Background Information Document on LifeWatchGreece Research Infrastructure Data Policy and Data Sharing Agreement

This is the background document describing the Data Policy and Sharing Agreement of LifeWatchGreece Research Infrastructure. It is not a legal document or a contract, but provides both the users and the Data Providers with background information on datasets, metadata, data sharing, licenses and copyright issues concerning biodiversity data.

1. Introduction

Greece possesses great biological diversity, both at species and ecosystem level, as a result of its geological and evolutionary history, its complex geographical relief and the, until recently, mild human pressures. According to the *Annex I - Directive 92/43/EEC* classification scheme, there are twenty-five habitat types, including maquis, phrygana, forests, grasslands, marine areas, wetlands, lagoons, salt marshes and sandy beaches. With the longest coastline in the Mediterranean (16,500 km) marine and coastal habitats are the largest ones. Although the largest part of Greek biodiversity remains undescribed both at species and genetic level, existing data indicate clearly that the Greek biodiversity is particularly rich with regard to wild fauna and flora, as well as the genetic resources related to agriculture and food products. While 15,000 animal species have been already recorded or described, it is estimated that approximately 50,000 animal species exist, of which up to 25% are endemic. Similarly, there are over 5,500 species of plants, of which over 1,000 are endemic. There are approximately 700 animal and 900 plant species protected by law, but only for a few of them there are specific management measures in place. Greece is a hot spot area for the European and the Mediterranean Biological Diversity, because it is characterized by a high level of endemism and it comprises one of the last refuges of many threatened, endangered and rare species on a European scale (CBD: http://www.cbd.int/countries/profile/default.shtml?country=gr#status). Therefore, Greek biodiversity, which constitutes the natural capital of the nation, needs to be protected. Effective protection, however, requires information and accurate scientific data, which only a national open research Infrastructure, as part of a broader European Infrastructure, could guarantee.

The LifeWatchGreece Research Infrastructure (RI) is hosted at the Hellenic Centre for Marine Research (Institute of Marine Biology, Biotechnology and Aquaculture), is open to all potential users, from researchers and students to entrepreneurs and policy makers, and it stores biodiversity data and information from all biology-related disciplines. The purpose of the RI is to accelerate international data-driven innovation and discovery by facilitating research data sharing and exchange, data use and re-use, standards harmonization, and discoverability. The participants (scientific community, environmental managers, policy makers and citizen scientists) are those who have accepted the Data Sharing Agreement and have expressed their

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willingness to make their biodiversity data (marine and terrestrial) available, in order to foster scientific research development in the Greek territory and internationally, as well as to support the public use of these data for scientific and decision making purposes. In this sense, the present document constitutes the basis of the Agreements.

The ultimate goal of LifeWatchGreece RI is based on the European Strategy Forum on Research Infrastructures (ESFRI) policy on research and innovation RIs, which seeks to maximize the socio-economic benefits of research and development for the public. In order to become an increasingly competitive knowledge-based economy, Europe must improve the production of knowledge through research, its dissemination through education and its application through innovation. According to the Communication from the Commission to the European Parliament, the Council and the European Economic and Social Committee on "Scientific information in the digital age: access, dissemination and preservation ({SEC(2007)181} /* COM/2007/0056 final): *All research builds on former work, and depends on scientists' possibilities to access and share scientific publications and research data. The rapid and widespread dissemination of research results can help accelerate innovation and avoid duplication of research efforts*". In addition, it is important to point out that the European Commission supports open access as the standard way of disseminating publicly funded research in the European Union and includes open circulation of knowledge as one of the five priorities of the European Research Area. Furthermore, open access will be required for all peer-reviewed publications resulting from Horizon 2020 funding.

Recent EU activity on data policy shows that future public funded research will focus on open access requirements, making the adoption of such policy essential both for the sustainability of the LifeWatchGreece RI depository and for the participating researchers. In this context, LifeWatchGreece RI seeks to aggregate and disseminate marine and terrestrial data according to the principles of openness, consensus-based decision making, balanced representation, technical neutrality, harmonization across communities and technologies, and following a non-profit approach.

2. What are LifeWatch and LifeWatchGreece RI?

LifeWatch is the European e-Science Research Infrastructure for biodiversity and ecosystem research designed to provide advanced research and innovation capabilities on the complex biodiversity domain. The term "Research Infrastructure" refers to the strategic installation at a European/International level supplying facilities, resources and related services to the scientific and other user's communities to conduct top-level activities in their respective field of science. On the top of that, e-Science infrastructures capitalize existing resources, as well as data and data observatories from physical infrastructures, distributed centers and single research groups. The capabilities offered by LifeWatch, as an e-Science infrastructure, allow users to tackle the big basic questions on biodiversity, as well as to address the

urgent societal challenges concerning biodiversity, ecosystems and other crosscutting issues (http://www.lifewatch.eu/web/guest/home).

The **LifeWatchGreece Research Infrastructure** (http://www.lifewatchgreece.eu/) aims to establish a biodiversity Centre of Excellence for Southeastern Europe. The key objectives of the project are as following:

1. To ally all the Greek scientific human potential working on Biodiversity data and data observatories, domestically and abroad, in order to achieve a world-class excellence national LifeWatch Centre. This LifeWatch Centre has to create exemplar management structures, to be legally registered, and to build the adequate interface for collaborative schemes for its continuation after state funding.

2. To pave the way for the development of complex virtual domains through a number of background e-Services which facilitate both the data contributors and the users, and virtually ally the dynamic teams that will be continuously collecting data at the entire territory of the state.

3. To develop a number of virtual labs (vLabs) where large scale science can be carried out at all possible levels of the biological organization from molecules to ecosystems. These vLabs will help scientists and other end users to answer the "why" and "how" questions and to adequately assist environmental managers and policy makers, among others, to adopt the biodiversity concept in their everyday activities.

4. To build capacity at the national level through a network of activities, including human potential mobilization, supporting and promoting the use of the RI, and enhancing organizational development. Finally, to disseminate information, scientific knowledge and experience gained to the public and to liaise the Network's ideas and practices to the activities of targeted groups and of the society at large.

3. Data Sharing and Open Access. Why should I share my data?

Data are considered as a critical national resource, particularly for the assessment, protection and sustainable management of biodiversity and of the resulting direct and indirect economic benefits. Permanent loss of data has fatal consequences for this resource because it is impossible for the nation to retrieve those data, which were collected from a certain area over a certain period of time. **Consequently, loss of data equals to loss of a nation's unique resources and ultimately to the loss of its natural wealth.** Specifically for Greece, the development and operation of the LifeWatchGreece RI consists a unique opportunity to play a leading role in the eastern Mediterranean and southeastern Europe concerning data sharing.

In addition:

- Data have a value:
  1. Financially, in terms of staff time, ship time and use of equipment. Re-use of data is cost-efficient and can prevent the duplication of effort and therefore the waste of money.
  2. Thematically and historically. Data document the state of a dynamic system at a specific point in space and time and are thus irreproducible.
- Sharing data comes with a number of benefits for the researcher/Data Provider, such as:
  1. Data are securely archived and stored in a format which ensures readability of the data in the future.
  2. Data are quality controlled concerning taxonomy, geography and general integrity.
  3. Datasets are fully documented with appropriate metadata so that they can be easily found through search engines.
  4. Data are disseminated through major data aggregators, ensuring a global and perpetual visibility, and thus promote the scientist's work, and increase their potential for attracting collaborations and funding.
  5. Shared data are citable, giving due credit for each use of the dataset to the scientist. Downloaded metrics allow the scientist to assess how often their data are viewed/ downloaded.
  6. Re-use of data in a wider context can provide new insights: small datasets from projects, when integrated, can answer global questions.
  7. Data Providers, through submitting their data, can use other's data with no "notions of guilt" for using them. This is based on a "sharing and exchange" philosophy.
- Publicly funded research results should be accessible for all tax payers.
- Finally, there is an additional, ethical, obligation: nation's resources need to be available to the state (both public and private sectors) in order to be better assessed, protected and sustainably managed. To this end, any possibility that this resource will foster development and create jobs must be exhausted. Data need to survive the scientist's life-cycle and loss of biodiversity data should be addressed by all means. LifeWatchGreece RI provides excellent means and support to avoid such loss.

Why to support open access of data?

Open access addresses the problem of limited access to scientific research information and data. It is the practice of providing online access to scientific information (articles, monographs, research data, etc.) so that they can be further used and exploited by researchers, by the industry and relevant markets, and by citizens. Milestone definitions of open access include those of the **Budapest Open Access Initiative (BOAI)**, the **Berlin Declaration** (October 2003) and the Bouchout (2014) **Declaration on Open Access**.

Different target groups can benefit from open access to scientific research and research data:

Universities and research institutions, monitor the quality and transparency of the research process, the return on investment on research, and the benefit of increased visibility at a national and international level

Authors, enjoy the benefit of greater dissemination and usage of their results. It also opens ways to new funding sources and opportunities.

Researchers save time seeking articles they cannot access through their libraries. Moreover, they can extract information or data from articles, often across diverse fields of research, to create new knowledge by using text and data mining technologies that can only work effectively on open research content.

Publishers and Data Providers who adopt open access may obtain more exposure for their publications, they become more transparent in their business models, can be more open to new opportunities and may focus on providing new added value services to their community.

Small and Medium Enterprises (SMEs): Horizon 2020 actively supports SMEs by providing both direct financial support, and indirect support to increase their innovation capacity. “Innovation in SMEs” aims at creating a bridge between the core of the framework programme - support to research, development and innovation projects - and the creation of a favourable ecosystem for SME innovation and growth. Into this framework, SMEs can greatly benefit from immediate and open access to groundbreaking research results to develop and introduce new products and services, to increase their competitiveness and finally to create job opportunities. Limited access to subscription-based scholarly outputs is an obstacle to innovation by SMEs.

Last but not least, widened and improved transparency of the scientific process and the consequent access to knowledge leads to more **science-literate citizens**, better capable of thriving in the complexities of the 21st century.

4. What data can be submitted to and accessed through the LifeWatchGreece RI portal?

Open access should apply to the results of scientific research - such as raw data and metadata, source materials, processed data, results of analyses, pictures, graphs and other diagrams derived from and representing these data. Open access should apply to every form of scholarly publication and other contributions to scientific knowledge.

4.1. Thematic Based Content:

- Metadata (information about datasets only)
- Genetic data
- Genomics data (including meta-barcoding and metagenomics data)
- Protein data (including those resulting from proteomics)
- Species occurrence data
- Taxonomic checklists
- Three-dimensional morphological data
- Morphometric data
- Functional trait data
- Habitat maps
- Museum collection data (specimens)
- Literature
- Sound, video, photos, 3-D mapping of environments
- Marine environmental data - only when accompanying species data (other repositories, such as Seadatanet and Emodnet already exist for the submission of marine physiochemical data).
- Terrestrial environmental data - can be stored in LifeWatchGreece RI even without associated species data, if no other repository for environmental data exists.

4.2. Geographic Based Content:

- Terrestrial distribution data: if at least one of the distribution points in the dataset falls in the Greek territory.
- Marine distribution data: if at least one of the distribution points in the dataset was collected within the boundaries of the Mediterranean Sea.
- Museum collection data: any data on specimens that were collected within the boundaries of the Greek territory or are held within Greek Natural History Museums.
- In case of submission of a geographically non-Greek (non-Mediterranean in the case of marine data) dataset collected or owned by a researcher associated with a Greek institution, the LifeWatchGreece RI Data Managers will submit the data to the appropriate repository (if this exists) and store the link as an external dataset together with the metadata. If no such appropriate external

repository exists, the data will be stored within LifeWatchGreece RI, without being visible by default through the portal.
- LifeWatchGreece RI will store data with no real geographic limits, such as taxonomy, classifications, traits, literature.

4.3. Data Formats

- Full datasets
- Single records
- Metadata
- External databases

5. Copyright, Creative Commons and related terms

- **Copyright:** is a legal concept that grants the creator of an original work (see term below) exclusive rights to its use and distribution. Copyright protects works that are original, individual, new creations with respect of their form of presentation. It gives the Owner the exclusive right to reproduce the work, to distribute it, to communicate it to the public, to make derivative versions, to transfer rights to others, as well as several other rights (*WIPO 1979*). Usually anyone creating an original work automatically holds the copyright on it. Copyright normally expires 70 years after the death of the creator.

  However, there are always exceptions to copyright and to its duration. Examples: a) the extraction of occurrence records from texts and their integration into a new dataset using a correct citation is a new intellectual effort, so it is a new dataset that simply cites other information, b) up to 1-2 sentences, if properly quoted, can be used in science and can be extracted from existing texts.

  European copyright legislation is well aware of the fact that copyright may present a barrier to scientific work. The *EU-Directive 2001/29/EC* on the harmonisation of certain aspects of copyright and related rights in the information society addresses the challenge and puts considerable weight on the importance of science by providing for exceptions and limitations to copyright (*Egloff et al., 2014).*

- **Work:** the term includes a wide array of forms of intellectual creations, including text, photographs, diagrams, maps, movies, etc. To be eligible for copyright, a work must be original, individual, singular and new (see, e.g., *Agosti and Egloff, 2009*).

- **Licenses:** are legally binding texts that define what can be done with works by a third party. They basically change the content of the work from “all rights reserved” (copyright) to “some rights reserved” (depending on the license).

- **Waivers:** are basically a declaration of the removal of copyright. This means the content now has “no rights reserved” and is released into the public domain. The original Owner abnegates all his/her rights to the data, but also

the responsibility. Ultimately, the former data and information "copyright holder" becomes a "donor".

- **LifeWatchGreece RI licenses:** LifeWatchGreece RI uses Creative Commons as a legal instrument to define the usage rights of the data. Creative commons is legally binding, simple to use, globally accepted and its licenses are both human-readable and machine-readable, the latter being especially important in the digital age.
- **LifeWatchGreece RI data release:** under two different conditions: 1) CC-Attribution (CC-BY, https://creativecommons.org/ licenses/by/3.0/): "*You must give appropriate credit, provide a link to the license, and indicate if changes were made. You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use*"; and 2) CC-Zero (waiver, https://creativecommons. org/publicdomain/zero/1.0/): "*The person who associates a work with this deed has dedicated the work to the public domain by waiving all of his/her rights to the work worldwide under copyright law, including all related and neighboring rights, to the extent allowed by law. You can copy, modify, distribute and perform the work, even for commercial purposes, all without asking permission*." However, there are ethical issues here for the user to make the appropriate attribution to the "donor" for the work done and released as free to use by all members of the society (see fair use guide at the end of the document). Also, the "donor" continues to receive all the benefits from the datasets he/she has donated, including the metrics on the viewing/downloading of all the information donated.
- **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. Towards this end, they can choose the date of data release. This will give the Data Provider and/or Data Owner sufficient time to exploit the data and publish the results before making them publicly available, in case this is necessary. A maximum time of 5 years can be selected for an embargo, however, this time can be renewed repetitively until the copyright expires (until 70 years after the Owner's death). If no embargo renewal is requested the data will automatically be released under the specified CC-license or waiver. During an embargo period, only metadata that describe the dataset will be published.

6. LifeWatchGreece General Terms of Use

- Once a dataset is published, it may be unpublished (not visible to the public) but the data will remain in the system for archival.
- Versioning is supported for changes in data files and/or metadata.
- Although a dataset might be retracted, its metadata remains always public.
- Metadata are always CC-Zero and available to the public[1].

[1] There is the provision for the LifeWatchGreece RI to "acknowledge" the use of the data, each time they are viewed or downloaded. In this way it is possible to give to the public the information on the data use and at the

- A dataset might be associated to zero, one or more publications.
- "Non-Commercial"[2], "No derivative" and "Share", alike as well as their combinations, are strictly not recommended by CC for licensing scientific data and LifeWatchGreece RI will therefore not offer them (http://creativecommons.org/).
- LifeWatchGreece RI provides a "best practice" guide and examples on the specific use of data, at the end of this document. Additionally, a "fair use statement on all use of data", is provided to encourage citation of data released under CC-Zero (CC0). However, this is not legally binding.
- Intellectual property (IP) rights are the legally recognized exclusive rights to creations of the mind. Under intellectual property law, Owners are granted certain exclusive rights to a variety of intangible assets, such as literary works, discoveries and inventions. Common types of intellectual property rights include "copyright".
- Data ownership refers to both the possession and the responsibility for information. Ownership implies power as well as control. The control of information includes not only the ability to access, create, modify, package, derive benefit from, sell or remove data, but also the right to assign these access privileges to others (*Loshin, 2002*).
- Unless data are released into the public domain with a waiver (CC-Zero) the Provider / creator remains the Data Owner and the data are considered his / her intellectual property. Copyright therefore remains with the Data Owner.
- Biodiversity data accessible via the LifeWatchGreece RI are openly and universally available to all potential users within the framework of the LifeWatchGreece RI Data Policy Agreement and under the terms and conditions that the Data Provider has identified for his/her data.

6.1. Rights and duties of the Data Providers & Data Owners

Rights

- Data Owners will retain some rights to their data with due regard to the CC license they choose when submitting data to LifeWatchGreece RI.

same time the reviewers or the evaluators of the scientific work would know where from the scientist got the data. In addition, the metrics on use would be publicized on the web and simultaneously inform the donor.

[2] There is no longer a clear distinction between commercial and non-commercial research (*Hagedorn et al., 2011*). Public-private partnerships, joint capital ventures and sponsored research render this distinction obsolete. A research institution that makes earnings from selling products or services cannot pretend to do non-commercial research, even if these earnings are at the break-even level. No institution can guarantee that the results of its research will not, at least, partly be commercialised by third persons. Regulations that restrict exceptions and limitations to the re-use of works for non-commercial research purposes misjudge the reality of science. The distinction is neither applicable nor useful and should be abandoned (*Egloff et al., 2014*).

- Right to choose an embargo time. The use of such right should be exercised with diligence and without eventually hampering the use of data sets.
- Right to withdraw or un-publish data, if this action is well justified.
- Right to change license. Waivers cannot be changed.

Duties

- Responsibility regarding the restriction of access to sensitive data resides in the Data Provider and/ or the Data Owner.
- A required minimum subset of metadata must be provided along with the dataset. These metadata will always be publicly available under a CC-Zero waiver.
- The Data Provider provides stable and unique identifiers to the data so that the Owner of the data is known for other necessary purposes.
- The Data Owner and/or the Data Provider collaborate with the data management team to maintain and manage the dataset and to improve its quality where possible.
- The Data Provider makes reasonable efforts to ensure that the data served are accurate.
- The Data Owner has to choose a license for the dataset. The licenses are pre-defined and machine-readable.
- The Data Provider (if he/she is not the Data Owner) warrants that they have made the necessary agreements with the original Owners of the data that the data can be made available through the LifeWatchGreece RI network.
- By submitting the data to LifeWatchGreece RI, the Data Provider explicitly authorizes the maintenance, reproduction, distribution, availability and re-use of the data collected in this database within the LifeWatchGreece RI and other relevant databases (e.g. GBIFGreece, GBIF, MedOBIS, OBIS).

6.2. Rights, duties and restrictions of LifeWatchGreece RI

Rights

- The Data Managers are allowed to annotate datasets and to mark inconsistencies, where appropriate. This is a standard procedure to ensure data quality/data assurance. No data values can be replaced or corrected without retaining the original data value and without the Data Provider/ Owner's consent.

- The data can be disseminated through other relevant databases, e.g. GBIFGreece, GBIF, MedOBIS, OBIS, using appropriate licenses. In no case the licensing / rights of the data will change, even if data are re-distributed through other portals. The data are always disseminated under the same conditions as signed in the Data Sharing Agreement of LifeWatchGreece RI. LifewatchGreece RI will communicate any changes or actions of withdrawal of datasets to these partners.
- The data will be reformatted in order to be compliant with international standards and for integration with other data, data infrastructures and storage systems.

Duties

- To perform a Quality control and provide Quality Assurance annotation.
- To create a citation (including authors, title and size of dataset) for the dataset according to GBIF data publishing guidelines (http://www.gbif.org/resources/2381) and in collaboration with the Data Owners and/or Data Providers.
- To encourage and facilitate free and accessible data by assigning default open data licenses to both metadata and files, but allowing terms of use and restrictions to be applied when needed.
- To encourage and facilitate sharing of sufficient information (domain - specific metadata and complimentary files) to enable reusability.
- To publish metadata through LifeWatchGreece RI portal.
- To publish data through LifeWatchGreece RI portal when authorized and to integrate it with other data in a format accessible by the publication.
- To ensure that the licenses and embargos are not violated (data protection) by the technical infrastructure.
- To ensure that the original dataset is not lost and no original values overridden.
- To conceal and protect sensitive data.
- To inform the Data Provider when an embargo is about to expire and about the option to renew the embargo.
- To keep track of the data use (implement a download tracking system and provide the Data Provider with these metrics).
- To assign each dataset with a data citation compliant with the Joint Declaration of Data Citation Principles (https://www.force11.org/datacitation).
- Seek to ensure that the Data Owner is properly acknowledged and inform the Data Owner in case the terms of use are violated.

- To assist Data Providers in publishing the data as a data paper, as well as in data versioning, assignment of DOI and tracking citations of datasets through literature.

Provisions & Restrictions:

- LifeWatchGreece RI does not assert any intellectual property rights in the data that is made available through its network. The ownership of the data belongs to the Provider/Owner, unless the data are released under a waiver to the public domain for the interest of the society at large (CC-Zero, under the fair use guide mentioned below)
- The Data Providers have the option to publish their datasets as a formal publication, such as a data paper in the Biodiversity Data Journal (http://biodiversitydatajournal.com/), at the cost of the LifeWatchGreece RI. This offer is only valid for the specific journal and for the duration of the project LifewatchGreece and constitutes the sole exception to the next point.
- No financial claim can be made by any of the parties concerning the submission, publication, curation or subsequent use of data and datasets,with the sole exeption of point above.
- LifeWatchGreece RI, its employees and its contractors are not liable or responsible, for the data contents or their use, subject to the provisions and terms of this document, or for any loss, damage, claim, cost or expense however it may arise, from a third party's inability to use the LifeWatchGreece RI network.
- The use of LifeWatchGreece RI always takes place on the basis that the accuracy and reliability of any data included are the responsibility of the Data Provider, unless the data are provided under the CC-Zero license, under which no such responsibility exists.
- LifeWatchGreece RI cannot alter any dataset content without previous consultation with the Data Providers / Data Owners.

7. Fair reuse of data published through LifeWatchGreece RI

The text below, in the form of simple instructions, describes the Canadensys norms (http://www.canadensys.net/) for data publication and use. These norms are not a legal document, but by adopting them, LifeWatchGreece RI helps to build a vibrant community around the biodiversity data sharing and supports future efforts to unlock these data.

Give credit where credit is due
As this is a common practice in scientific research, cite the data you are using.

Be responsible

Use the data responsibly. The data are published to allow anyone to better study and understand the world around us, so please do not use the data in any way that is unlawful, harmful or misleading. Understand that the data are subject to change, errors and sampling bias. Protect the reputation of the Data Provider and clearly indicate any changes you may have made to the dataset.

Share knowledge

Contact us to let us know if you have used the data (info@lifewatchgreece.eu). It helps our participants to showcase their efforts and it helps you reach a wider audience. Inform the Data Provider(s) and/or the Data Owner(s) if you have comments about the data, if you notice errors, or if you need more information. Their contact details are included in the dataset metadata and on our repository.

Respect the data license

Understand and respect the data license or waiver under which the data are published. This is always indicated in the metadata. To help you make greater use of the data, most of our participants have dedicated their data to the public domain (CC-Zero). Do not remove the public domain mark or provide misleading information about the copyright status.

8. Glossary

Data: Individual pieces of information within LifeWatchGreece RI. To be submitted and integrated into the RI, these must be digitized.

Dataset: Collection of thematically related data, such as results from a sampling campaign, literature collections, results from analyses, sets of occurrence records, etc.

Metadata: Data about data. There is no clear distinction between data and metadata: metadata are also a kind of data. Within LifeWatch Greece RI, metadata stands for "metadata of a dataset" and consists of a minimum set of information describing the purpose, the content, the involved persons and the terms of use (licenses and embargo period) of the actual dataset.

Sensitive data: Any data that the Data Owner does not want to make available, e.g. precise localities of endangered species (IUCN), of key-strategist species with vulnerable populations, of biota with high blue growth potential, etc. The accurate / original information is only visible to the Data Provider and to the LifeWatch Greece management office. Access to these data has to be requested from the Data Providers who are the only persons or entities having the jurisdiction to take decisions on making such data available to certain third persons or parties.

Data sharing: The process of and the agreements for making data available over the Internet.

Published dataset: A published dataset consists at least of the required subset of metadata and of one or more data files, which are all publicly accessible and reusable under the given license or waiver. The metadata are stored in the LifeWatchGreece RI, the data files can be stored either in the LifeWatchGreece RI or elsewhere, but the metadata must contain a link to the data (Figure 1).

Archived / Submitted dataset: An archived or submitted dataset consists at least of the required subset of metadata and optionally of one or more data files. The metadata are publicly available, the data are either: a) stored in the LifeWatchGreece RI, but not yet publicly available or b) stored elsewhere and not yet publicly available.

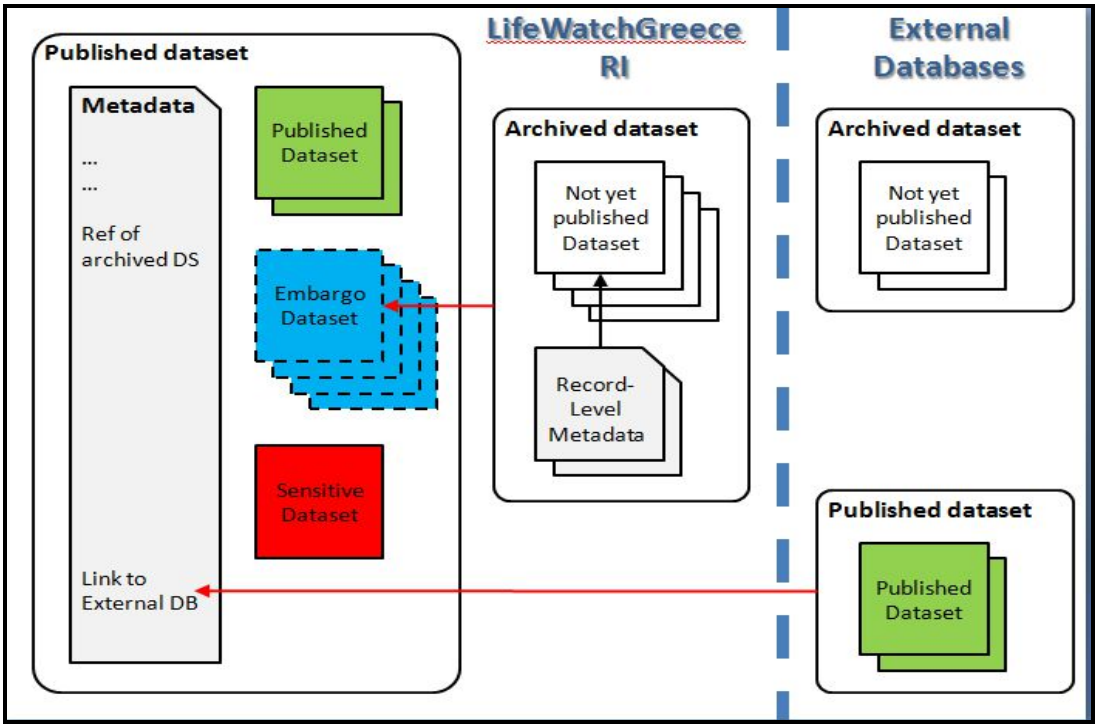

Figure 1: Schematic presentation of different data and metadata types and their connection with publication policy of LifeWatchGreece RI

Data Provider: The person or legal entity submitting data to LifeWatchGreece RI or to any other publicly available repository, such as MedOBIS and GBIF. This person or entity may or may not be identical with the Data Owner, but usually is responsible for the dataset and its contents (e.g. the Data Provider may be the principal investigator of a project who assembles the data, the data are, however, owned by his/her institution).

Data Owner: The person or legal entity possessing the Intellectual Property Rights (IPR) resulting from the act of creating a digital data record. The Data Owner may or may not be identical with the Data Provider (e.g. data resulting from a project within an institution are property of the institution not of a person. Thus, a proper license for the use of these data should be issued by the dean or the director of such institution).

Data Manager: A LifeWatchGreece RI employee who ensures a smooth integration of the dataset into the LifeWatchGreece RI and is responsible for the technical aspects of the data publication. The Data Manager works in close collaboration with the Data Provider to improve the quality of the dataset, assemble metadata and inform the Data Provider and the Data Owner regarding the rights, duties and terms of use. Data Managers can be also Data Providers or Data Owners.

User: Any entity (person, institution, organization or electronic infrastructure) who uses the Internet to access data through the LifeWatchGreece RI.

LifeWatchGreece RI: The Research Infrastructure, funded by the GSRT through the structural funds, which forms part of the LifeWatch ESFRI (European Strategy Forum on Research Infrastructures), consisting of four main parts: (a) the physical part, which is the buildings and the hardware (computer clusters); (b) the computational part, which consists of the software and all the applications developed, such as the e-Services and the vLabs; the latter are those applications which assist the scientists to conduct their research from the planning of the experiments all the way to the analysis of the data and their publication; (c) the management office, a core-group of highly specialized scientists and technicians, who take care of all the development and operation of the RI; (d) the LifeWatchGreece Network, which numbers more than 400 scientists, conducting research relevant to biodiversity and contributing with data, information and knowledge to the RI.

LifeWatchGreece RI management office: The core-group of the project authorized by the Network to execute the Work Programme and maintain the central services for the LifeWatchGreece RI.

Greek territory: The land and waters under the jurisdiction of the Greek State.

9. Reference List

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