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**RECODE** final Conference,  
National Hellenic Research Foundation, Athens January 15-16, 2015



European Union



G. S. Research & Technology



Hellenic Centre  
for Marine Research



European Strategy Forum  
for Research Infrastructures



LifeWatch EU



National Strategic  
Reference Framework



FORTH-ICS  
Foundation for Research and  
Technology - Hellas

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# The field: biodiversity

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*...”the variability among living organisms from all sources including inter-alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part” (CBD)*

*....”includes diversity within species between species and ecosystems”..... (Gaston & Spicer, 2004)*

# Biodiversity is...

## Genes and DNA

$10^6$  to  $10^9$  nucleotides in a DNA molecule



## Species (organisms and their populations)

$>10^7$  species; each species with  $10^2$  -  $10^{12}$  individuals



## Ecosystems

habitats with  $10^4$  to  $10^6$  species,  
and manifold interactions



# Scientific approach

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– Patterns

– Processes

– Consequences from changes



# What do we need for its study?

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- Data
- Observatories
- Networks
- Infrastructure

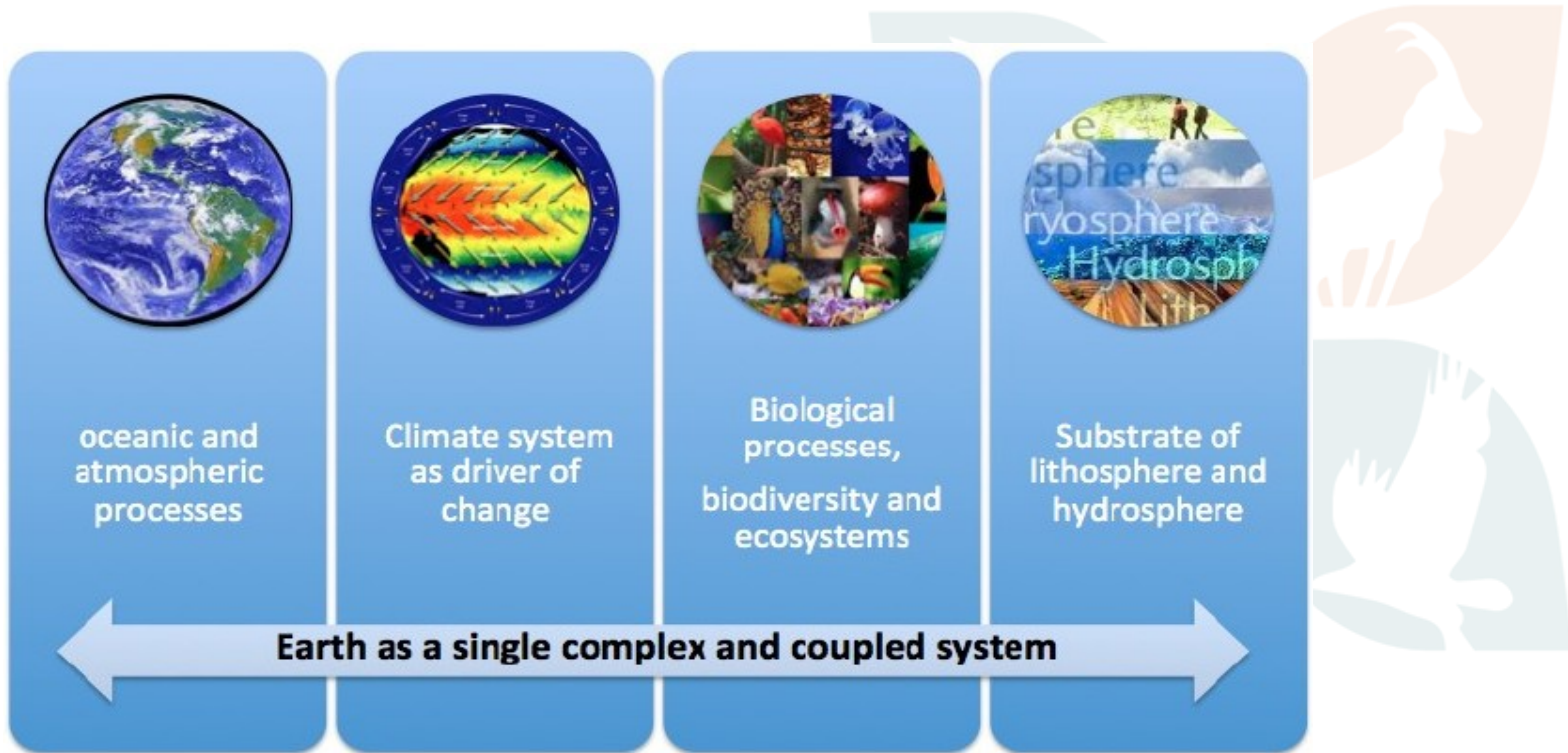


# The concept of ESFRIs: LifeWatch

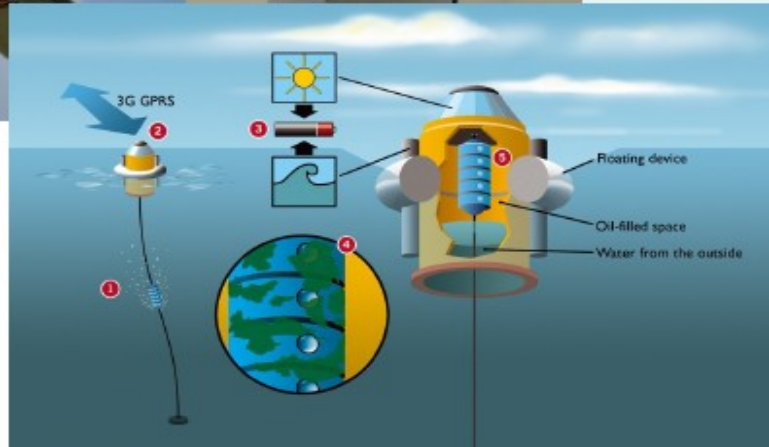
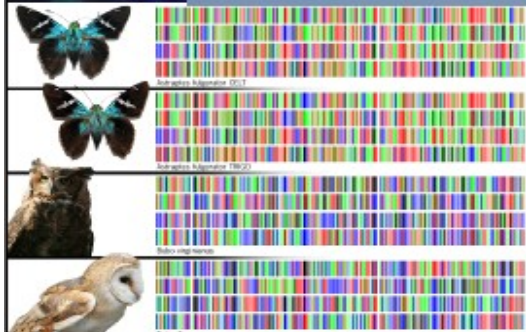
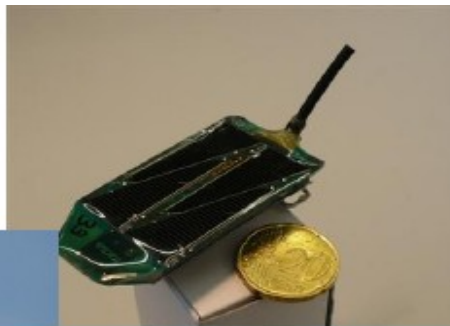




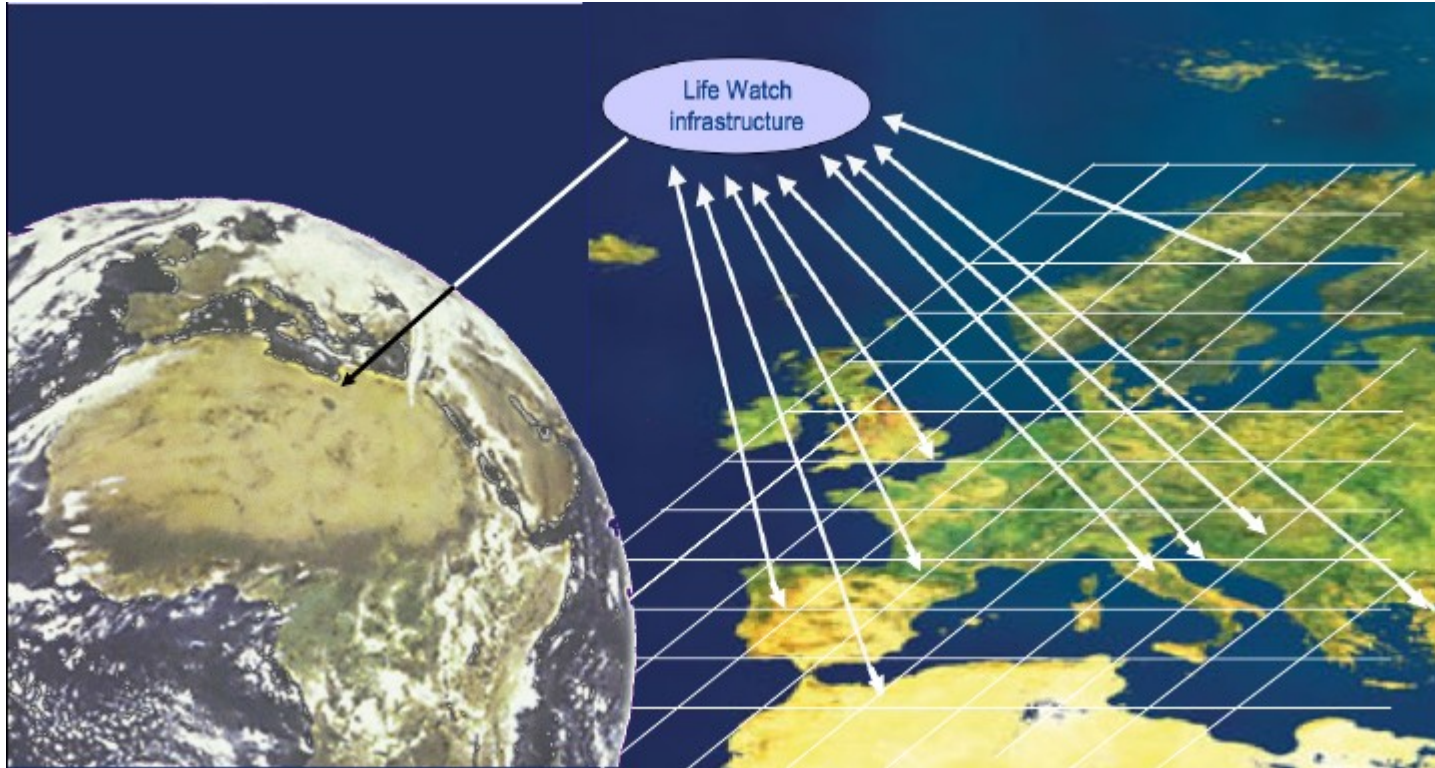
# LifeWatch: challenges



# LifeWatch: the “data era”



# LifeWatch: distributed infrastructure



# ESFRIs: a new era of mega-science

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- Computational capacity free VREs
- Transparency
- Change in the way we work - change in the way we think
- Transition towards mega-science





# LifeWatchGreece Project info

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- Nov 2012-Dec 2015 (extension)
- Almost 4 MEuros
- 49 Research Institutions and Academic Departments
- 400 participants





# What makes LifeWatchGreece?

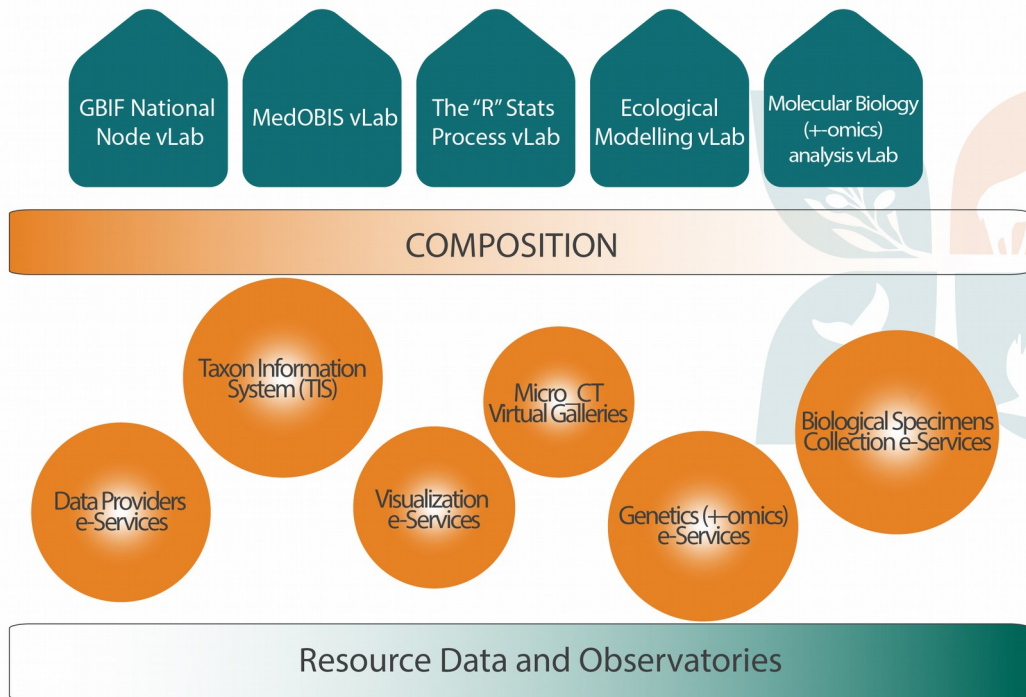
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- Human Network
- Physical Installations
- Equipment (mostly hardware)
- Software
- Data



# LifeWatchGreece Concept Arc

## Technical architecture of LifeWatchGreece



# Web portal

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- Tool for coordination
  - Publication of documents
  - Events Calendar
  - Internal Forum
- Portal to all vLabs and eServices (so far only internally)







## LifeWatch Project

### LifeWatch Project

Greece is a country

- with 16,500 km of coastline and more than 9,800 islands and rock islets
- having more than 53 mountain ranges above 2,000 m altitude
- with an eventful geological history (primarily caused by the fact that it is located on the Eurasian and African tectonic plates friction point)
- characterized by an ecosystem diversity ranging from alpine, to temperate, to sub-desert, and from coastal to the abyssal (deepest point in the Mediterranean)
- located at the Eastern part of the Mediterranean Sea, next to the Black Sea and in close proximity to the Red Sea.



All these factors reflect on Greek biodiversity, regarding both the number of species and habitats, rendering it one of the hot spots among European countries. The Aegean Sea is ranked as the second richest in species numbers area after the NW coasts of the Mediterranean. It is no surprise that Greece hosts, for example, more than 1,000 vertebrate species (50 of which are endemic and over 600 under protection status).

The precise cataloging of the different Greek ecosystems and the biological species occurring therein, along with the continuous monitoring of species distribution changes through time are of paramount importance for studying such rich biodiversity.

LifeWatchGreece Research Infrastructure (LWG RI), funded by the GSRT (structural funds), is the national effort to address the above requirement and to support relevant studies; studies powered not only with a scientific incentive but also with a strong societal, industrial and market impact; such exemplar sectors include the ongoing tourism development, fisheries, agriculture and maritime transport.

To materialize its aim, LWG RI adheres to the central lifewatch.eu guidelines, and attempts to ally all the Greek scientific human resources working on biodiversity data and data observatories.

SEARCH LIFEWATCH WEB PAGES (FOR DATA GO TO SEARCH DATA)

CALENDAR | LIFEWATCH

« **October** »

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

USER LOGIN

Username \*

Password \*

[Request new password](#)



Month Week Day Year

Event Calendar

## Event Calendar

July 2014

« Prev Next »

Sun	Mon	Tue	Wed	Thu	Fri	Sat
29	30	1 Data...	2	3	4	5
6	7 Lifewatch...	8 Lifewatch Stakeholders Board Meeting	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29 R for...	30	31	1	2

SEARCH LIFEWATCH WEB PAGES (FOR DATA GO TO SEARCH DATA)

CALENDAR | LIFEWATCH

« July »

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27	28	29	30	31		

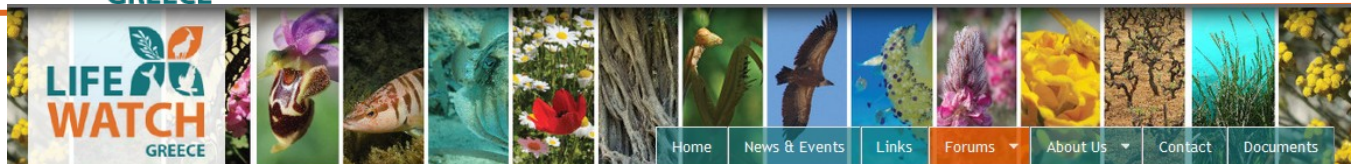
USER LOGIN

Username \*

Password \*

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Log in



View Forums | Active topics | Unanswered topics | New & updated topics

## Forums

### Forums

Forum	Topics	Posts	Last post
 General discussion <small>Subscribe to this forum</small>	5 1 new	26 1 new	test by Matina Nikolopoulou 26/09/2014 - 15:24

### LifeWatch Workgroups

Forum	Topics	Posts	Last post
 Lifewatch Ontology Group (LOG) <small>Subscribe to this forum</small>	1	1	LOG Meeting 21/02... by Admin 21/02/2014 - 14:46
 Data Collection (DC) <small>Subscribe to this forum</small>	5	7	Finding Old Maps by Gavriella Pappas... 26/09/2014 - 16:33

SEARCH LIFEWATCH WEB PAGES (FOR DATA GO TO SEARCH DATA)

#### USER MENU

- My account
- Log out

#### CALENDAR | LIFEWATCH

« July »

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
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20	21	22	23	24	25	26
27	28	29	30	31		



# Experience / principles

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1. Sine qua non

Custodians want to have formal agreements before willing to share data

2. Open only to people sharing data in Projects (MarBEF)

3. Co-authorship is not sufficient

Scientists want to be involved in the creative process of hypothesis generation and testing

# Experience / principles

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- Not all researchers like the idea of data sharing: this is MY data
- Need to know the fair play side of the game: policy
- Incentives: data publishing, data papers, data impact factor
- EU and MS are in favour of: data is a capital produced by tax-payers money
- EU and MS are in favour of: data is a capital and can create jobs

# Data Access

Question:



Answer:



# ... and understanding

Question:



Answer:



Watch the video here: <http://www.youtube.com/watch?v=N2zK3sAtr-4> -

# Data Policy and Data Sharing Agreement

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- <http://www.lifewatchgreece.eu/?q=content/documents>
- LifeWatch / LifewatchGreece: Background info
- Glossary of terms
- Principles of data sharing
  - Why should I share my data?
  - Why to support open access data?
  - Creative Commons & Copyright
  - Rights and duties of the data providers & data owners
  - Fair reuse of data published through LifeWatchGreece
- Legal Contract between data providers & LWG



# Why should I share my data?

Data has got a value...

- Economic
- Thematic and historical

Benefits for the researcher/Data Provider

- Data securely archived and stored
- Quality controlled
- Fully documented with appropriate metadata
- Disseminated globally, visible in perpetuity
- Citable, giving due credit
- Re-used, providing new insights
- “Sharing 'n' exchange” philosophy
- Our duty to publicly funded data
- Ethical, obligation: nation’s resources need to be available to the state

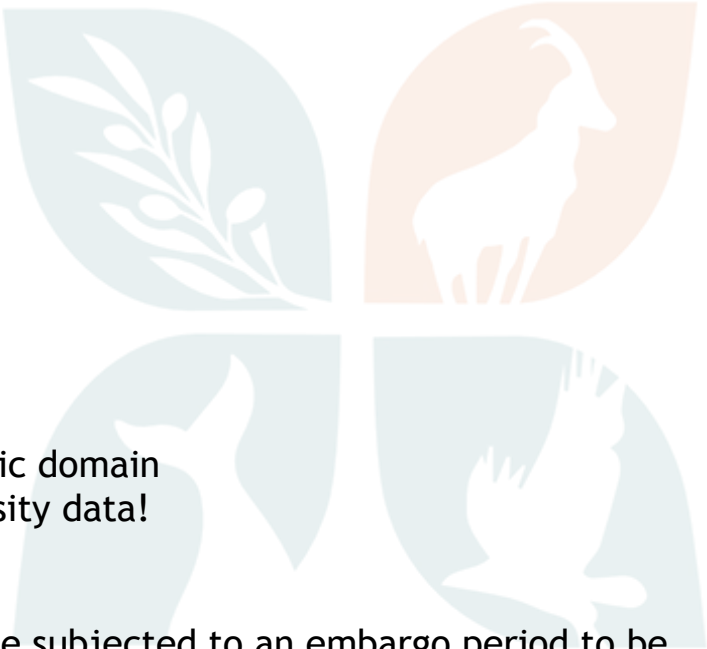
# Why to support open access of data?

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Those who benefit from are:

- Universities and research institutions
- Authors
- Researchers
- Publishers and Data Providers
- SMEs

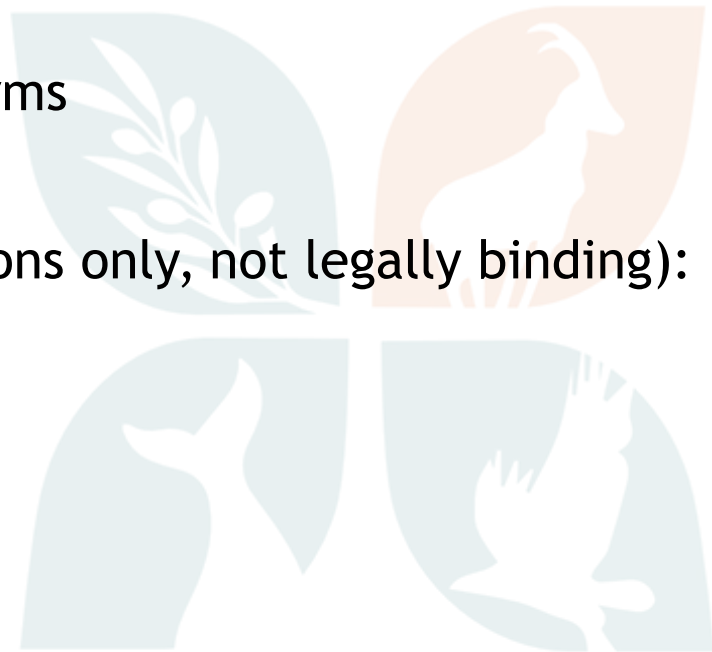


- LifeWatchGreece uses Creative Commons licenses
    - legally binding
    - simple to use
    - globally accepted
    - both human-readable and machine-readable
  - LifeWatchGreece offers only
    - CC-Attribution (CC-BY): Attribution must be given
    - CC-Zero (waiver): Data are released into the public domain
    - All other CC licenses are not suitable for biodiversity data!
  - Embargo: all data submitted to LifeWatchGreece RI can be subjected to an embargo period to be determined by the Data Provider and/or Data Owner.
- 
- A large, faint background graphic of a four-leaf clover is centered on the right side of the slide. The top-left leaf is light blue with a white bird silhouette. The top-right leaf is orange with a white goat silhouette. The bottom-left leaf is light blue with a white bird silhouette. The bottom-right leaf is light blue with a white bird silhouette.

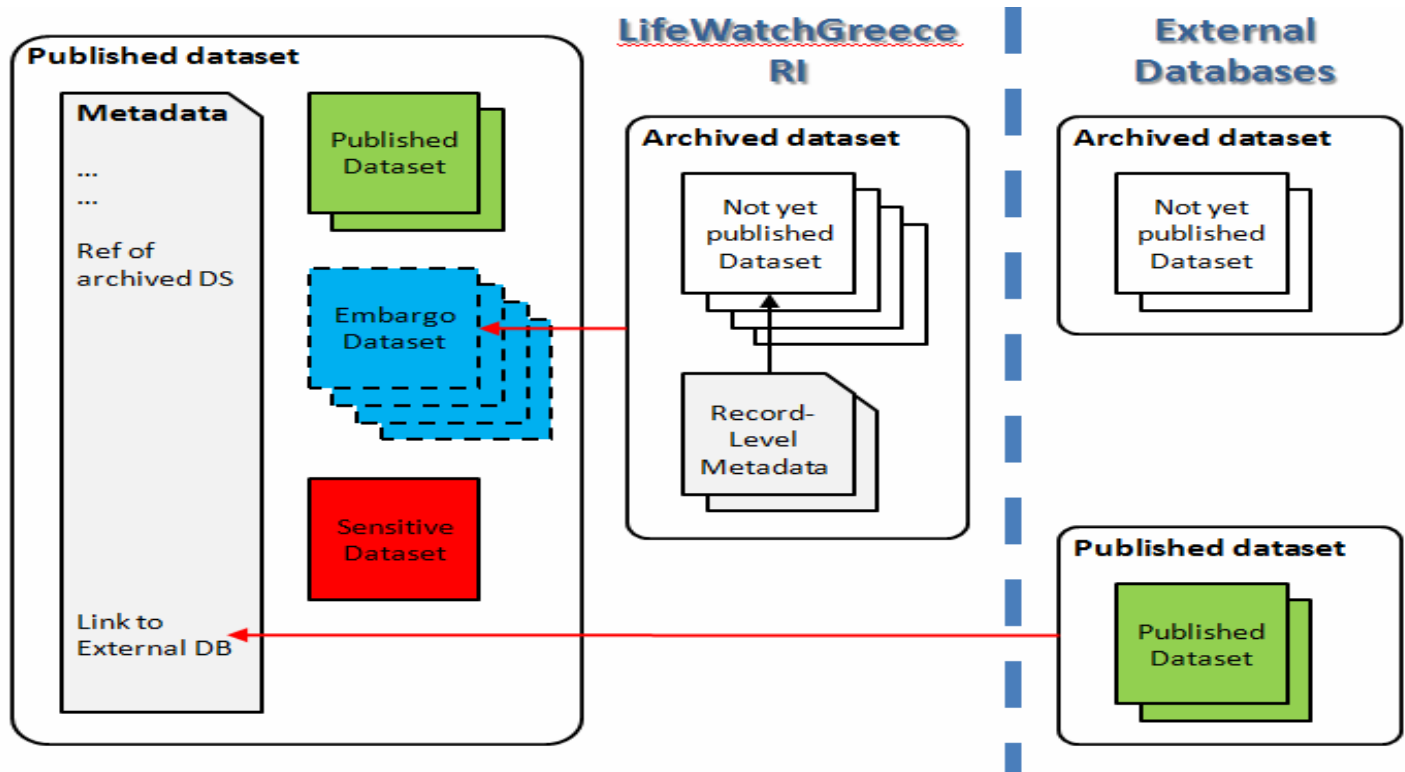
Additionally, LWG adopts the Canadensys norms  
(<http://www.canadensys.net/>)

for data publication and use (recommendations only, not legally binding):

- Give credit where credit is due
- Be responsible
- Share knowledge
- Respect the data license



# Types of Data & Publication policy



# Differences in community attitude

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- Conventional communities/networks (e.g. taxonomists, ecologists): among the most difficult to share data
- Recent communities/networks (e.g. genetics, genomics, biomedical): the sharp progress of their disciplines is based on data sharing
- Operational environmental science (e.g. oceanography, biogeochemistry): all data are online

# WHY these differences?

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- Much more time spent by the scientists in conventional disciplines to obtain their data; data sharing a very recent “phenomenon”
- Scientists working in more recent disciplines are accustomed to work with shared data (e.g. GenBank, etc)
- Scientists in operational disciplines have developed the data sharing attitude since long ago

## Existing biodiversity RIs: two of the brightest examples

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- OBIS (<http://www.iobis.org/>)

LifeWatchGreece developed the regional OBIS node: MedOBIS

- GBIF (<http://www.gbif.org/>)

LifeWatchGreece developed the national GBIF node: GBIFGreece



## How can I participate?

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- Explore the web site: <http://www.lifewatchgreece.eu>
- Inform us about your needs (methods of analysis, software, etc.)  
Your messages to: [info@lifewatchgreece.eu](mailto:info@lifewatchgreece.eu)
- Contribute and publish your own data and metadata



Thank you for your attention  
Special tanks to W. Los for the LifeWatch slides

<http://www.lifewatchgreece.eu>  
[info@lifewatchgreece.eu](mailto:info@lifewatchgreece.eu)