ENVRI Community International Winter School on DATA FAIRness

https://www.lifewatch.eu/envri-iws-data-fairness-2020

Resource access tools

Nicola Fiore (nicola.fiore@lifewatch.eu) and Lucia Vaira (lucia.vaira@lifewatch.eu), LifeWatch ERIC

11-22 January 2021

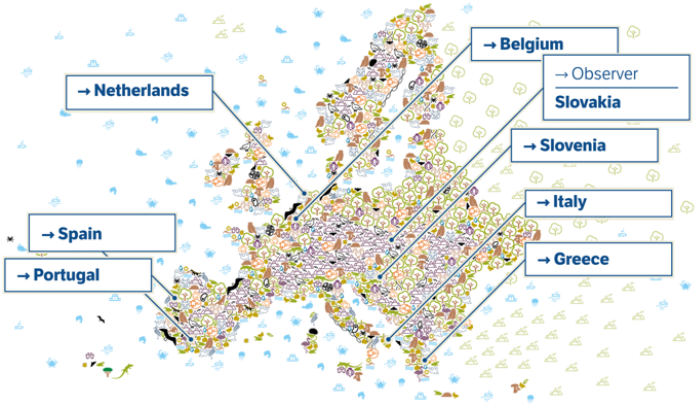
ENVRI-FAIR has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 824068

Outline

- Introduction
  - LifeWatch ERIC
  - LifeWatch ERIC and the FAIRness
  - LifeWatch ERIC Data LifeCycle
- How to describe resources
  - What is a metadata
  - Types of metadata
  - Metadata schemas, standards and controlled vocabularies
    - Dublin Core
    - ISO 19139
    - EML 2.2.0
  - The metadata lifecycle
- Assignment
- LifeWatch ERIC Metadata Catalogue overview
  - How to create/publish/access resources

LifeWatch ERIC

- LifeWatch ERIC is a European Infrastructure Consortium that offers e-Science research facilities to scientists investigating Biodiversity organization and Ecosystem functions and services.
- Combining a wide range of ICT tools and resources with deep domain knowledge, LifeWatch ERIC's mission is to be the leading worldwide provider of content and services for the Biodiversity research community, creating new opportunities for large-scale scientific development, and enabling accelerated data capture and modelling thanks to the use of innovative technologies.



- LifeWatch ERIC is a distributed research e-infrastructure consortium consisting of 7 European Member States.
- Its structure mirrors its nature, with central components (Common Facilities) located in 3 Member States (Spain, Italy and the Netherlands), and National Nodes in all 7 countries.
- LifeWatch ERIC's current members are: Belgium, Greece, Italy, the Netherlands, Portugal, Slovenia and Spain. Slovakia participates as an Observer.

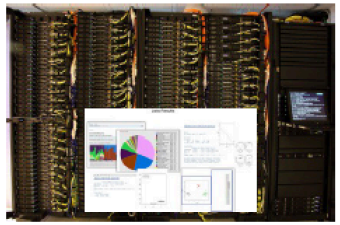
LifeWatch ERIC

What LifeWatch-ERIC can do for you?

- Provide **unique access to ICT resources, services & tools** for all researchers.
- Enhance **computational power** through remote resources.
- Improve & facilitate **data management** through **semantic resources** & **tools**.
- Increase **knowledge** of the **domain** & make it **accessible**.

Services

Computing Power



Controlled Vocabularies & Ontologies

LifeWatch ERIC and FAIR Principles

- One of the grand challenges of data-intensive science is to facilitate knowledge discovery by assisting humans and machines in their discovery of, access to, integration and analysis of, task-appropriate scientific data and their associated algorithms and workflows.

- The term FAIR was launched at a Lorentz workshop in 2014, the resulting FAIR principles were published in 2016, a set of guiding principles to make data Findable, Accessible, Interoperable, and Reusable

LifeWatch ERIC and FAIR Principles

To be Findable:

F1. (meta)data are assigned a globally unique and eternally persistent identifier
F2. data are described with rich metadata
F3. (meta)data are registered or indexed in a searchable resource
F4. metadata specify the data identifier

LifeWatch ERIC and FAIR Principles

To be Accessible:

A1 (meta)data are retrievable by their identifier using a standardized communications protocol
A1.1 the protocol is open, free, and universally implementable
A1.2 the protocol allows for an authentication and authorization procedure, where necessary
A2 metadata are accessible, even when the data are no longer available

LifeWatch ERIC and FAIR Principles

To be Interoperable:

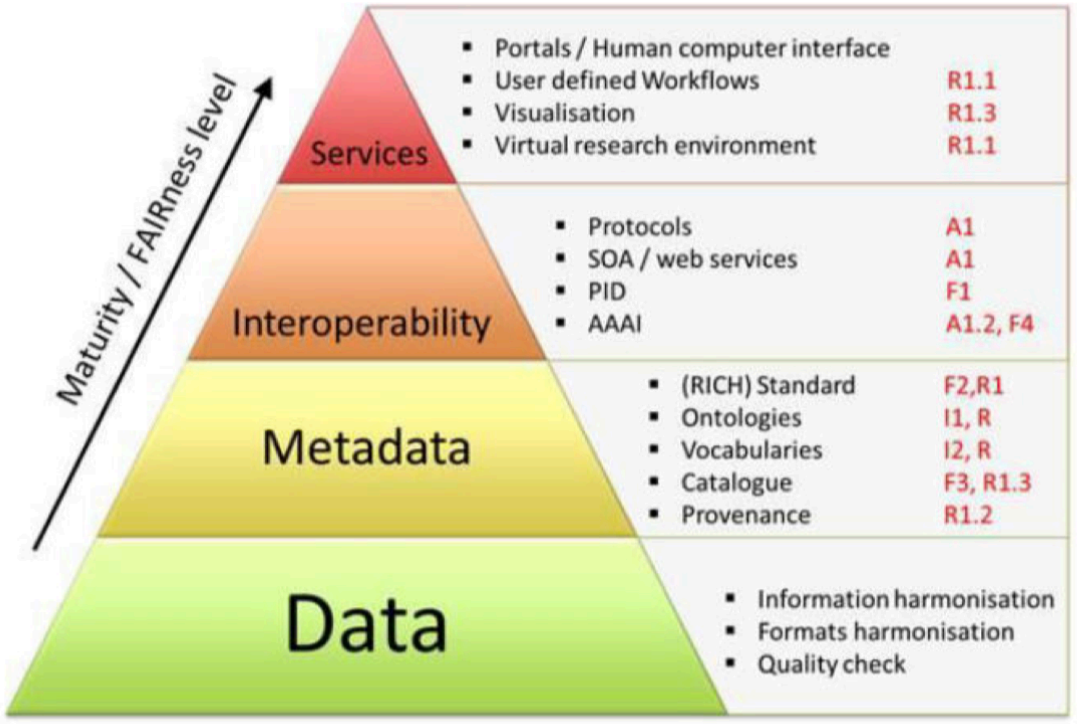
I1. (meta)data use a formal, accessible, shared, and broadly applicable language for knowledge representation
I2. (meta)data use vocabularies that follow FAIR principles
I3. (meta)data include qualified references to other (meta)data

LifeWatch ERIC and FAIR Principles

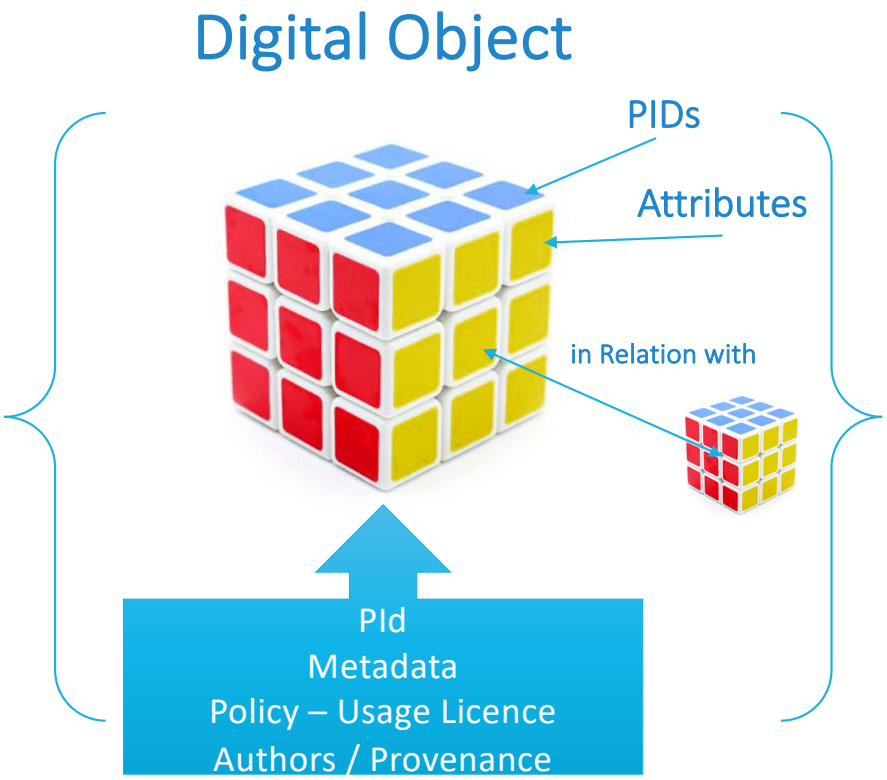
To be Re-usable:

R1. meta(data) have a plurality of accurate and relevant attributes
R1.1. (meta)data are released with a clear and accessible data usage license
R1.2. (meta)data are associated with their provenance
R1.3. (meta)data meet domain-relevant community standards

LifeWatch ERIC vs. FAIRness Level

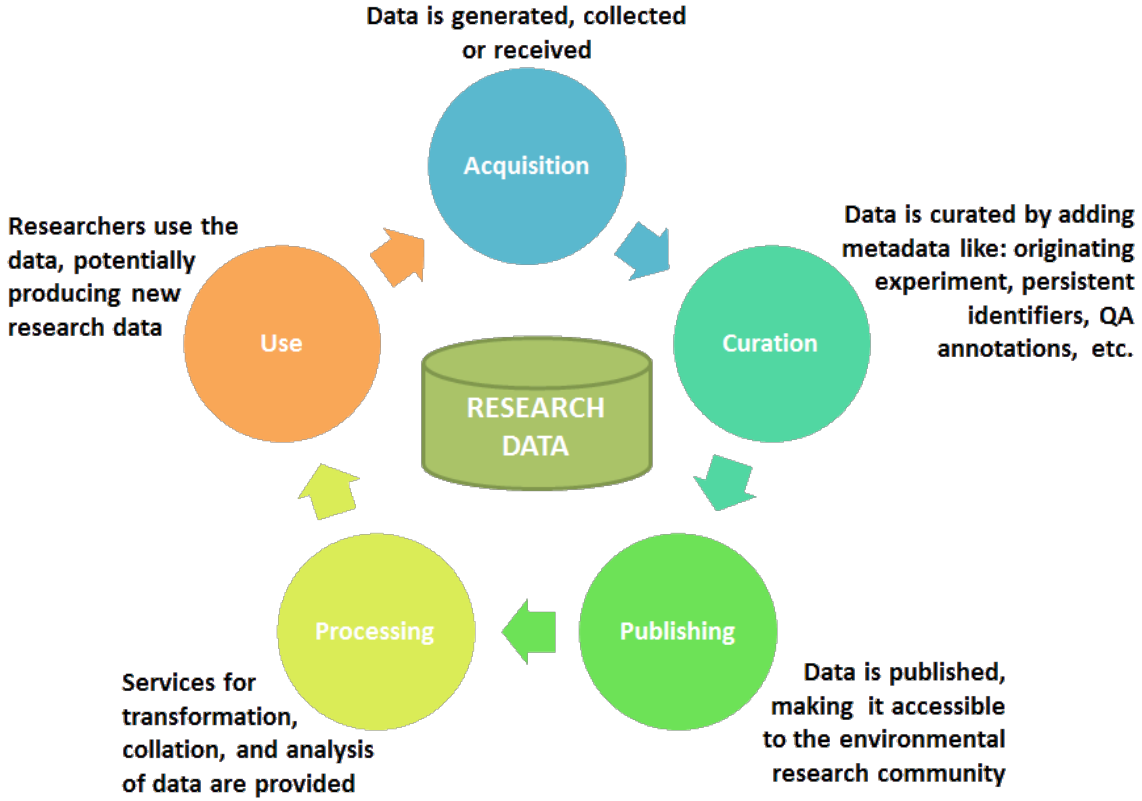


LifeWatch ERIC vs. FAIRness Level



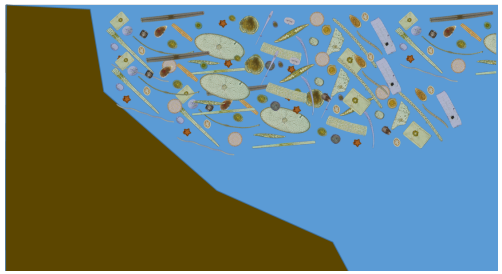
Standard Format
based on
Thesauri &
Ontologies

LifeWatch ERIC Data Life Cycle

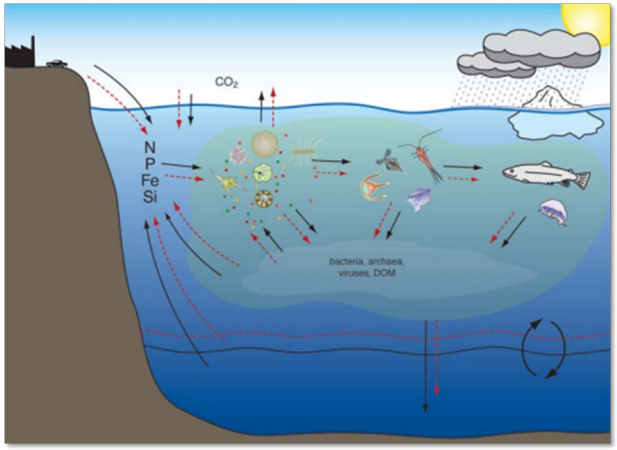


Phytoplankton Use Case

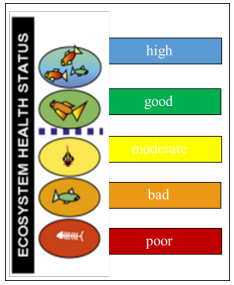
Critical to maintaining biodiversity and supporting aquatic life



Highly efficient primary producers

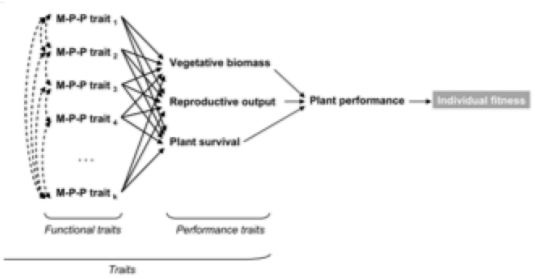


Useful indicators, "Biological quality element"



Water Framework Directive, WFD 2000/60/EC
Marine Strategy Framework Directive, MSFD 2008/56/EC

Phytoplankton Use Case



at the individual level that influence individual performances via its effects on growth, reproduction and survival in relation to the environment and to other species
(Diaz & Cabido, 2001; Violle et al., 2007; Mouillot et al., 2013).

Morphological
- **SIZE**
- **SHAPE**

Physiological
- **NUTRIENT REQUIREMENT**

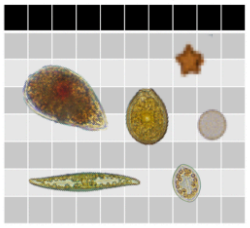
Behavioural
- MOTILITY

Phenological
- PHENOTYPE

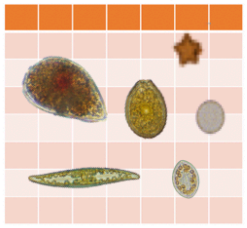
Phytoplankton Use Case

(a) Taxonomy

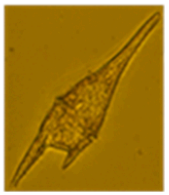
Laboratory 1



Laboratory 2



Which is the scientific name?



Ceratium furca (Ehrenberg)
[Claparède and Lachmann]

OR

Tripos furca (Ehrenberg)
[F. Gómez]

⊗ **Not standardized**

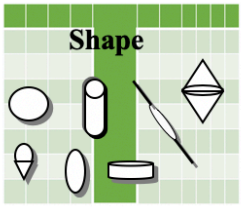
⊗ **Not harmonized**

⊗ **Heterogeneous**

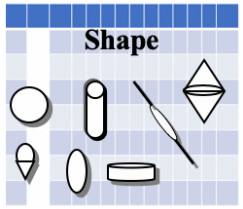
⊗ **Distributed**

(b) Traits

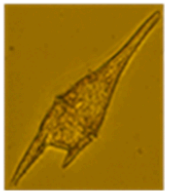
Laboratory 1



Laboratory 2



Which is the shape?



oval cylinder
OR
ellipsoid
OR
prism on elliptic base


5 MINUTES
Break

Outline

- Introduction
  - LifeWatch ERIC
  - LifeWatch ERIC and the FAIRness
  - LifeWatch ERIC Data LifeCycle
- How to describe resources
  - What is a metadata
  - Types of metadata
  - Metadata schemas, standards and controlled vocabularies
    - Dublin Core
    - ISO 19139
    - EML 2.2.0
  - The metadata lifecycle
- Assignment
- LifeWatch ERIC Metadata Catalogue overview
  - How to create/publish/access resources

Question

What is a metadata?

Mentimeter

Question

What is a metadata?

"Metadata is structured information that describes, explains, locates, or otherwise makes it easier to retrieve, use, or manage an information resource. Metadata is often called ***data about data*** or information about information."

National Information Standards Organization

Data vs. Metadata

- ***Data***: a collection of information such as observations, measurements, facts, and descriptions of certain things. It gives you the ability to discover patterns and trends
- ***Metadata***: often defined as "data about data", refers to specific details on these data. It provides granular information on one specific data such as file type, format, origin, date, etc.
- Metadata are used to facilitate and support resource *organisation*, *discovery*, *identification*, *retrieval*, *exchangeability* and *interoperability*. Metadata also capture and provide important contextual details, as not all resources are self-describing.
- The metadata lifecycle is larger than the data lifecycle:
  - metadata may be **created before data is created** or captured, e.g. to inform about data that will be available in the future
  - metadata needs to be **kept after data has been removed**, e.g. to inform about data that has been decommissioned or withdrawn

→ metadata is as valuable as the data

Metadata: understanding the value

If data is the new oil, then metadata is the refinery

Without it we have no way of knowing or utilizing what we have

- "Help!"
- Is it informative? Does it contain value?
- Let's add some context:

Dispatch_number: 123u3h

Call_back: 555-867-5309

Tower_location: Springfield

Call_time: 6:07 CST

Call_length: :07

Call_priority: 1

Recording_transcription: "Help!"

TIME FRAME

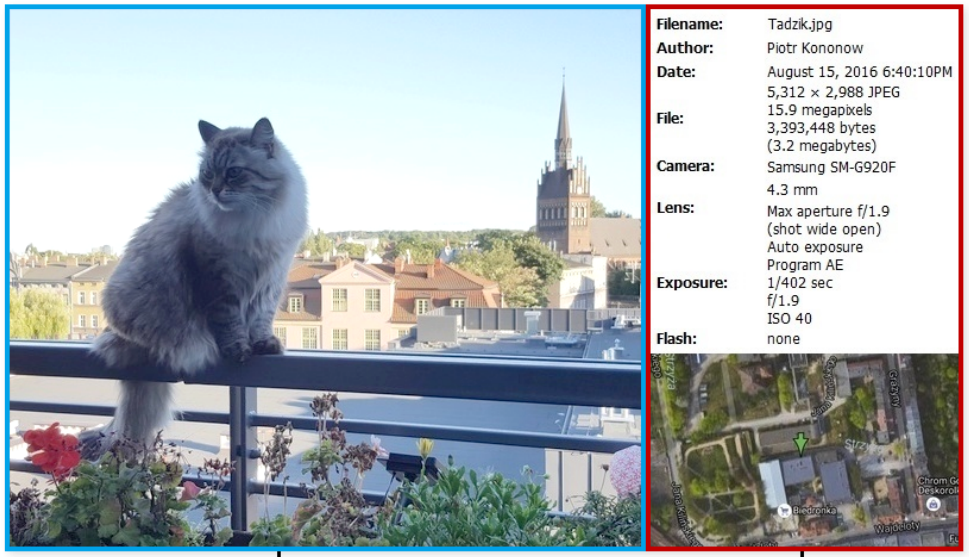
PRIORITY

LOCATION

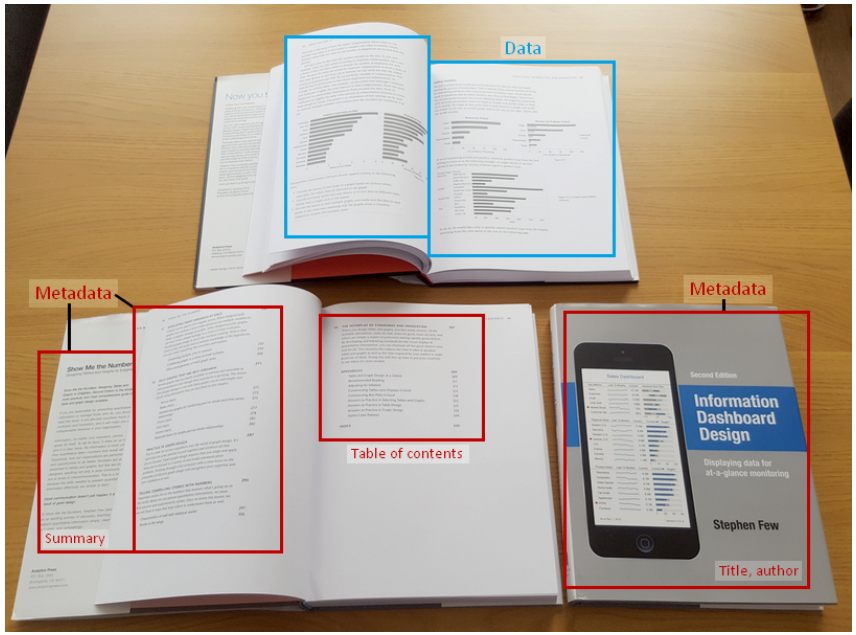
CALL-BACK NUMBER
- Name
- Address
- Cell-tower location

- Thanks to all the context provided by the metadata we can easily understand a lot more about what's happening

Metadata: two simple examples



Credits to https://dataedo.com/kb/data-glossary/what-is-metadata



Types of metadata

- **Administrative metadata**:
  - **Rights** metadata: intellectual property rights, copyright status and license information
  - **Technical** metadata: technical details about the object and its instantiation like its file format, file size, creation date and time, and how to open, access and use it
  - **Preservation** metadata: any contextual information required to provide sustainable access to content. They can include for example details about provenance (who has had custody/ownership of the digital object?), authenticity (is the digital object what it purports to be?), preservation activity (what has been done to preserve the digital object?), technical environment (what is needed to render, interact with and use the digital object?)
- **Descriptive metadata**: describes a resource, its content, its identifying characteristics and its "aboutness"
- **Structural metadata**: describes how the pieces of a single object fit together and how an object exists in relationship to other objects
- Example on services provided by LifeWatch ERIC: each unique service will have its own administrative and descriptive metadata (they will differ from the others). Services will have instead the same structural metadata (with the corresponding definition and measurement units)

Another point of view on metadata

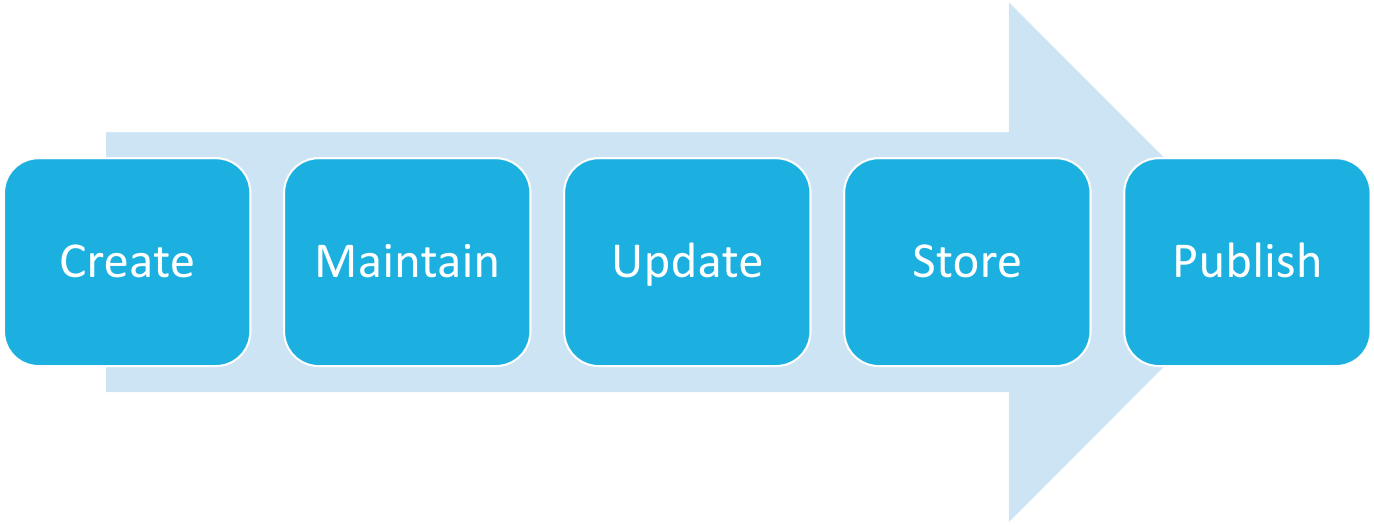
The W7 Ontological Model of Metadata

[Jason Hare, opendatasoft https://www.opendatasoft.com/blog/2016/08/25/what-is-metadata-and-why-is-it-important-data]

Metadata gives the following information about the data it models or represents:

- **What** are the data's properties (e.g. schema, size, etc.)?
- **When** does the data apply to temporally?
- **Where** does the data apply to geographically?
- **Who** created it?
- **How** was it created (survey, IoT device readings, web sales extract, etc.)?
- **Which** instrument or software package created it?
- **Why** was it created (to monitor water levels, track product inventory, etc.)?

The metadata lifecycle



The metadata lifecycle

- Here a sort of checklist to create your metadata:
  - List out the information that you would like to include as data points, e.g., title, subject, access rights, etc. (a metadata wish list)
  - Consider the descriptive information or metadata that you may already have: which elements or what kind of information are recorded or represented there? Is information missing about your resources? Is there information that would challenging to find or create?
  - Find your "golden minimum". Determine what information is essential to facilitate discovery, identification, and to give sufficient context, but no more. What exactly is the golden minimum in the space of your project depends on your project goals and available resources.
  - Finalize your list of data points. Choose to codify this list as your own metadata schema or map it to an existing schema.
  - Decide whether you want to make use of data value standards (controlled vocabularies, thesauri, encoding or formatting standards). If so, which standards would apply to which fields? Alternatively, you can create your own data value standards, such as, a subject vocabulary specific to your topic or collection of resources or a controlled list of names.
  - Document the design in a table or spreadsheet that lists each element, its attributes (e.g. qualifiers), usage (description of what information is recorded in that element), authority lists (if a controlled vocabulary is used), required/optional flag, format (e.g. ISO 8601 for dates), and example.

Metadata Strategy

The metadata lifecycle

- Approaches for maintaining metadata need to be appropriate for the type of data that is being published:
  - if data does not change, metadata can be relatively stable. Changes (bulk conversions) can take place off-line when needed
  - if data changes frequently (e.g. real-time sensor data), metadata needs to be closely coupled to the data workflow and changes need to be practically instantaneous.

The metadata lifecycle

- Metadata operates in a global context that is subject to change!
  - Organisation: departments are established, merge with others, responsibilities are handed over.
  - Usage of the data: new applications emerge around data
  - Reference data: controlled vocabularies evolve and get linked
  - Data standards and technologies: technology lifecycle is getting shorter all the time
  - Tools and systems: evolution of storage, bandwidth, mobile, etc.

- Metadata needs to be kept up-to-date to the extent possible, taking into account the available time and budget.

The metadata lifecycle

- Depending on operational requirements, metadata can be embedded with the data or stored separately from the data:
  - embedding the metadata in the data (e.g. office documents, MP3, JPG, RDF data) embedding makes data exchange easier
  - separating metadata from data (e.g. in a database), with links to corresponding data files makes management easier
- Depending on the availability of tools and requirements on performance and capacity, metadata can be stored in a classic relational database or an RDF triple store.

The metadata lifecycle

- Depending on operational requirements, metadata can be:
  - embedding the metadata in the data, embedding makes data exchange easier
  - separating metadata from data with links to corresponding data files that makes management easier
- Depending on the availability of tools and requirements on performance and capacity, metadata can be stored in a classic relational database or an RDF triple store.
- In many cases, metadata must survive even after deletion of the data it describes.
- Decommissioning or deletion of data happens for example when data is no longer necessary; when data is no longer valid; when data is wrong; when data is withdrawn by the owner/publisher. In that case the metadata should contain information that the data was deleted, and if it was archived, how and where an archival copy can be requested.

The metadata lifecycle

- The option most in line with the vision of Linked Open Data that allows the 'follow-your-nose' principle is the 'Open' publication → direct access on URIs
- Publish your metadata records in a metadata catalogue, a toolkit for creating, storing, updating, sharing and accessing descriptive metadata and allows to query for resource items based on desired attributes
  - it can be queried by end users (Web Interface)
  - or other machines (Web APIs)
- Tips:
  - Make your metadata available through a SPARQL endpoint (this allows external systems to send queries to an RDF triple store). It requires knowledge about the schema used in the triple store.
  - Deferred publication: access to exported file in RDF
    - Produced by converting non-RDF data to RDF.
    - Allows off-line bulk harvesting and caching of data collections.
    - Allows implementation of access control.

Metadata schemas, standards and controlled vocabularies

- A metadata schema is a list of elements or defined data points that are used to capture information about a resource.
- Standards are the tools that specify how to populate each of the data elements within a schema. There are three types of standards:
  - **Content standards**: describe the use of each element or give guidance of what pieces of types of information go where.
  - **Data value standards**: lists of standardized subject terms, genre terms, names, etc. Examples are controlled vocabularies, discipline-specific thesauri, formatting standards, etc.
  - **Data structure standards**: specify how to encode and structure the metadata record so as to ensure its machine readability. Examples are XML, RDF, etc.
- When creating / evaluating metadata it is important to ask:
  - **Accuracy:** is the data recorded correct and factual?
  - **Completeness:** has all relevant data been recorded in full?
  - **Consistency:** has data been entered consistently? Is data being entered in the same format?
  - **Interoperability:** is the data machine readable? Can metadata be easily migrated to and understood by another system?

Metadata schemas, standards and controlled vocabularies

- Some general purpose standards and specifications:
  - Dublin Core for published material (text, images), http://dublincore.org/documents/dcmi-terms/
  - FOAF for people and organisations, http://xmlns.com/foaf/spec/
  - SKOS for concept collections, http://www.w3.org/TR/skos-reference
  - ADMS for interoperability assets, http://www.w3.org/TR/vocab-adms/
- Do ***not re-invent terms*** that are already defined somewhere else (e.g., the DCAT Application Profile for data portals in Europe (DCAT-AP) reuses terms from DCAT, Dublin Core, FOAF, SKOS, ADMS and others)
- It is a good practise to reuse existing vocabularies for providing metadata to your resources
- What is a ***controlled vocabulary***?
  - It is a predefined list of values to be used as values for a specific property in your metadata schema, that is very important for the exchange of information, and thus interoperability, indeed common controlled vocabularies for value spaces make metadata understandable across systems
- It is recommended to:
  - use code lists as controlled vocabulary for free text or “string” properties (e.g., for keywords)
  - use concepts identified by a URI for reference to “things” (e.g., for properties)

Question

Which metadata schemas do you know?

Mentimeter

Dublin Core metadata schema

https://www.dublincore.org/specifications/dublin-core/dces

- One of the simplest and most widely used metadata schema. Originally developed to describe web resources, it has been used to describe a variety of physical and digital resources
- Dublin Core includes 15 “core” metadata elements (all elements are optional, repeatable, do not have a specific order, can contain controlled values)
  - Title (name given to the resource)
  - Subject (topic of the resource)
  - Description (abstract of the resource)
  - Creator (entity responsible for making the resource)
  - Publisher (entity responsible for making the resource available)
  - Contributor (entity responsible for making contributions to the resource)
  - Date (point or period of time associated with an event in the lifecycle of the resource)
  - Type (nature or genre of the resource)
  - Format (file format, physical medium or dimensions of the resource)
  - Identifier (unambiguous reference to the resource within a given context)
  - Source (a related resource from which the described resource is derived)
  - Language (language of the resource)
  - Relation (related resource)
  - Coverage (spatial or temporal topic of the resource
  - Rights (info about rights held in and over the resource)
- Some examples here: https://www.dublincore.org/specifications/dublin-core/usageguide/2000-07-16/generic

ISO 19115 - ISO 19139

https://www.iso.org/standard/32557.html

- The International Organisation for Standardisation (ISO) includes ISO/TC 2112, which is an international, technical committee for geographic information. TC 211 has created a strong, globally implemented set of standards for geospatial metadata:
  - the baseline ISO 19115
  - the ISO 19139 for implementation of dataset metadata
  - the ISO 19119 for services metadata
- These open standards define the structure and content of metadata records and are essential for any catalogue implementation.
- The INSPIRE DIRECTIVE applies these standards and specifications in its implementation.
- Which is the difference between the ISO standards 19115 and 19139?
  - ISO 19115 is a content standard that defines what information should exist in a metadata document
  - ISO 19139 produces an XML Schema defining how metadata conforming to ISO 19115 should be stored in XML format
- Some examples here: https://inspire.ec.europa.eu/id/document/tg/metadata-iso19139/2.0/examples

Ecological Metadata Language - EML 2.2.0

https://eml.ecoinformatics.org

- EML is a metadata specification particularly developed for the ecology discipline based on prior work done by the Ecological Society of America and associated efforts, indeed it is in widespread use in earth and environmental sciences and increasingly in other disciplines as well. It defines a comprehensive vocabulary and a readable XML markup syntax for documenting research data
- Sponsored by ecoinformatics.org, EML Version 2.2.0 was released in 2019.
- The eml module is a wrapper container that allows the inclusion of any metadata content in a single EML document. The eml module is used as a container to hold structured descriptions of ecological resources.
- The top-level structure of EML has been designed to be compatible with the Dublin Core syntax. In general, dataset resources, literature resources, software resources, and protocol resources comprise the list of information that may be described in EML. EML is largely designed to describe digital resources, however, it may also be used to describe non-digital resources such as paper maps and other non-digital media.
- **Interactive Module Documentation:** https://eml.ecoinformatics.org/schema/eml_xsd.html
- Some examples here: https://eml.ecoinformatics.org/whats-new-in-eml-2-2-0.html

Why so many standards?

- Metadata schemas differ in the type and number of data elements, the designation of mandatory fields, encoding requirements, and the use of data content and value standards.
- A decision about selecting a schema has implications for the ***quality*** and ***level*** of description.
- Several factors need to be considered in adopting a schema or developing a customized metadata profile (Kennedy, 2008; Miller, 2011; Zeng and Qin, 2008):
  - Kennedy (2008) offers a practical guide to assist professionals in choosing a metadata schema. The guide consists of nine questions focused on (1) potential users and their needs, (2) expertise of cataloguing staff, (3) time and financial resources, (4) type of access to a digital collection, (5) relationships to other collections, (6) collection scope, (7) metadata harvesting, (8) interoperability, and (9) level of maintenance and quality control.
  - Zeng and Qin (2008) point out that the metadata creation process begins with an examination of the discipline, community, and potential users and usage and then considers a number of other criteria, including the nature of the collection and constraints in staffing and funding, as well as institutional and cooperative information systems.
  - Miller (2011) recommends adopting an approach from information architecture that is frequently used to determine functional requirements. The triad of context, content, and users can be used as a framework for analysing the organizational context in which a digital library is created, for examining the type, format, and subject content of materials, and for gathering information about users, their information-seeking behaviour, and intended use.

From *https://www.sciencedirect.com/topics/computer-science/metadata-schema*

Adopt or adapt?

- The key question when implementing a metadata initiative is this: “Is it necessary to create a new metadata schema, or are there already existing metadata schemas which can be adapted for use?”
- Generally you should be able to find a metadata schema and standard to suit your needs.
- When you find one, use it, since standards improve interoperability and reduce unnecessary variation. Hence it is better and easier to adopt something that already exists, is well modelled, and comprehensively supported.
- If you build a new schema, then you will also have manage and support it for the life span of the records. This includes updates, backwards and forwards compatibility, metadata about the metadata schema, registry and other infrastructure to support its implementation, etc.
- If you find one that is close to your needs, but not quite, you can extend or shorten it to suit your needs (Refer to Recommended Minimum Elements).
- You can also develop a crosswalk: a document mapping the relationships between fields of different metadata schemas

Assignment

Assignment

- Here some resources (2 images capturing important events, 1 service and 1 dataset)
- Using these resources and the supplied info, walkthrough the metadata creation process.
  - Create metadata your wish list
  - Find your golden minimum based on your project goals
  - Map desired data points to appropriate (Dublin Core, ISO) elements
  - For which metadata elements do you want make use of data value standards (e.g., controlled vocabulary terms, specific encoding or formats standards, or do you want to develop your own)?
  - Using your metadata template, create descriptive metadata records for each of the resource given

Assignment – two images

1920: Women's Suffrage

- Date: Aug 26
- Location: Washington D.C.

Though the United States was founded under democratic principles, only a minority of its population – in the beginning only white landowning males over the age of 21 – could actually vote. But after the 19th Amendment of the Constitution was passed, women finally gain a voice and the right to cast their ballots, though the voting rights fight was far from over for many African American women, especially in the South.
PAUL THOMPSON / GETTY IMAGES

1945: World War II Ends

- Date: May 7
- Location: Germany

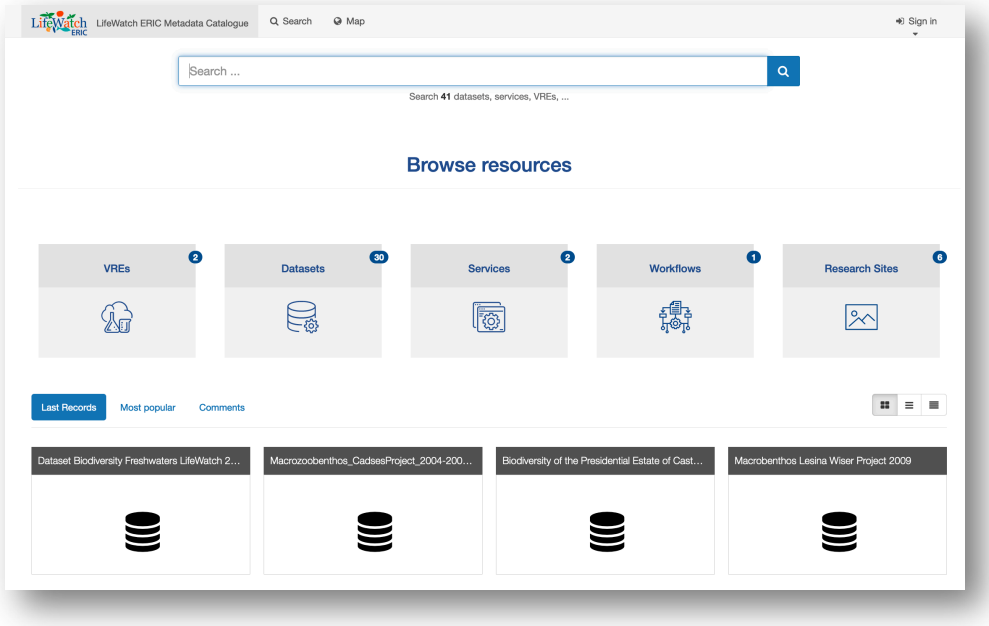
Germany surrendered to the Allied Forces, ending World War II in the West. The next day, parades marched, kisses flew, beer flowed, and the globe erupted in celebration. Though the Pacific theatre continued to rage until August, the Third Reich's collapse was enough of a reason to take a deep breath and dance in the streets. Here, a glimpse into this pivotal 20th century moment, photos snapped on the first "Victory in Europe Day."
MICHAEL OCHS ARCHIVES / GETTY IMAGES

Assignment – a service

2020: LifeWatch ERIC Metadata Catalogue

- Date: 2020
- Location: https://metadatacatalogue.lifewatch.eu

The LifeWatch ERIC Metadata Catalogue is based on GeoNetwork 3.10 and allows to manage metadata related to Datasets, Research Sites, Services, Virtual Research Environments and Workflows by using a customized ISO 19139 standard and the EML 2.2.0 standard.

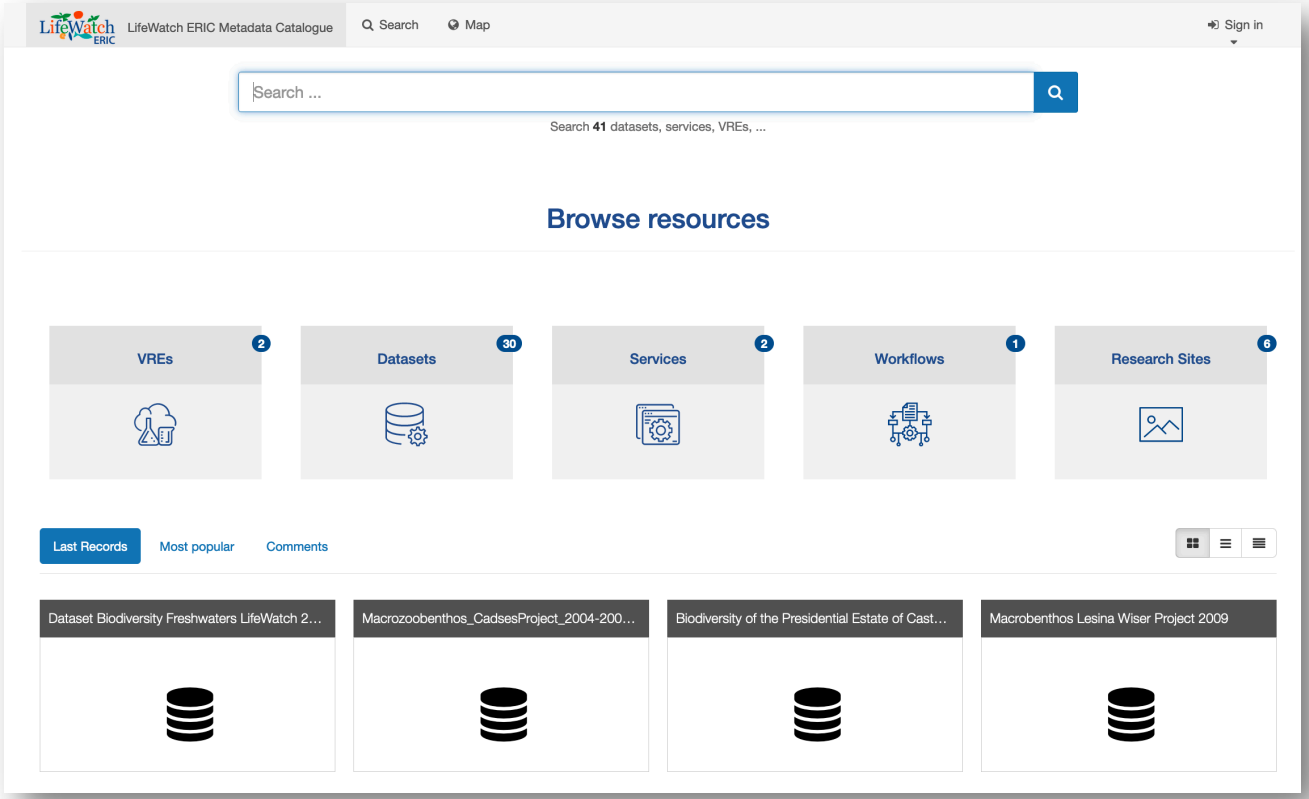


Assignment – a dataset

Select one dataset from your country and describe it with one of the schema we analysed during the lecture

LifeWatch ERIC Metadata Catalogue

https://metadatacatalogue.lifewatch.eu



LifeWatch ERIC Metadata Catalogue

https://metadatacatalogue.lifewatch.eu

- The LifeWatch ERIC Metadata Catalogue is based on GeoNetwork 3.10 and allows to manage metadata related to five kinds of resources:
  - Datasets, by using the EML 2.2.0 standard[1] (60 metadata attributes)
  - Research Site, by using a customized ISO 19139 standard[2] (14 metadata attributes)
  - Services, by using a customized ISO 19139 standard (40 metadata attributes)
  - Virtual Research Environments, by using a customized ISO 19139 standard (25 metadata attributes)
  - Workflows, by using a customized ISO 19139 standard (25 metadata attributes)

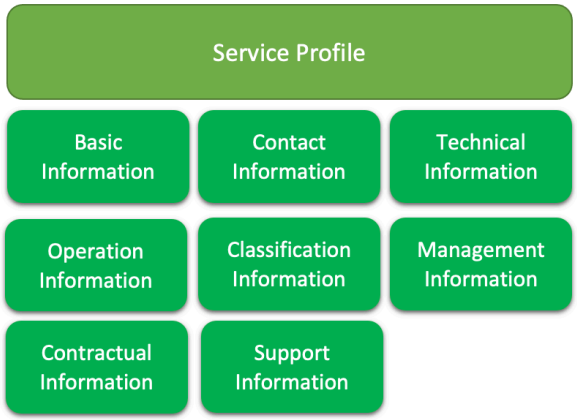
- Metadata attributes can be optional/mandatory and can require single/multiple values.

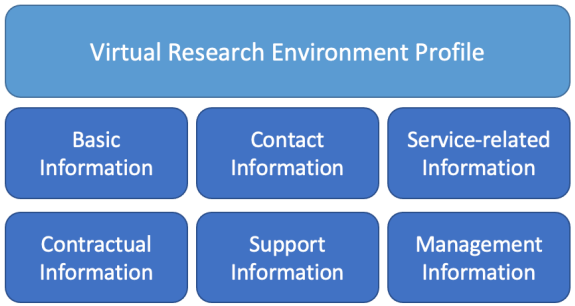
- The LifeWatch ERIC Metadata Catalogue allows (upon validation and verification) the creation of Digital Object Identifiers (DOIs) for resources that do not have it, by exploiting the GeoNetwork – DataCite connection.

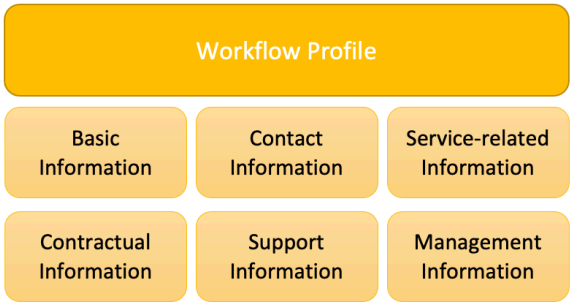
[1] EML: Ecological Metadata Language - https://eml.ecoinformatics.org
[2] ISO 19139 standard - https://www.iso.org/standard/32557.html

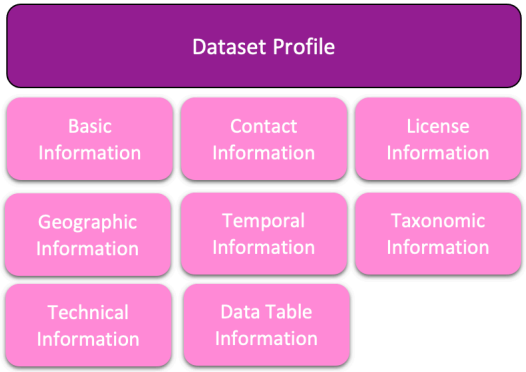
LifeWatch ERIC Metadata Catalogue

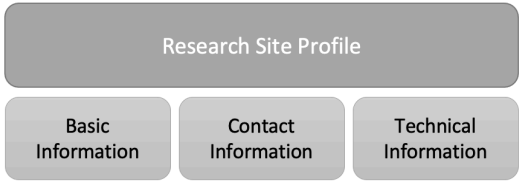
https://metadatacatalogue.lifewatch.eu





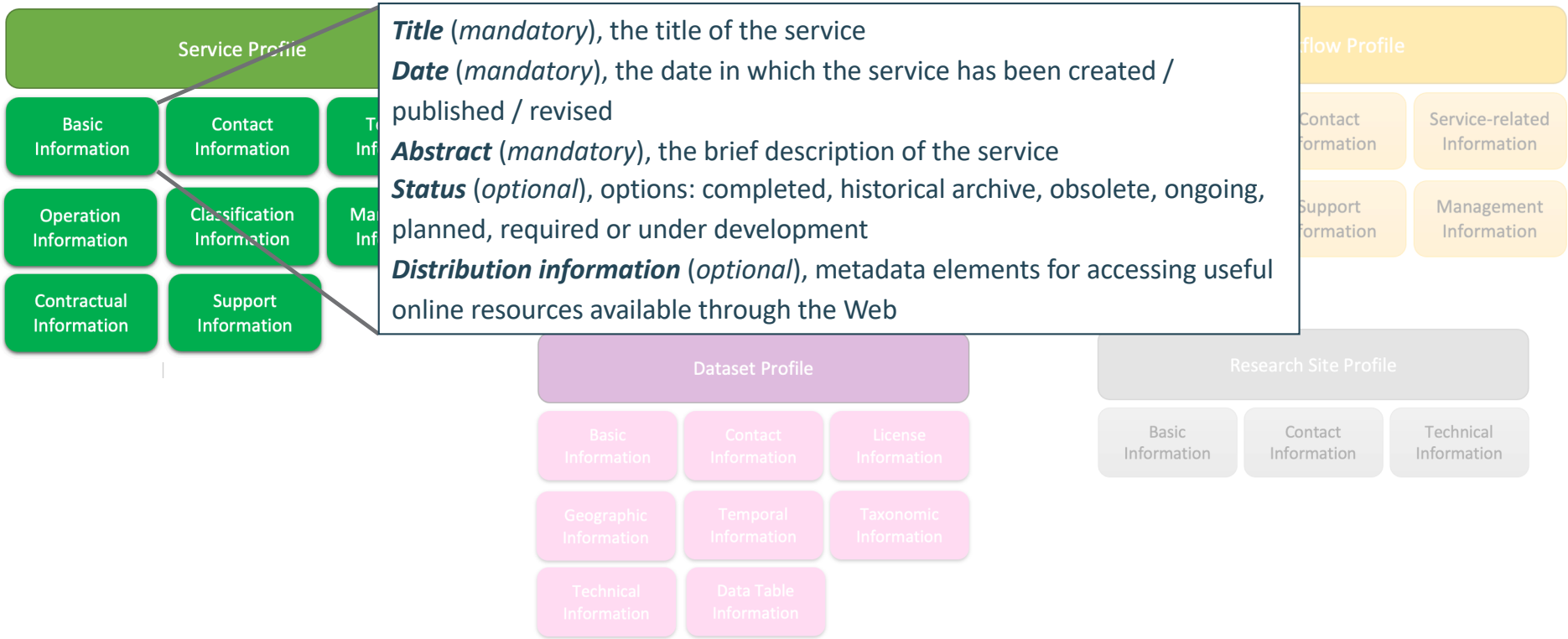






LifeWatch ERIC Metadata Catalogue

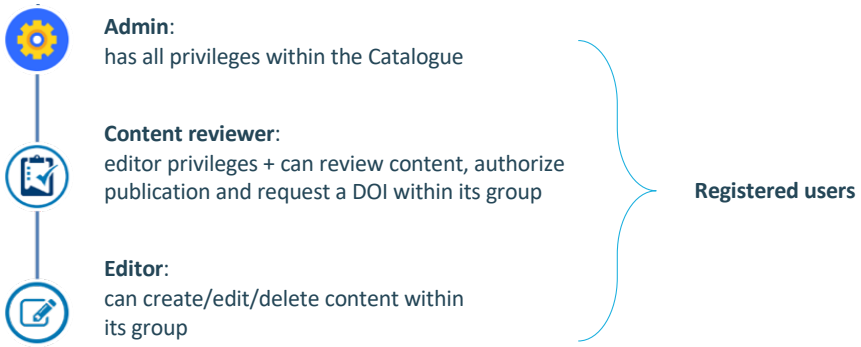
https://metadatacatalogue.lifewatch.eu



LifeWatch ERIC Metadata Catalogue

https://metadatacatalogue.lifewatch.eu

- The LifeWatch ERIC Metadata Catalogue allows to:
  - discover resources with advanced filters (e.g., according to the provider, to the group, i.e. LifeWatch national nodes)
  - manage users with the corresponding profiles and privileges



Public users: can browse the catalogue and download public metadata

How to create/publish/access resources

https://metadatacatalogue.lifewatch.eu

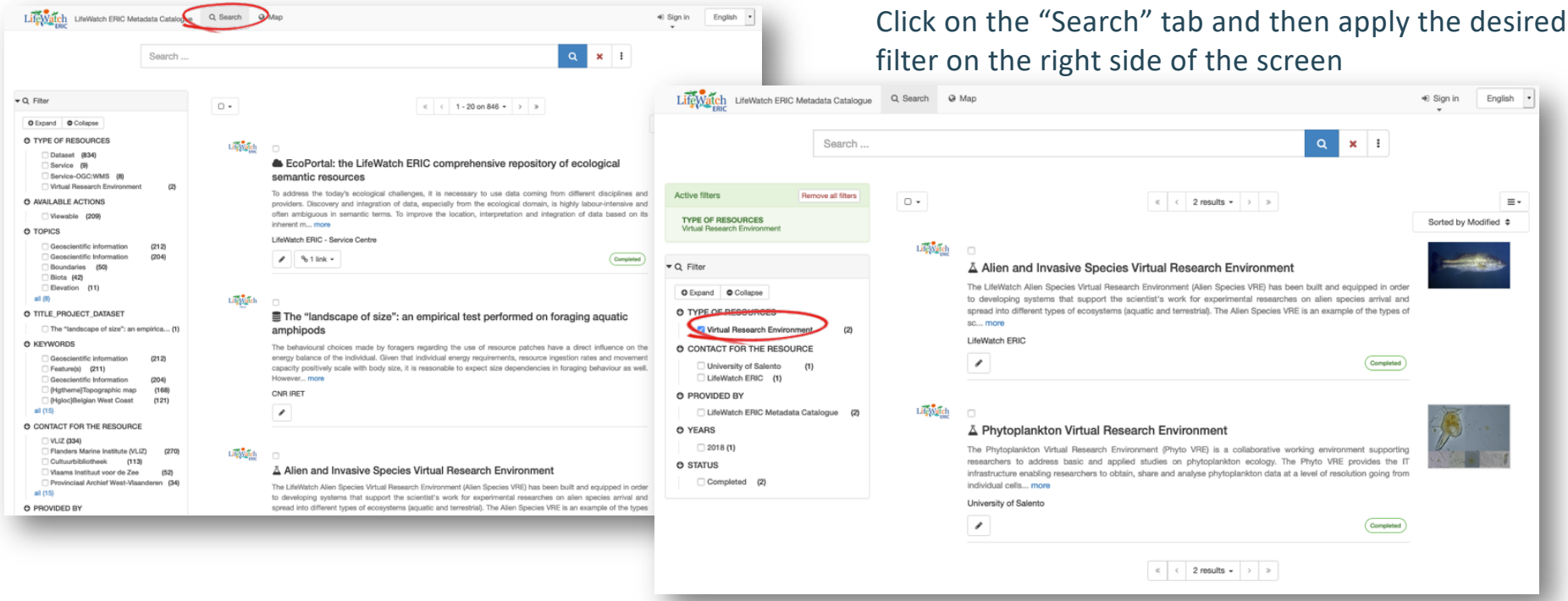
1. How to search for a specific kind of resource?
2. How to access the detailed view of a specific resource?
3. How to download metadata related to a specific resource?
4. How to create a new resource?
5. How to edit a resource?
6. How to publish a resource?
7. How to request a DOI for a resource?

How to create/publish/access resources

https://metadatacatalogue.lifewatch.eu

1. How to search for a specific kind of resource (e.g., Virtual Research Environment)?

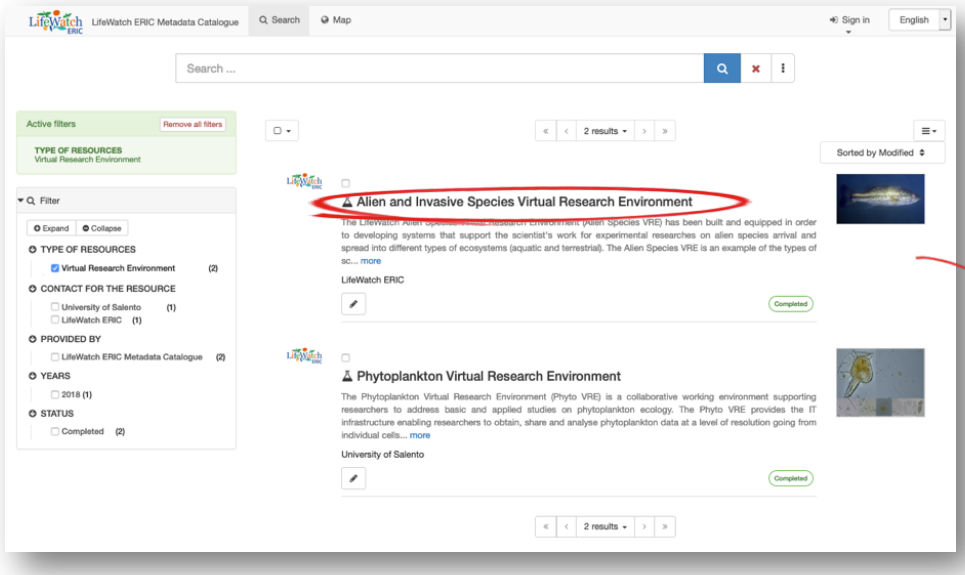
Click on the “Search” tab and then apply the desired filter on the right side of the screen

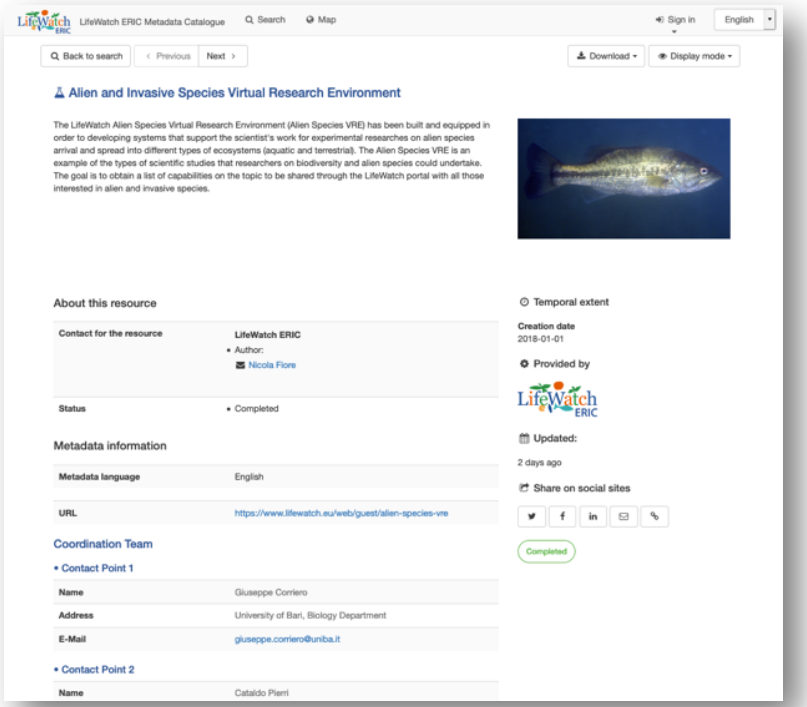


How to create/publish/access resources

https://metadatacatalogue.lifewatch.eu

2. How to access the detailed view of a specific resource?



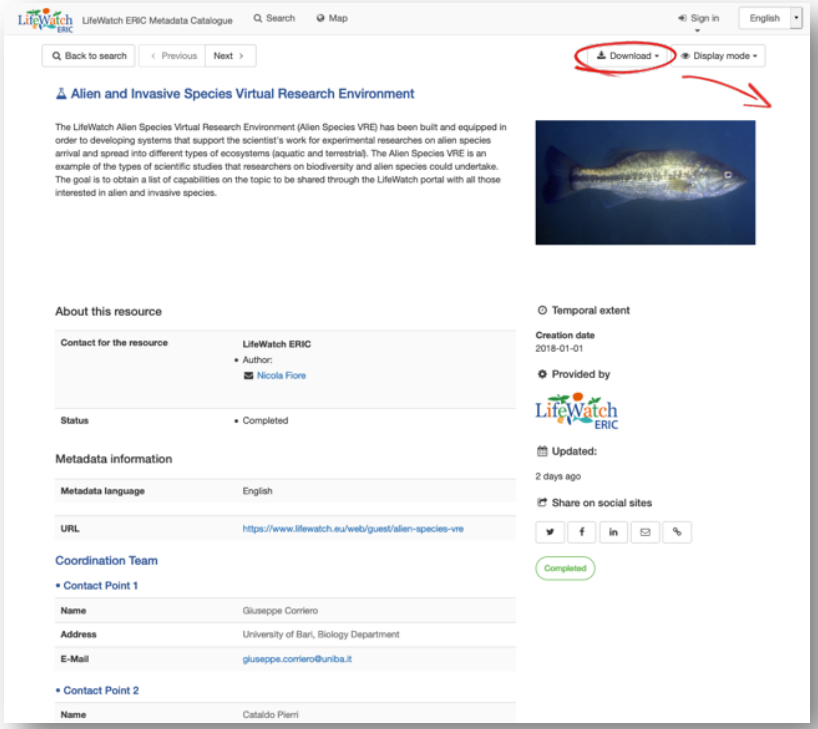


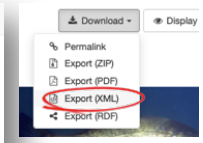
Click on the title of the resource to see its details

How to create/publish/access resources

https://metadatacatalogue.lifewatch.eu

3. How to download metadata related to a specific resource?



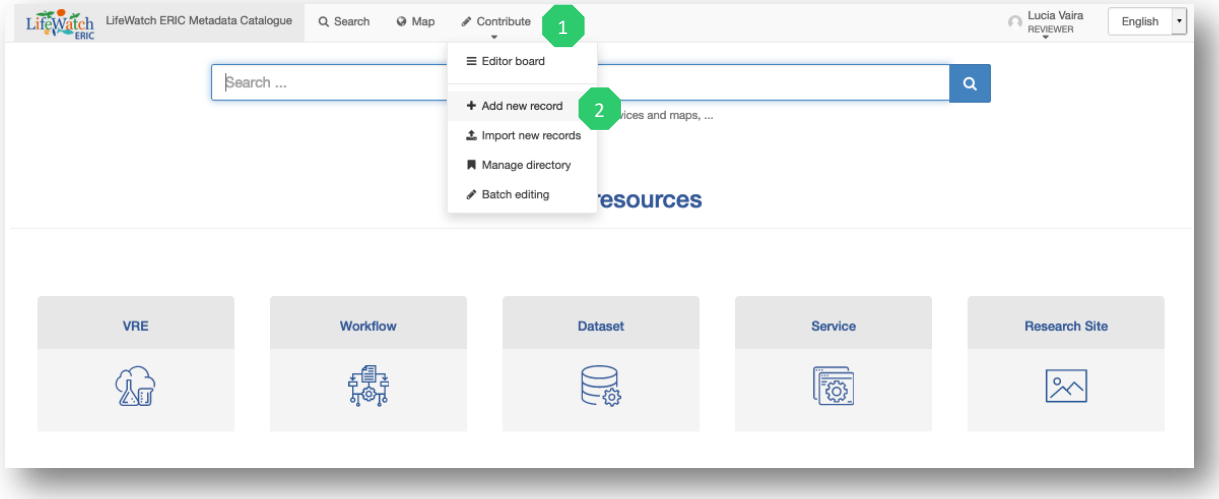


In the detail view of the resource, click on the “Download” button to download the resource in the desired format (ZIP, PDF, XML and RDF are available)

How to create/publish/access resources

https://metadatacatalogue.lifewatch.eu

4. How to create a new resource?



After **login**:

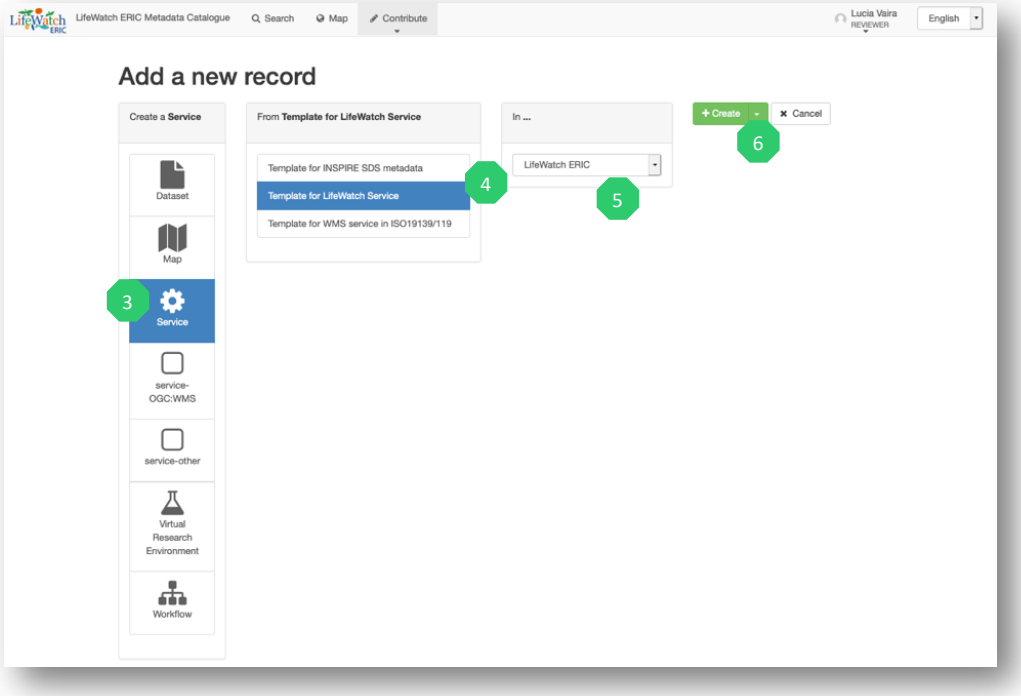
1. Contribute
2. Add new record

Requisite: registered user

How to create/publish/access resources

https://metadatacatalogue.lifewatch.eu

4. How to create a new resource?



After login:

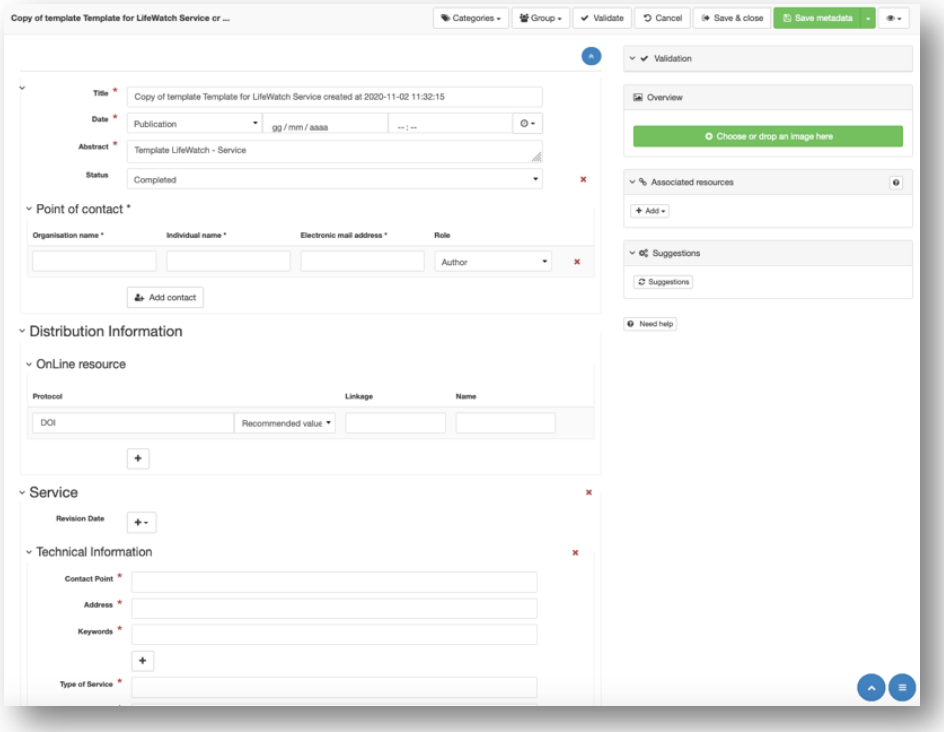
1. Contribute
2. Add new record
3. Choose the record type (e.g., Service)
4. Choose the template to use
   (***for this school use the LifeWatch ERIC templates***)
5. Select the group (***LifeWatch ERIC***)
6. Click on “Create”

Requisite: *registered user*

How to create/publish/access resources

https://metadatacatalogue.lifewatch.eu

4. How to create a new resource?



The editor shows the list of all metadata related to the metadata schema of the selected resource to be added.

User-friendly interface.

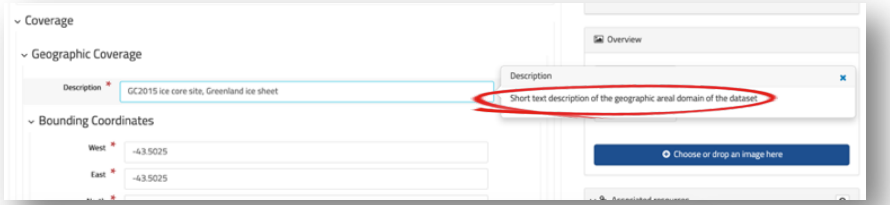
Metadata marked with red asterisks are mandatory metadata.

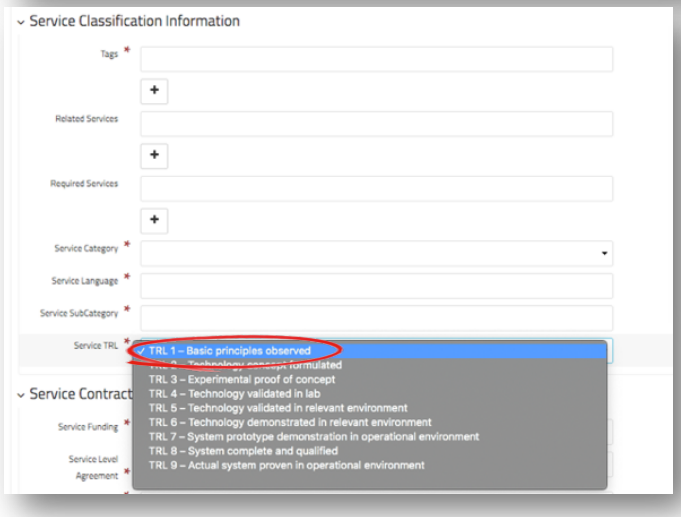
Requisite: *registered user*

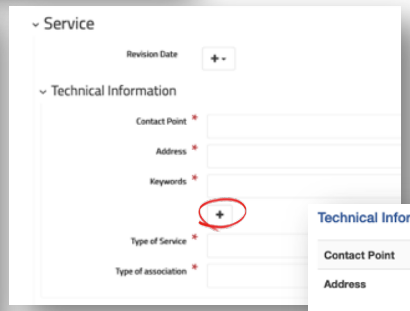
How to create/publish/access resources

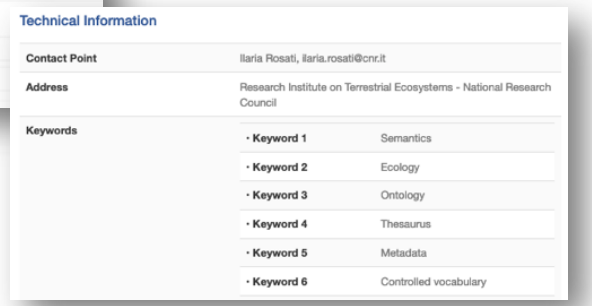
https://metadatacatalogue.lifewatch.eu

4. How to create a new resource?









Users are guided in the input process by means of:

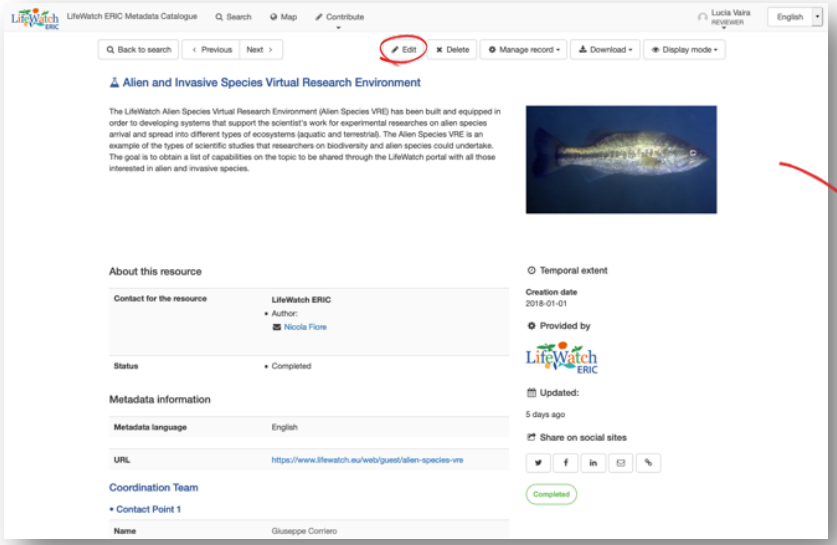
- **tooltips** for the description of the specific field
- **drop down lists** with the appropriate values of the specific field
- **multiplicity** for multi-value attributes
- **markers** for optional/mandatory metadata

Requisite: registered user

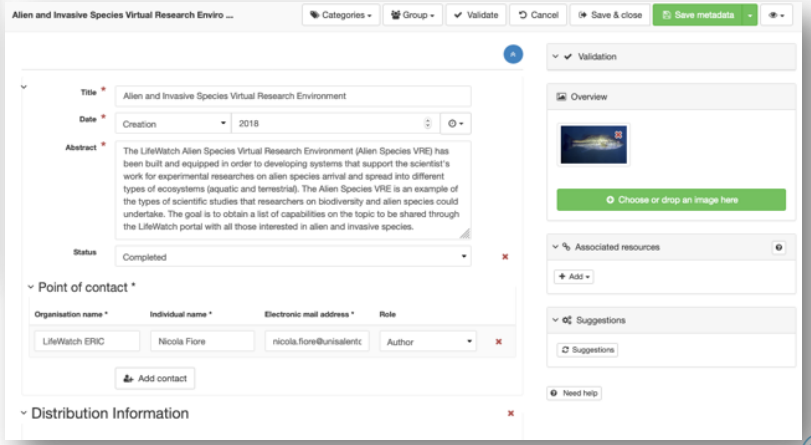
How to create/publish/access resources

https://metadatacatalogue.lifewatch.eu

5. How to edit a resource?



1. Click on the name of the resource to edit from the resource list
2. Click on Edit button
3. Update the record as needed
4. Decide if:
   a) Cancel → to go back to the resource list without saving
   b) Save & close → to go back to the resource list after saving
   c) Save metadata → to save changes but remain in the same edit page

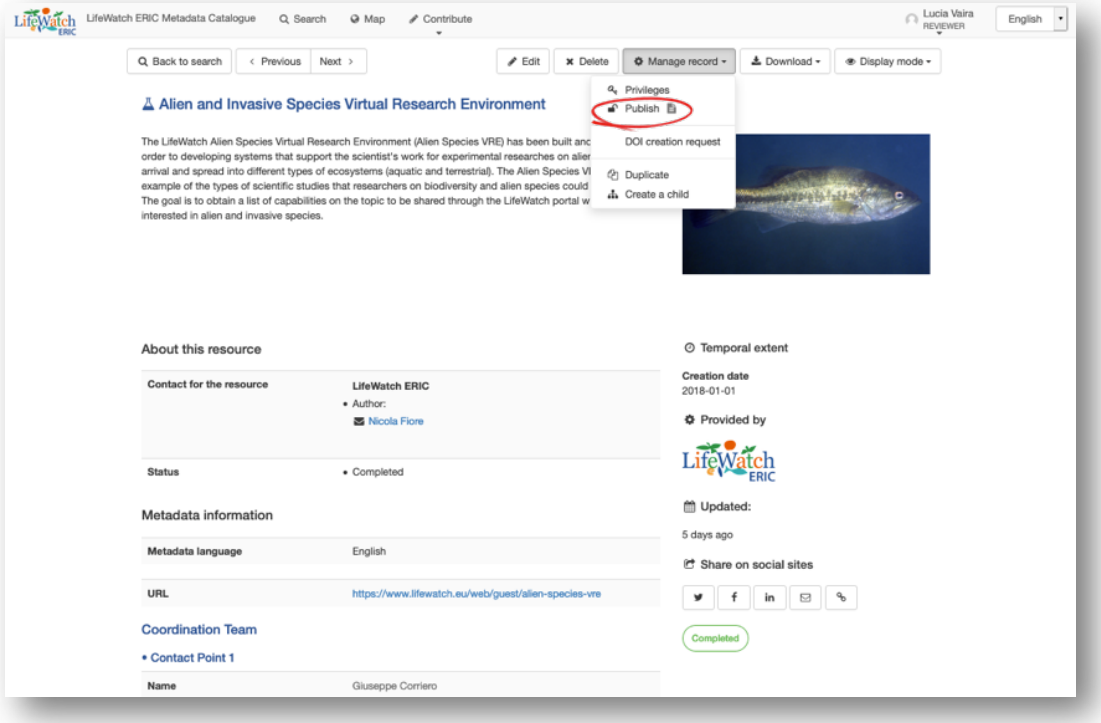


Requisites: *registered user and creator of the resource*

How to create/publish/access resources

https://metadatacatalogue.lifewatch.eu

6. How to publish a resource?



1. Click on the name of the resource to publish from the resource list
2. Click on Manage record
3. Publish

Once published, the created resource is visible to the public users and listed among the “last recent” records of the catalogue.

Requisite: *reviewer user*

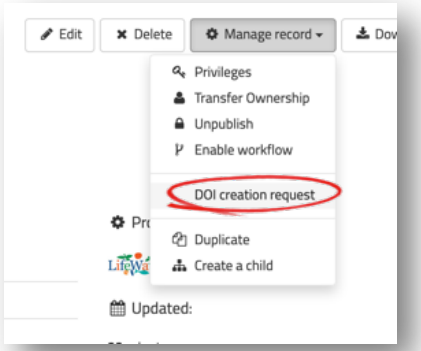
How to create/publish/access resources

https://metadatacatalogue.lifewatch.eu

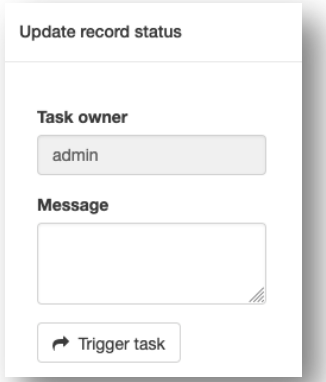
7. How to request a DOI for a resource?

DOI is created on demand. It means that a user must ask for creation of a DOI for a specific resource.

1. Manage record
2. DOI creation request



3. Specify an optional message
4. Trigger the task



5. After submission, the administrator is notified by email and will manage the request

Requisite: reviewer user

How to create/publish/access resources

https://metadatacatalogue.lifewatch.eu

7. How to request a DOI for a resource?

Once the admin will receive the request, the DOI creation process will start:

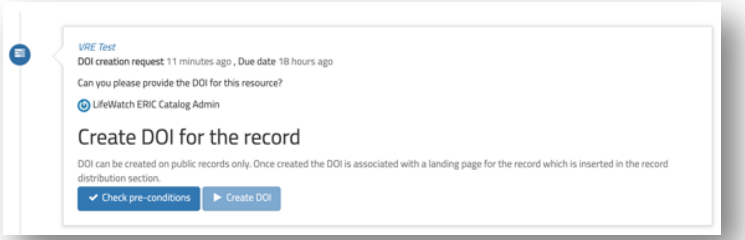
- ***pre-conditions checking***: DataCite mandatory fields have to be specified (Creator individual name, Creator organization name; Resource Title; Publication Year)
- ***existence checking***: check if a DOI already exists, otherwise it is possible to create a DOI that will be automatically added to the metadata record
- ***internal validation step***: the admin will go through an internal validation step that will analyse the record in order to decide if all required metadata have been correctly specified
- ***DOI creation***: the DOI is created with DataCite and it is in "Findable" status. This means that the DOI will be indexed into DataCite Search (https://search.datacite.org) within 15 minutes after its creation.

How to create/publish/access resources

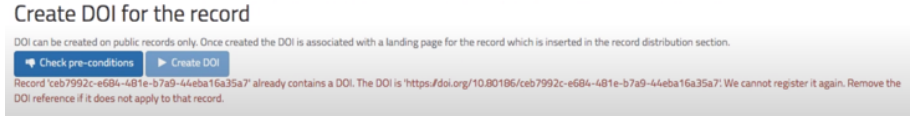
https://metadatacatalogue.lifewatch.eu

7. How to request a DOI for a resource?

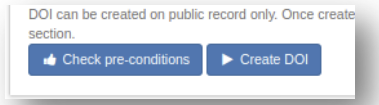
The task can then be resolved by checking the pre-conditions (6 mandatory fields for DataCite)



If DOI already exists, it needs to be removed



Otherwise, it is possible to create a DOI that will be added to the metadata record



DataCite

DataCite mandatory fields:

- Identifier (the prefix is already defined)
- Creator (individual name and organization name)
- Title
- Publisher: set by default to “LifeWatch ERIC”, the provider of the DOI
- Publication Year
- ResourceType: one of the allowed values of the enumeration *[Audiovisual, Collection, DataPaper, Dataset, Event, Image, InteractiveResource, Model, PhysicalObject, Service, Software, Sound, Text, Workflow, Other]*

envri.eu/envri-fair

@envri_fair

company/envri-fair

facebook.com/ENVRIcomm