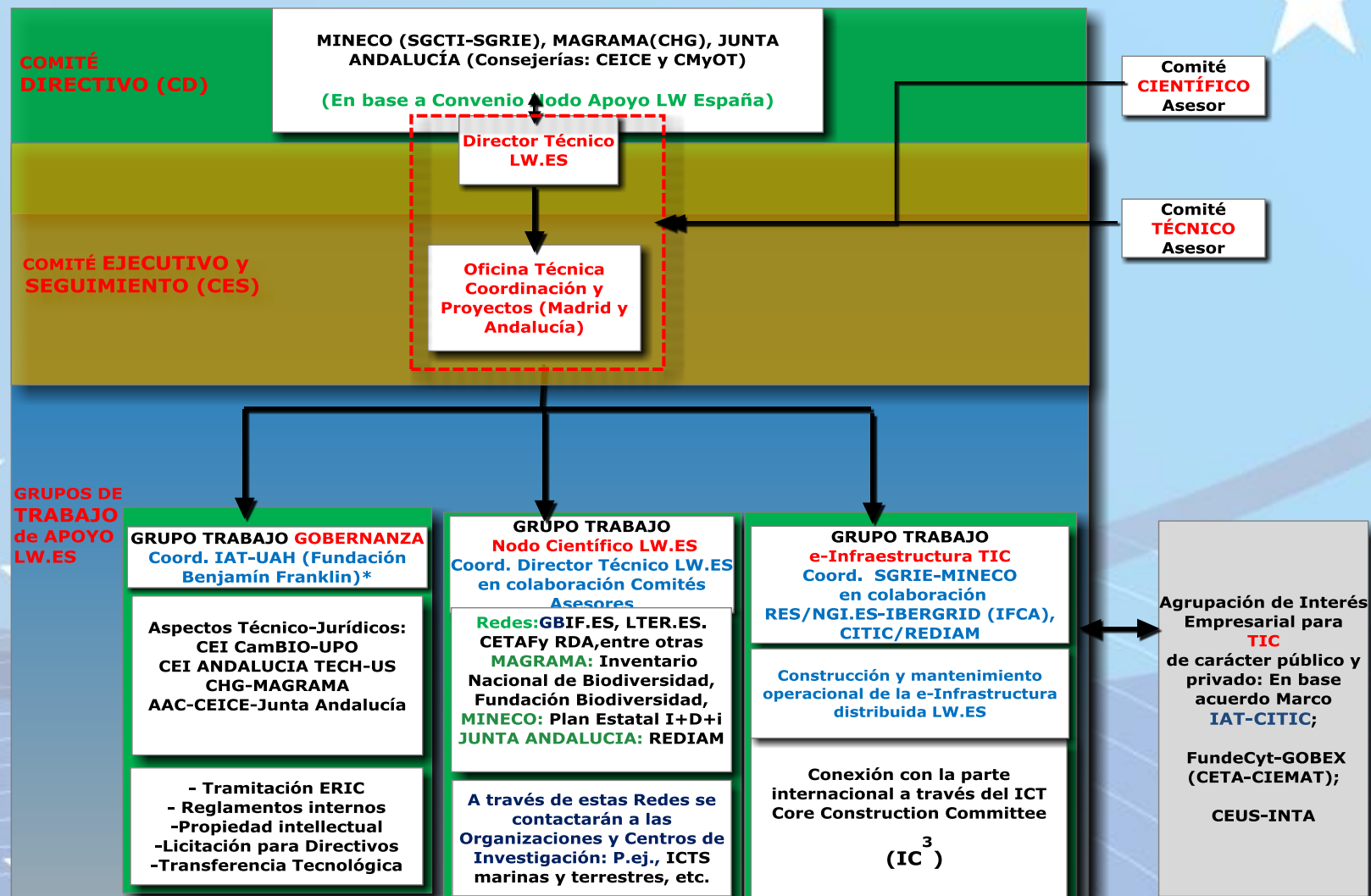
WEBSITE

<http://www.lifewatch.eu>

UNIDAD CONJUNTA DE INVESTIGACIÓN LIFEWATCH ESPAÑA (JRU LW.ES):

Suscrito por 24 Organizaciones hasta fecha 11 julio 2016

ESQUEMA DE GOBERNANZA



The background features a light blue sky with a series of white, wavy lines representing clouds or water at the bottom. There are also several white five-pointed stars scattered across the sky, with three in the top right and four in the bottom left.

...HOWEVER...

How to
Integrate across
scales?

...and stakeholders
needs?

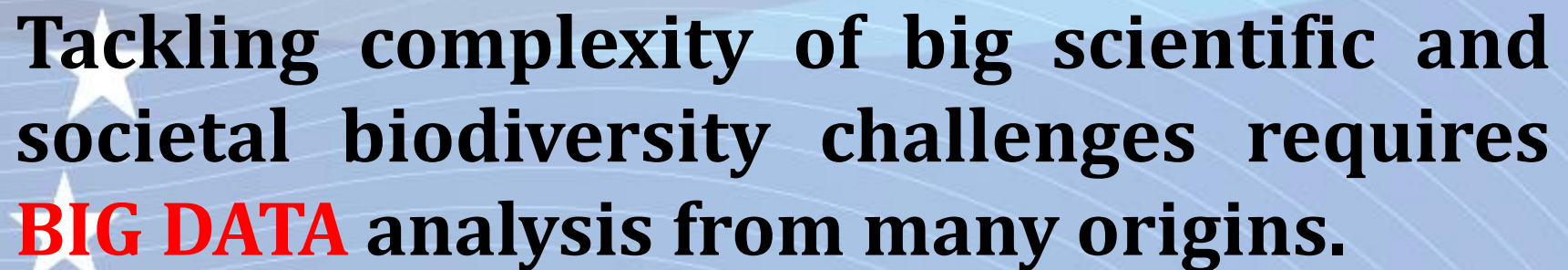
...taking into account the COMPLEXITY of data, model
and tool resources...BUT...



Sergei Ashmarin, Russia

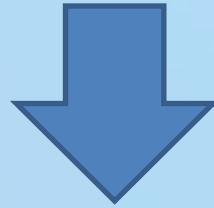
- ...Many models? Poorly linked
- Not enough relevant or accessible data?
- Too much data – not enough synthesis and understanding

Courtesy of T. Parr



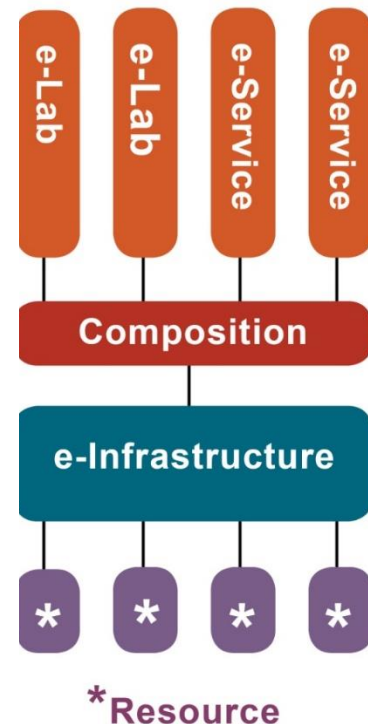
AMONG OTHERS, 2 CONCRETE CHALLENGES:

- ✓ **SCALE:** Users and data generators in the large Networks of Excellence
- ✓ **HETEROGENEITY:** Interconnected nature of biodiversity ideas, outputs and repositories



LifeWatch
ICT e-Infra
& BIG DATA
architecture
in place

- **e-Services** for scientific cooperation
- Select the data, software and computing power for your project
- Integrate resources
- Linking to resources (databases, sensors, software, computing power)



...Therefore, (Meta-)Data, modelling and analysis capabilities:

COMMON e-Infrastructure Services to guarantee **INTEROPERABILITY**

Operations Services

Services and Tools Catalogue

Annotations repository

Provenance/citation repository

Semantic Mediation Framework

Workflow management

Virtual Collaborative
Environments

Base Services

Geospatial
Services

General
Services

Computational
Resources

Portal Server(s)

LIFEWATCH Thematic Services

Phylogenomics &
Biogeography

Taxonomy &
Systematics

Species Richness &
Ecosystem Services

Biodiversity Valuation

Species Distribution
Dynamics

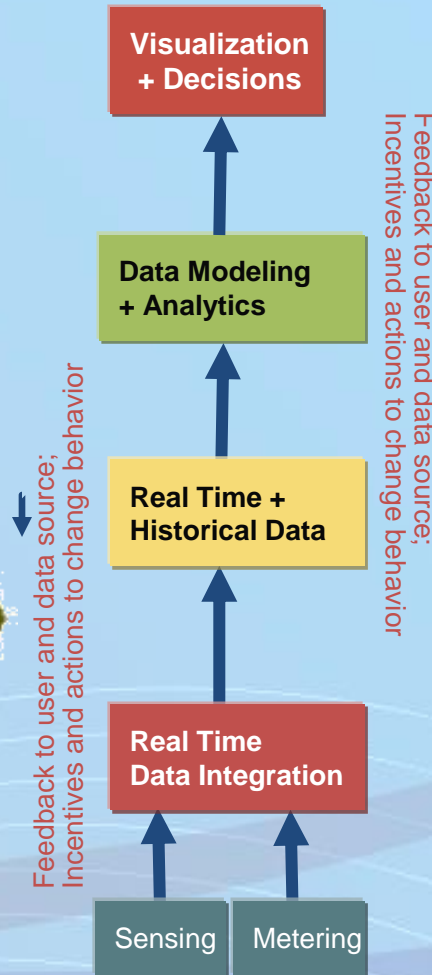
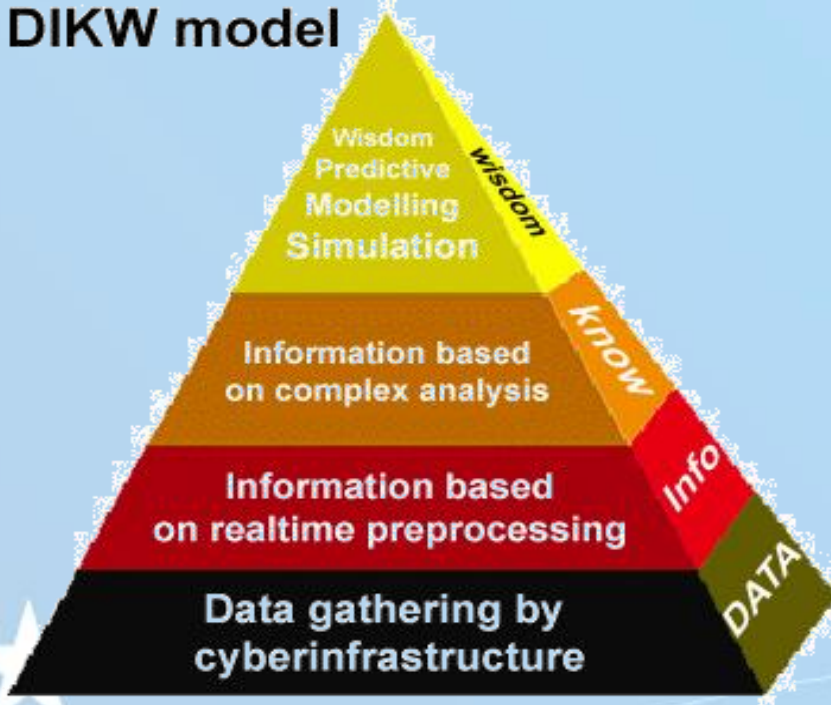
Genes-Species-Specimens
(multi-scale linkages)

Citizen Science &
Observations

**COMMON e-Infrastructure
(LIFEWATCH & others)
Services**

...COMMON e-Infrastructure services which allow:

DIKW model



- Data modeling and analytics to create insights from data to feed decision support and actions

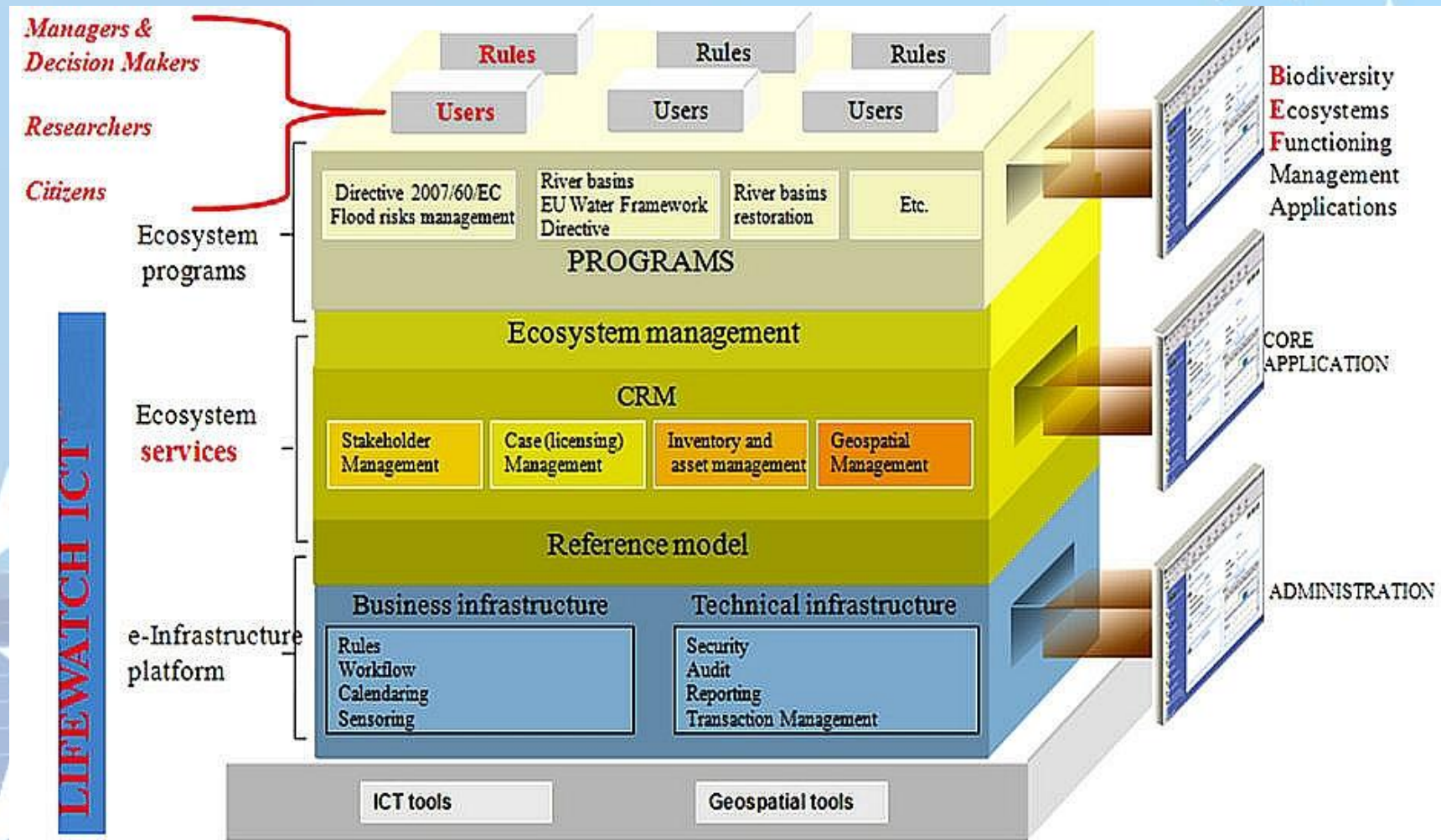
- Comparison of historical data, with newly collected data

- Data Integration

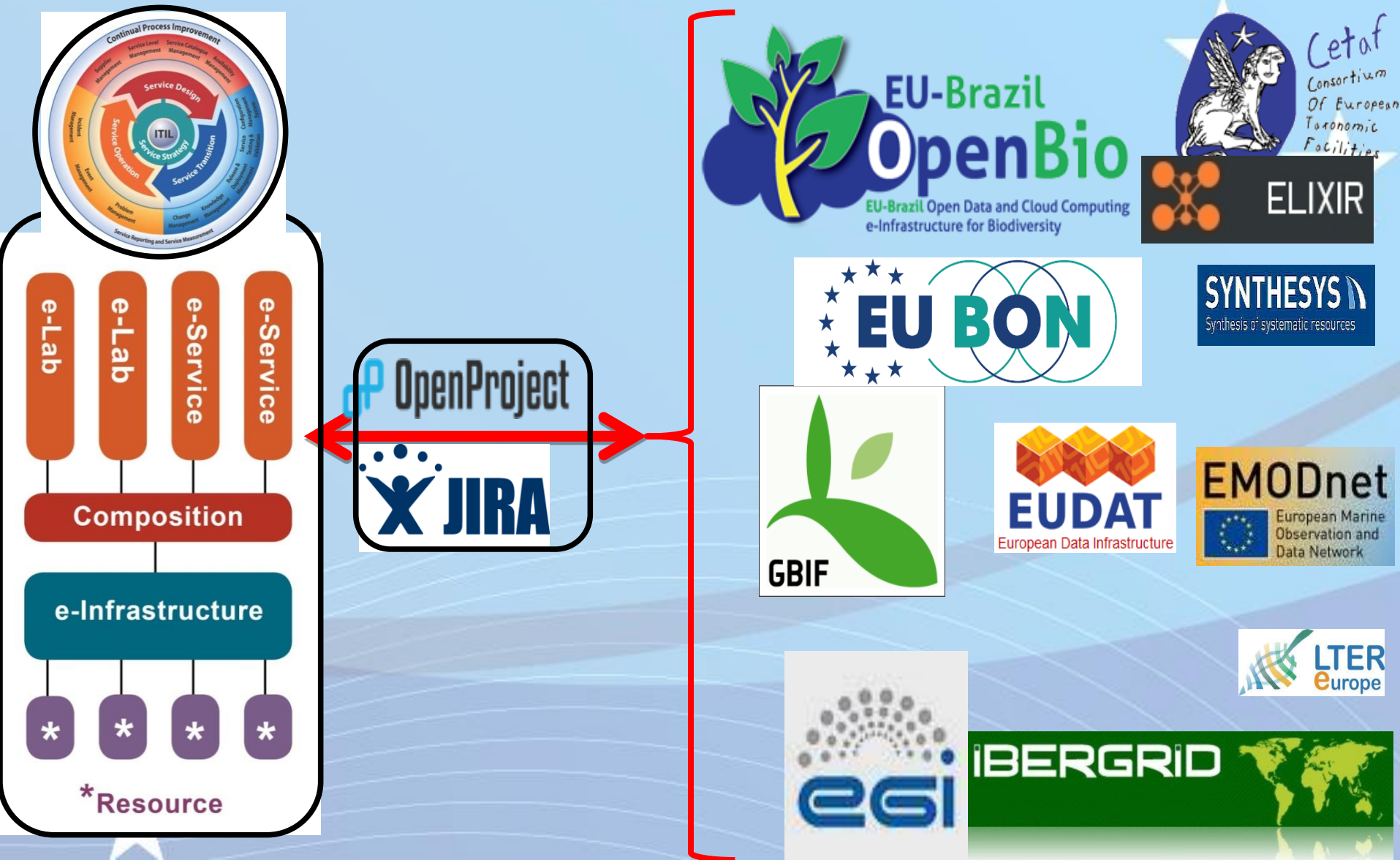
- Data collection

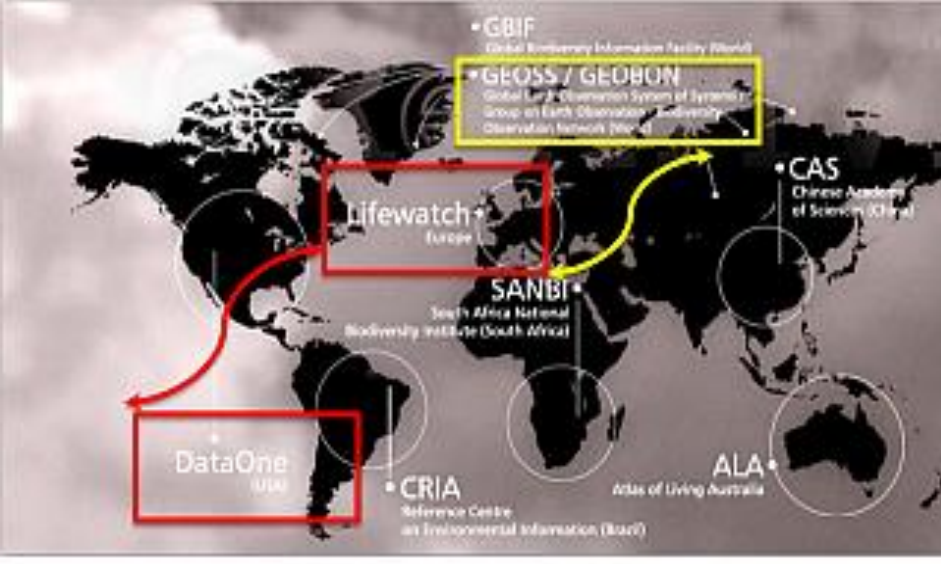


This **mission** is achieved by providing access to a multitude of data sets, services and tools enabling the construction and operation of **Virtual Research Environments** which provide the environments for integrating data, software and computation as developed in European infrastructure cooperation.

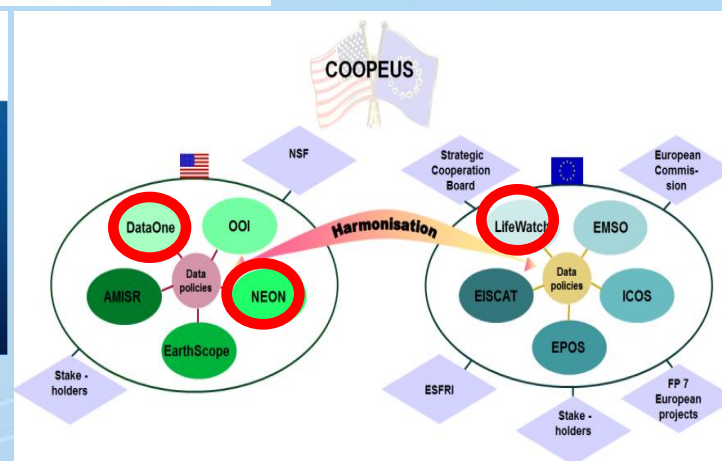


NOT FROM SCRATCH !: Interministerial agreements (Brussels, February 2011) and Commission Mandate based on ERIC Establishment Cooperation and Integration: **PARTICIPATING COUNTRIES** “in kind” contributions + **SUPPORTING Projects and Initiatives** (only some of them below).





And not only!

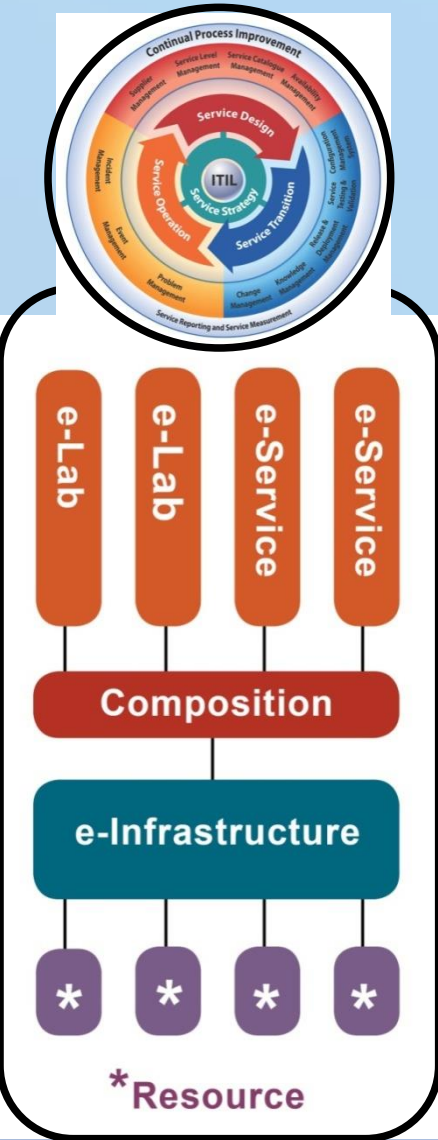


COOPEUS
COOP+



European Open Science Cloud

Interministerial agreements (**Brussels, February 2011**) and Commission Mandate based on ERIC Establishment Cooperation and Integration: **PARTICIPATING COUNTRIES** “in kind” contributions.



- **“Realistic” Construction and associated Business Plan (from now on CBP)** based on “real” needs and users’ requirements.
- Including a **“feasible” Governance Scheme and Funding Strategy** in order to guarantee the RI **Sustainability** based on an early identification of “in-kind” and “in-cash” Member States (including their Regions-RIS³) contributions, consisting of at least a 5-years period “Cash Flow” Analysis.
- The CBP follows a sequence of releases, starting with a down-scaled level and a **incremental & iterative construction methodology** (“Agile”-based) with a proper Quality Assurance & Risk Management Plan associated. Establishment of the proper Working Methodologies, including Technical Advisory and Operational Committees.

LifeWatch ERIC Distributed Construction STRATEGIC PLAN

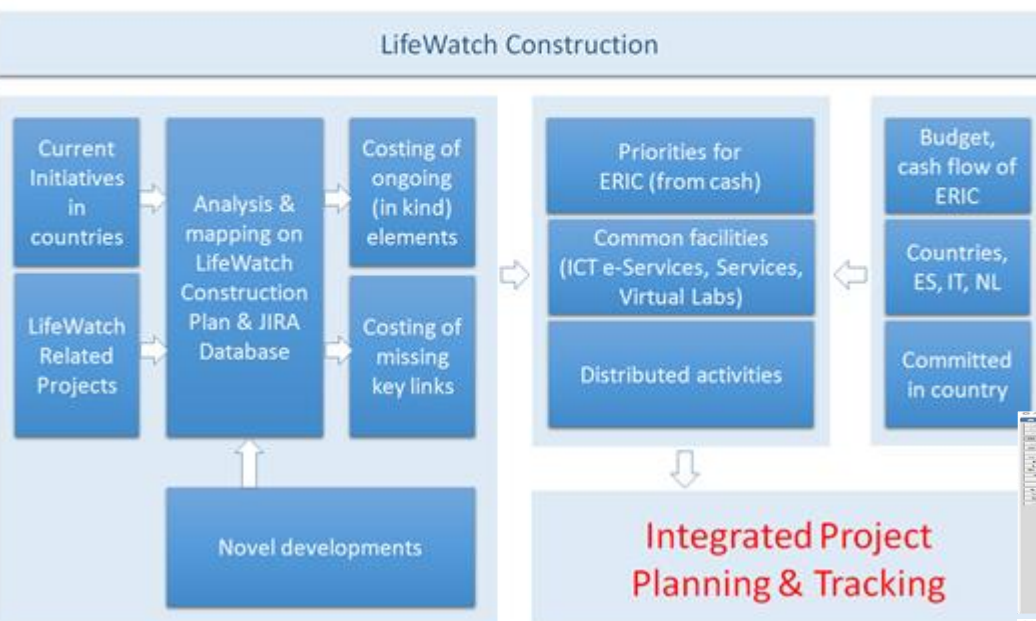
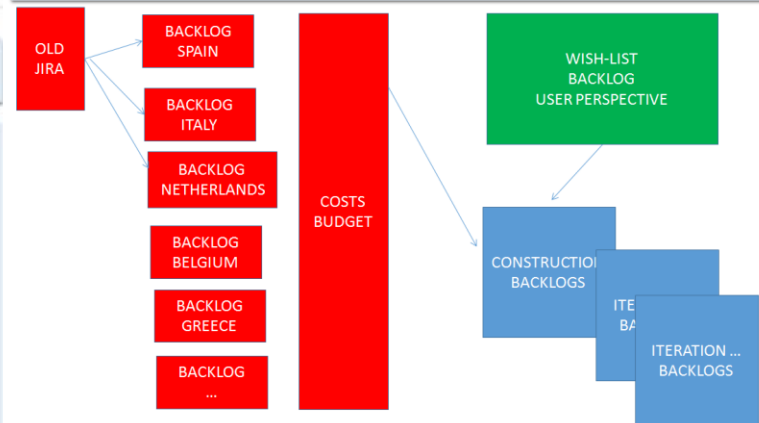
Technical working document in regards to the specific tasks for the coordination and management of the distributed construction operations of the distributed e-Infrastructure, as required by the Article 4 of the ERIC regulations directives

and corresponding mapping of tasks into the <http://construction.lifewatch.eu>
SmartSheet (Financial) & OpenProject (Technical) Intranets

*Málaga meeting:
Advancing towards construction*

A well defined operating procedure

OPERATING PROCEDURE (Málaga meeting agreement)



Country	Project	Component	Task	Value	...
Spain
Italy
Netherlands
Belgium
Greece

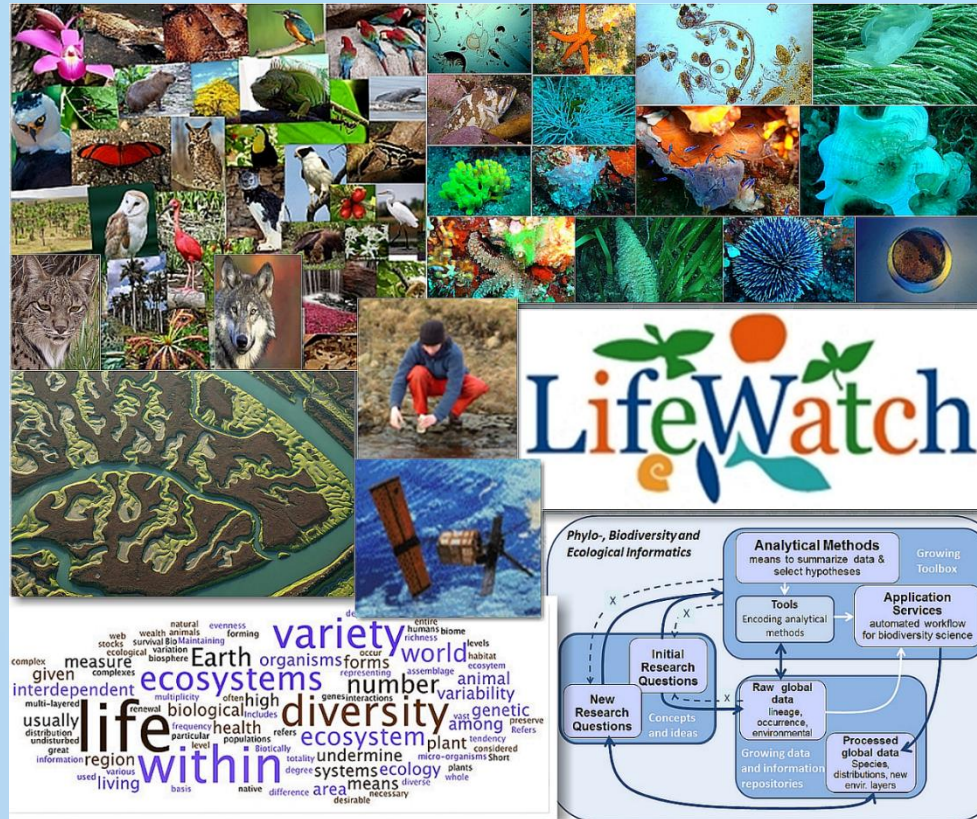
“Ink-kind” and “in-cash” Countries’ Contributions associated to concrete Projects, Components and Tasks

- WORKING integration in LifeWatch distributed e-Infrastructure
 - EGI ENGAGE LifeWatch Competence Center **OK!**
 - IaaS/PaaS/SaaS: INDIGO-DataCloud **OK!**
 - Collaboration with LW-BELgium (LW Marine) **OK!**
 - Collaboration with LTER -> on-going**
 - Collaboration with GBIF> on-going**
- REAL Integration in Andalusia Region (**ESIF-FEDER**)
 - SMEs and Public Administrations-Institutions synergies.**

Researchers' Interests

- Fluvial-Freshwater/**Invasive Alien Species**, Estuaries, Phenology...*
- V-LABS & (SMART) SENSORS
 - Protocols, **Bird-tracking**
 - Biodiversity and Ecosystems Management Case Studies**





¡ Muchas gracias !
<http://www.lifewatch.eu>