



BIODIVERSITY E-SCIENCE

LIFEWATCH, L'INFRASTRUTTURA EUROPEA PER LA
RICERCA SU BIODIVERSITA' ED ECOSISTEMI

LTER – Italia

La Rete di ricerca Ecologica di Lungo Termine

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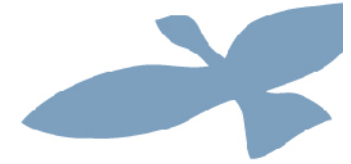
CNR – Rete LTER Italia e LifeWatch

Alberto Basset

University of Salento LifeWatch Board of Directors



Consiglio Nazionale
delle Ricerche

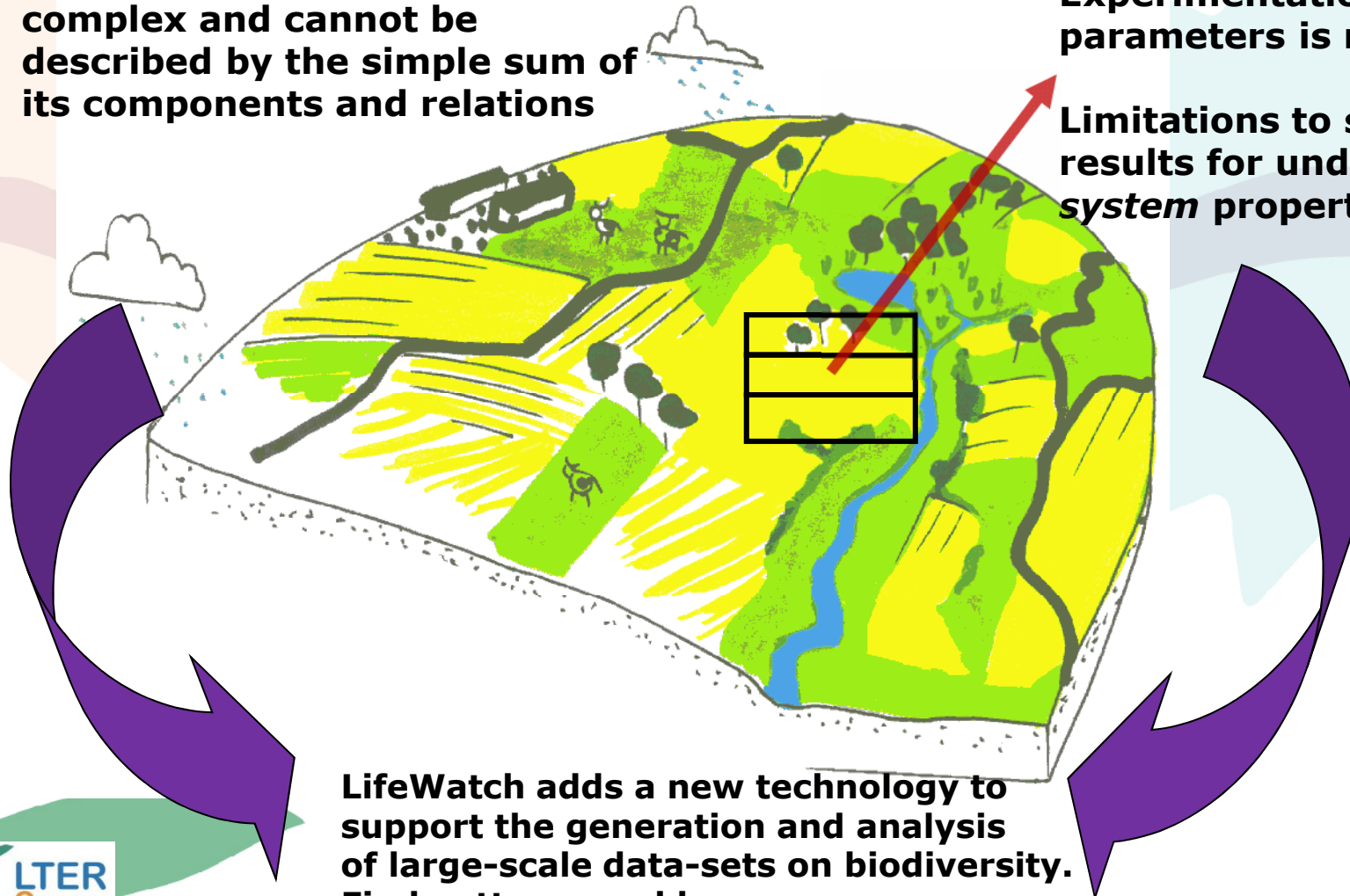


LifeWatch (SPECULATIVE AND GLOBAL INNOVATION) →

The biodiversity *system* is complex and cannot be described by the simple sum of its components and relations

Experimentation on a few parameters is not enough:

Limitations to scaling up results for understanding *system* properties



LifeWatch adds a new technology to support the generation and analysis of large-scale data-sets on biodiversity. Find patterns and learn processes.



Objective: “to provide data to understand how the world works”



CERN-LHC

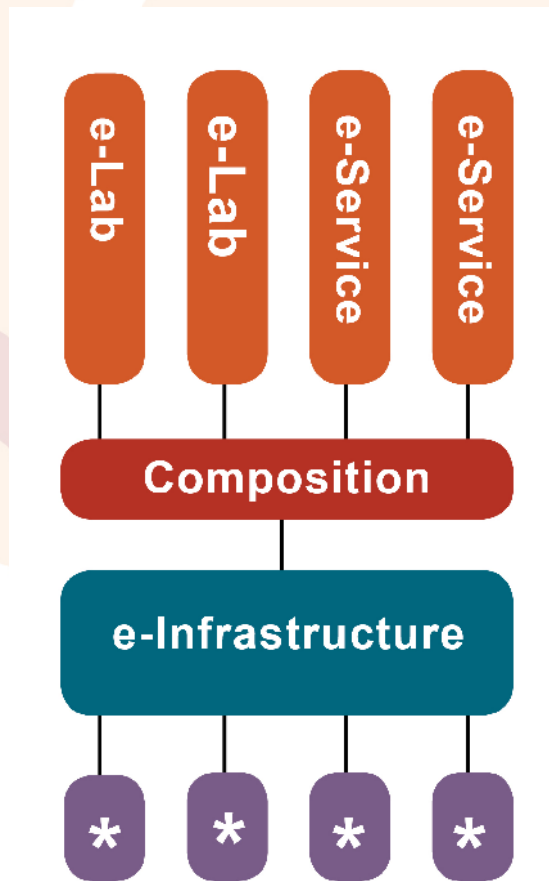
- Large-scale centralised infrastructure
- 1 site in 2 countries
- 3.2–6.4 billion euros since 1995
- Smashes millions of small particles together and observes what happens
- Reductionist: tests theories

LifeWatch

- Large-scale distributed infrastructure
- many sites and data sources sites in up to 50 countries in Europe
- 370 million euros (estimated)
- Observes what is happening to planet earth
- Holistic: analysis of large data sets to identify patterns and underlying processes of changing ecosystems - resilience.



LIFEWATCH Infrastructure for biodiversity research



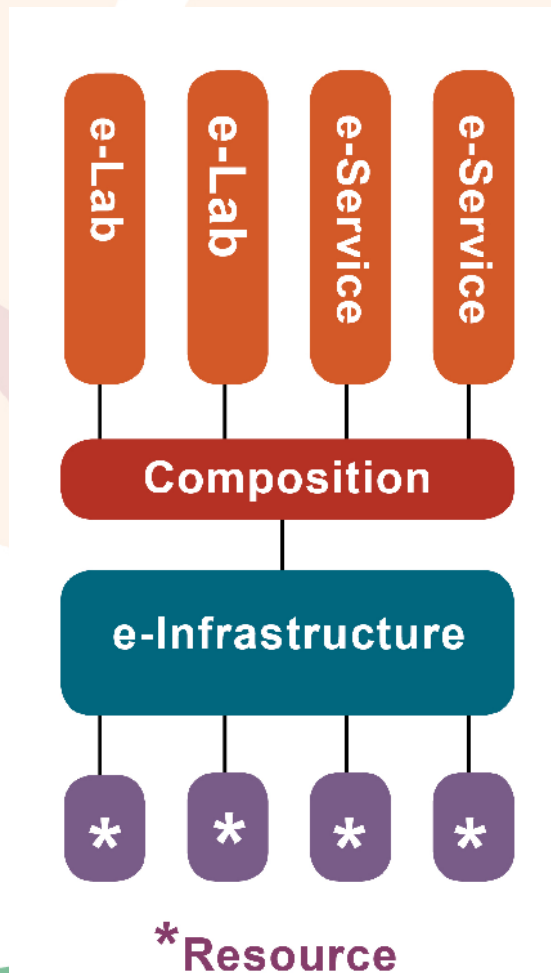
*Resource

A pan-European research infrastructure

- a. serving the science community in conducting first class Biodiversity research;
- b. in order to provide for answers to political problems and questions concerning Biodiversity in its broadest sense.



LIFEWATCH Infrastructure for biodiversity research



LIFEWATCH,

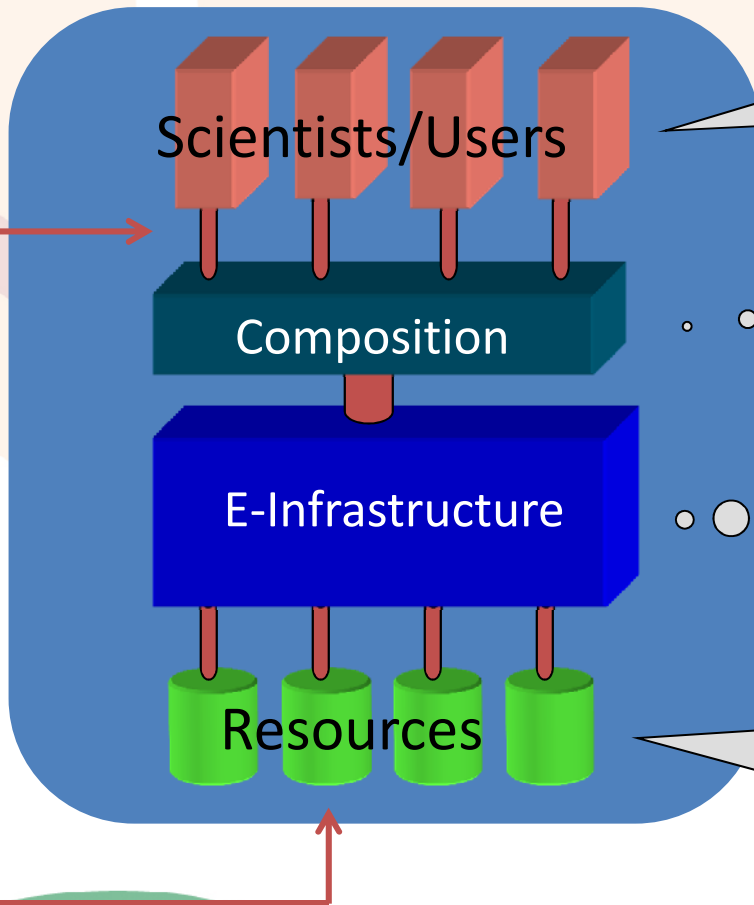
- capitalising on existing knowledge (i.e., knowledge-based resources) ;
- integrating inter-disciplinary fields, data sources and data processing tools;

creates the environment to:

- address innovative scientific questions (i.e., virtual research projects; virtual experiments....);
- deepen current understanding on Biodiversity in its broadest sense;
- decrease the uncertainty of environmental management, governance and policy;

Infrastructure at work

Ad hoc Infrastructure services



1. Innovative hypothesis

- Design a innovative experiment/project
- Define required data, their scale/extent

3. Strengthen collaboration

- Common Exploratory Environment
- Collaborative Virtual Organisations

4. Semantic metadata framework and workflow development

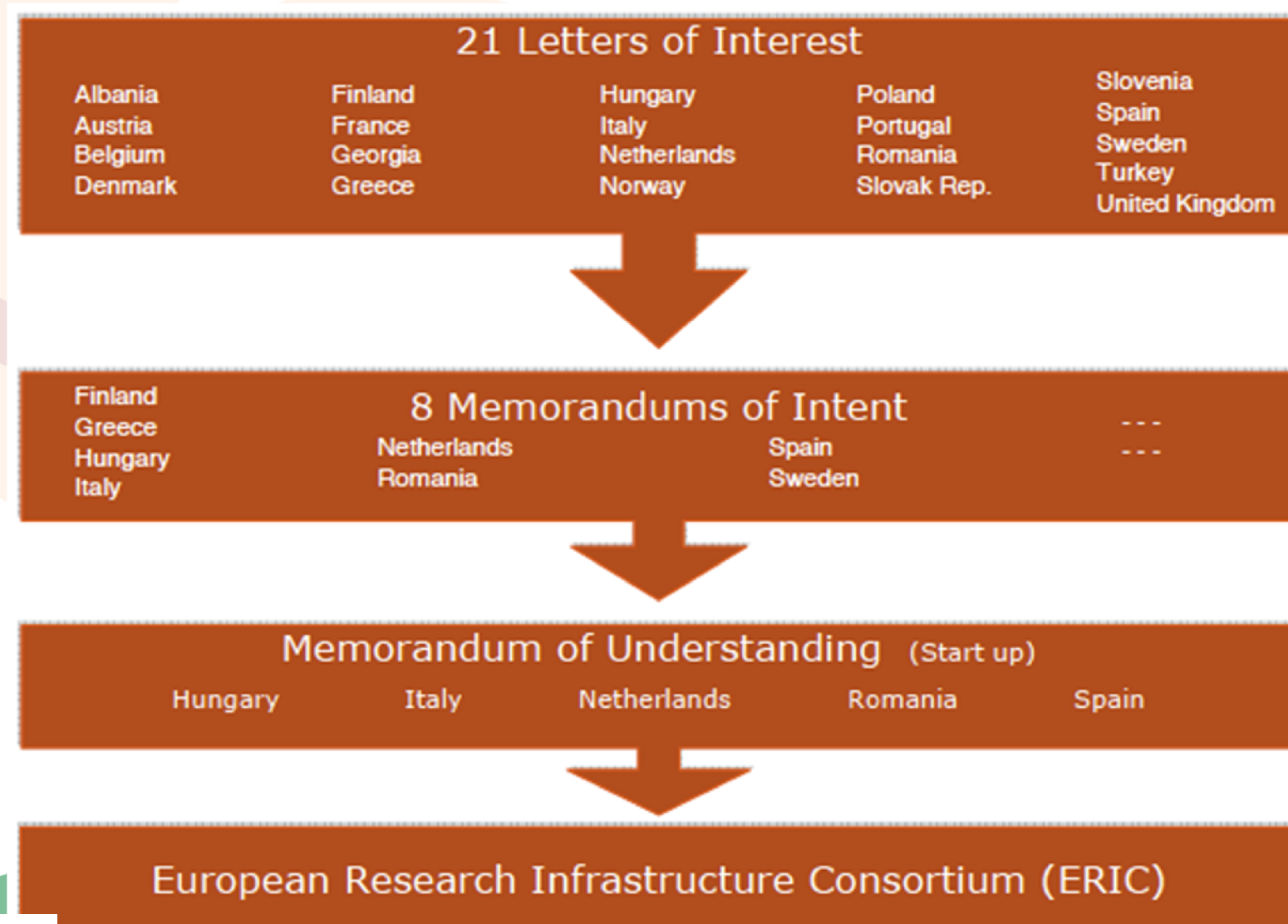
5. Analysis and processing

- Integration of resources
- Documented, shared workflows
- Grid computation

2. Search for data

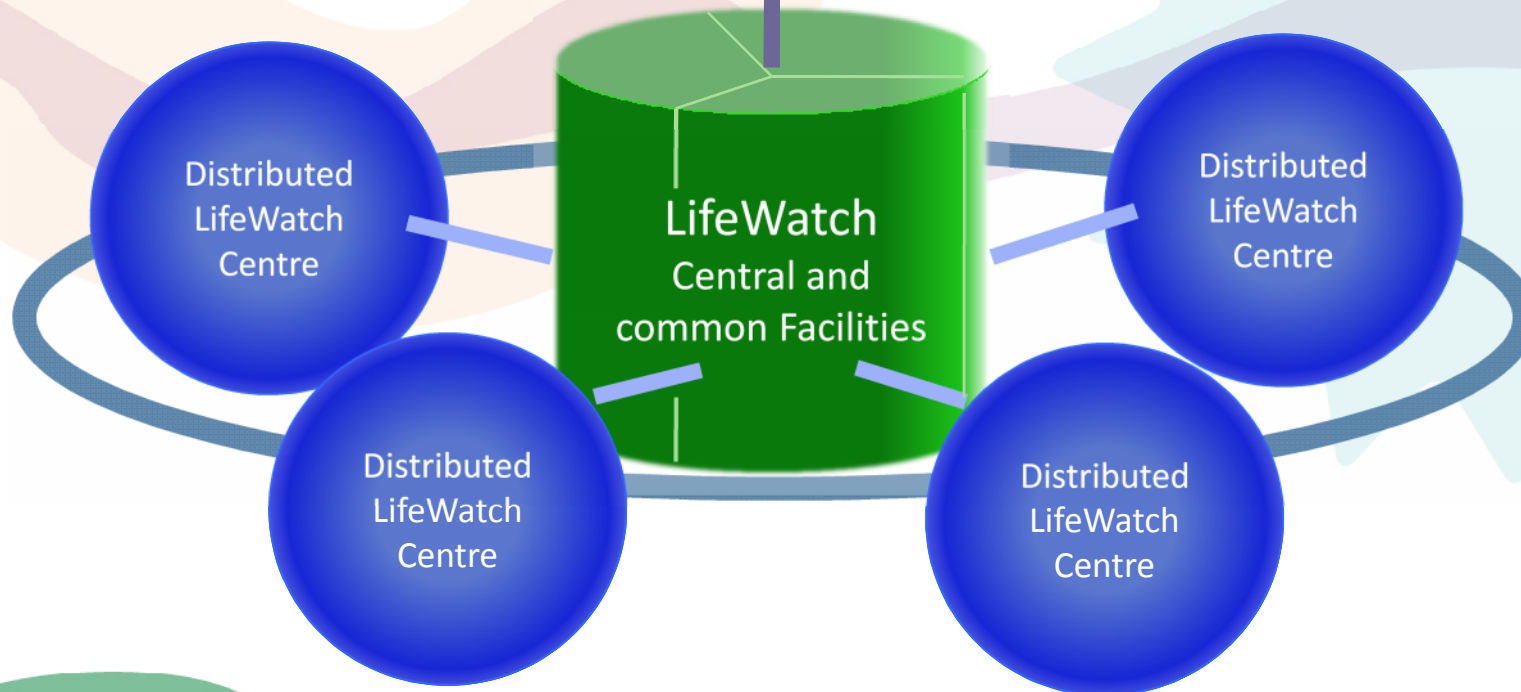
- measurements, observations & sensors
- other infrastructures

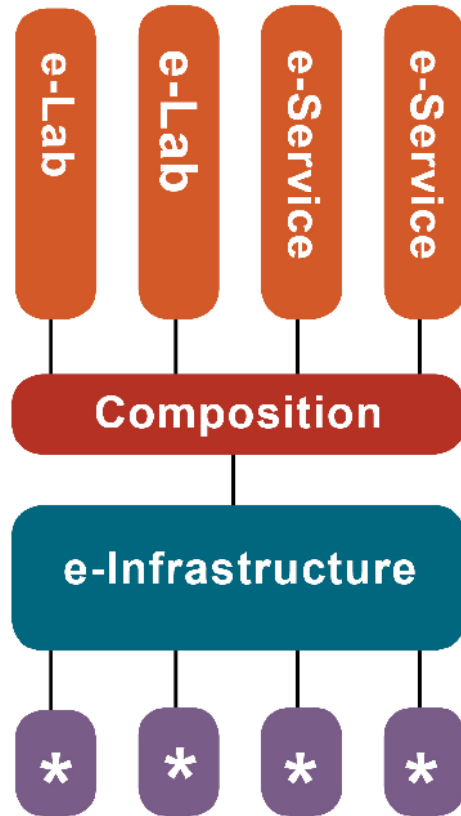
Software facilities





General Assembly
Representation of member states





*Resource

Headquarters distribution:

Statutory Seat – **Spain**

Service Centre - **Italy**

Centre IT Research – **The Netherlands**

LifeWatch Construction in Italy

LW-ITA has been established as a formal entity -
Joint Research Unit, involving:

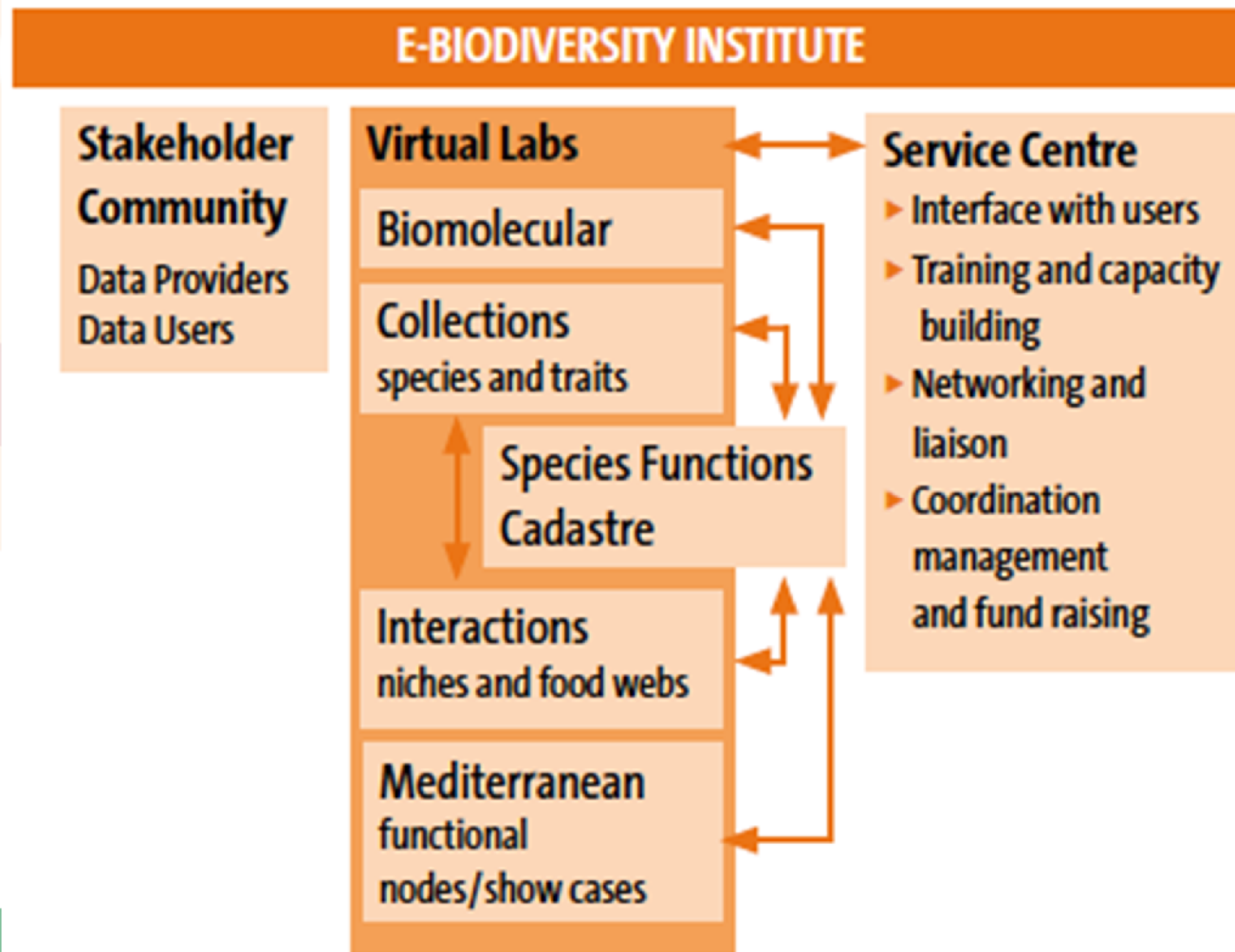
- National Research Council (Depts / Institutes)
- Research Centres (Zoological Station Naples.)
- *Universities (Bari, Florence, Rome, Salento..)
- Agencies (UNESCO-IAMB.... EPAs: Puglia EPA....)
- Institutions (Academy XL, Presidency of the Republic
- Private companies (Comunità Ambiente....)

EoI from: **LTER**, Scientific societies, Consortia,..

*10 Universities



LifeWatch Construction in Italy





What we expect from LifeWatch-ITA

Results	Impact descriptors
Reinforce research on Biodiversity in Italy	Papers in top journals, International Awards, IP Coordination
Strengthen knowledge-based environmental policy	Solution-oriented research, Applied models and tools, Services, Realised actions
Increase awareness of importance of scientific research on Biodiversity	Citizen science, Educational programmes, Newspapers, Magazines, Media,
Enhance funding of Biodiversity research	Grantors, public grants, foundation and industry grants



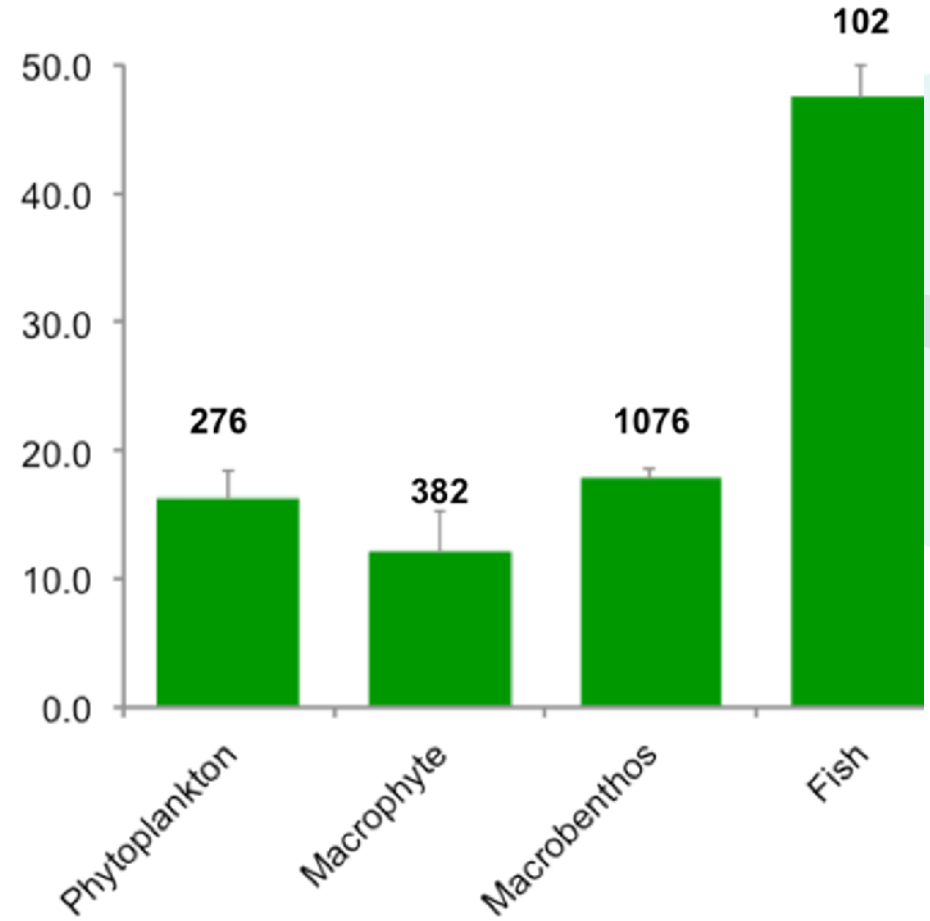
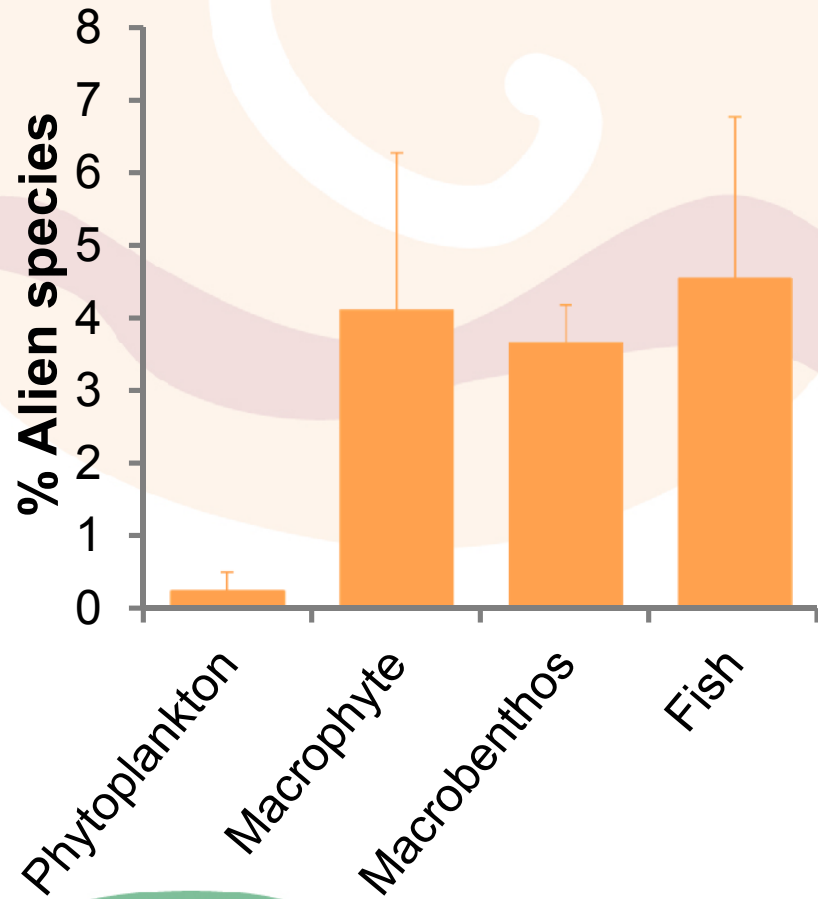
VIRTUAL LAB START-UP: the LifeWatch Showcase(s)

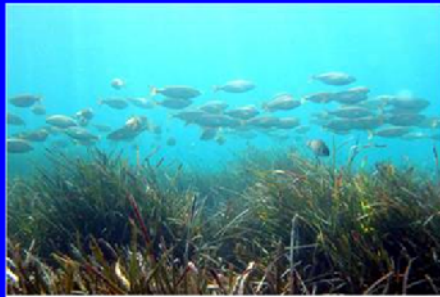
Proposed Show Case:

' *'Ecosystem fragility to alien and invasive species: mapping ecosystem vulnerability and threats to biodiversity and service provisioning.*

Based on:

- Data Platforms of species lists and traits;
- Data Integration
- Data Standardisation / Quality Control
- Integrative modeling

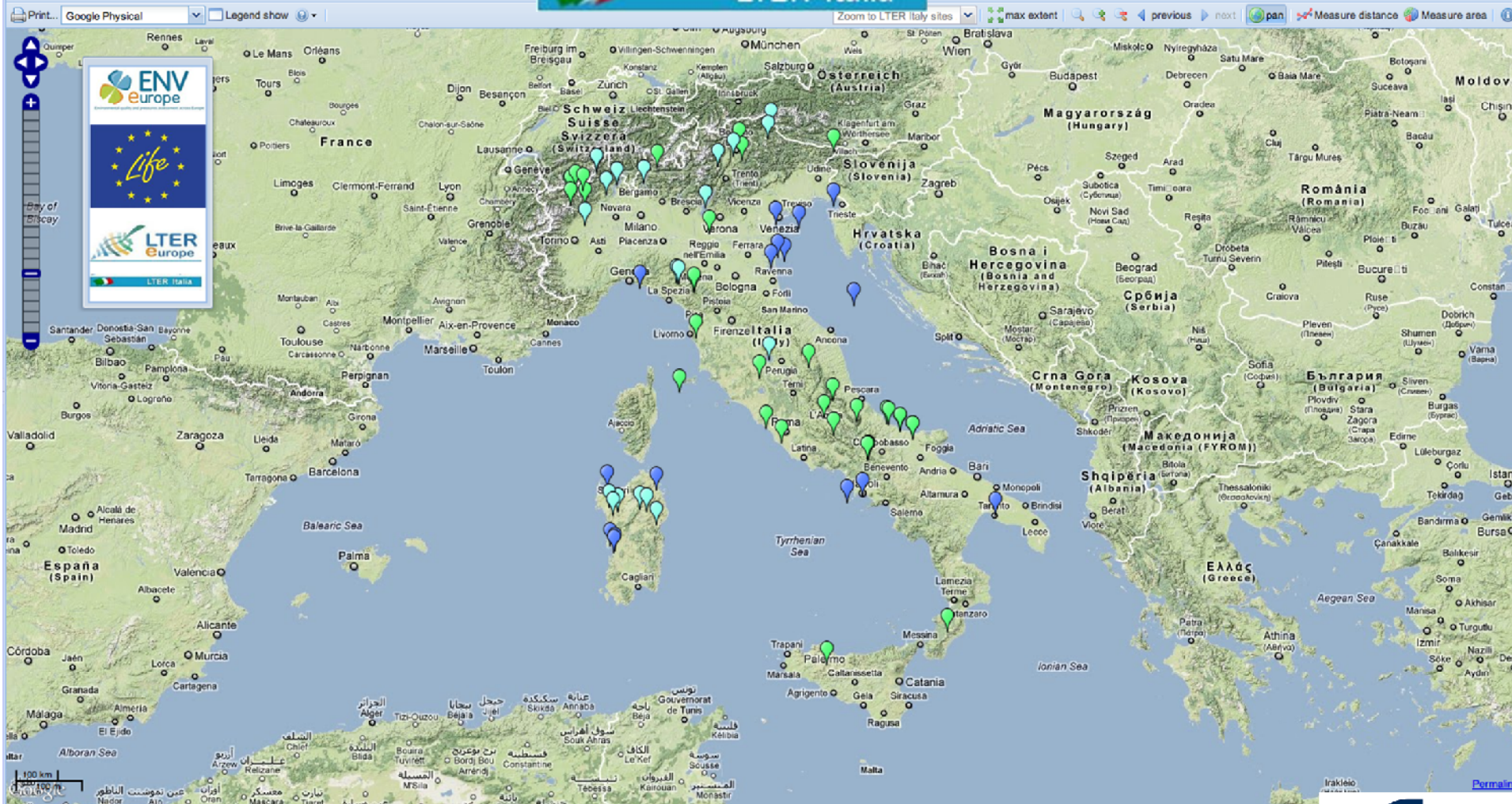


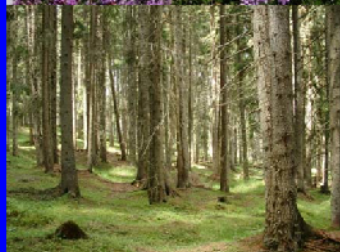
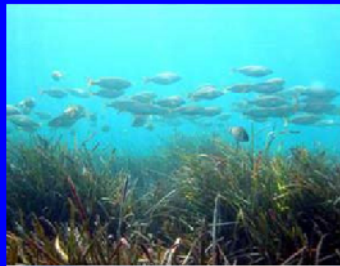


LA RETE LTER-ITALIA

www.lteritalia.it







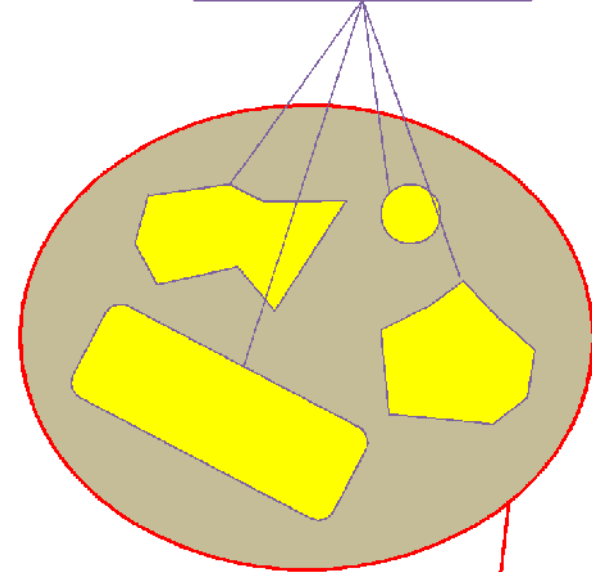
I SITI

22 siti LTER "Parent site"
69 siti di ricerca

- IT01-High Altitude Apennines
- IT02-Forests of the Alps
- IT03-Forest of the Apennines
- IT04-Mediterranean Forest
- IT05-Lowland Forests
- IT06-Pianosa Island
- IT07-Lagoons of Po River Delta
- IT08-Southern Alpine Lakes
- IT09-Mountain Lakes
- IT10-Lake ecosystems of Sardinia
- IT11-Himalayan Lakes
- IT12-Northern Adriatic Sea
- IT13-Gulf Naples
- IT14-Marine ecosystems of Sardinia
- IT15-Marine protect area of Portofino
- IT16-Lagoon of Venice
- IT17-Antarctica Research Station
- IT18-Castelporziano Reserve
- IT19-Western Alps (High Elevation)
- IT20-Italian Coastal Dunes

- IT21 - Lake Trasimeno
- IT22 - Mar Piccolo of Taranto

research sites



parent site

Ecodomains

Terrestrial	27
Freshwater	21
Marine	21
Total	69 (20*)

A05
XXX



La rete italiana per la ricerca ecologica a lungo termine (LTER-Italia)

La Rete Italiana di Ricerche Ecologiche a Lungo Termine (LTER-Italia) è costituita da enti e da scienziati che si occupano di ricerca ecologica in ecosistemi terrestri, d'acqua dolce e marini. Essi utilizzano lunghe serie temporali di dati ambientali e biologici come strumento diagnostico e prognostico per comprendere lo stato, il funzionamento e l'evoluzione degli ecosistemi, aspetti fondamentali che possono essere indagati e interpretati solamente in modo parziale ed irrealistico da indagini occasionali e sporadiche. Questo volume, che esce in occasione dei primi 5 anni di esistenza di LTER-Italia (2006-2011), contiene la presentazione dei siti che fanno parte della rete, sui quali sono disponibili informazioni, studi e osservazioni ecologiche su scala pluridecennale. La descrizione, inevitabilmente succinta e schematica, dei siti di ricerca LTER italiani attivi ad oggi, di alcuni risultati conseguiti e delle ricerche in corso, è preceduta da una descrizione delle finalità scientifiche della rete, della sua storia e del suo valore sociale. A questo riguardo vengono illustrate le opportunità, offerte da LTER-Italia, di condivisione dei dati territoriali tra le autorità pubbliche. La rete può, in questo modo, divenire uno strumento utile per rendere più efficaci le future politiche ambientali, mettendo a disposizione dati e conoscenze accessibili e di qualità elevata.

L'incontro tra la rete di Ricerche Ecologiche a Lungo Termine internazionale (LTER International) e il mondo della ricerca italiano, inizialmente promosso dalla Società Italiana di Ecologia, si consolida nel 2006 quando la rete europea di eccellenza "Alternet" fornisce all'Italia il contesto istituzionale appropriato per portare a compimento il processo di costituzione di una rete nazionale, al quale collaborano le principali istituzioni di ricerca del Paese. Nel 2006 la rete LTER italiana è entrata a far parte ufficialmente della rete LTER europea e internazionale. Dopo una fase di coordinamento della rete a cura dal Corpo Forestale dello Stato (2006-2010), dal 2010 il coordinamento è stato affidato al Consiglio Nazionale delle Ricerche.

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LIBRERIA ARACNE

La rete italiana per la ricerca ecologica a lungo termine (LTER-Italia) a cura di R. Bertoni

ARACNE

LA RETE ITALIANA PER LA RICERCA ECOLOGICA A LUNGO TERMINE (LTER-ITALIA)

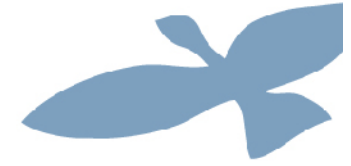
SITUAZIONE E PROSPETTIVE DOPO UN QUINQUENNIO DI ATTIVITÀ (2006-2011)

a cura di
Roberto Bertoni



Consiglio Nazionale
delle Ricerche





Opportunità ma necessario, in parte, cambiare mentalità

Servizi

Condivisione dei dati

Messa a disposizione informazione

Interoperabilità

Aumentare l'impatto





Biodiversity is life
Biodiversity is our life

