Emma Lazzeri, Gina Pavone
Istituto di Scienza e Tecnologie dell'Informazione
Consiglio Nazionale delle Ricerche

Research Data Management e DMP

Train the trainers series
Università di Milano-Bicocca
Modulo 3

Il backup è quella cosa che andava fatta prima

S.Aliprandi, Sicurezza dati e privacy (le norme) 2017

Riflettete: quanti di voi …

- Avrebbero seri problemi se domani Dropbox o Google chiedessero il pagamento di un abbonamento per avere accesso ai propri file.
- Avrebbero problemi se perdessero il PC stasera.
- Avrebbero serie difficoltà sul lavoro se perdessero **quella** pennina USB.

Notizia vera:
https://www.ilmessaggero.it/primopiano/cronaca/zainetto_campi_flegrei_tesi_laurea-503115.html

OpenAIRE

European Commission

Siate consapevoli…

Gestire i dati non è semplice

Non esiste un «one size fits all»

Ci vuole tempo per prendersi cura e per gestire i dati

Molti aspetti da considerare

Esistono molti strumenti e buone pratiche

Ma… i vantaggi sono ENORMI!

Quanto costa NON gestire i dati?

Tempo, costo dello storage, costo delle licenze di riuso, ritrattazione dei risultati scientifici, finanziamento multiplo, crescita economica potenziale e interdisciplinarietà.

Published: 2019-01-16
Corporate author(s): Directorate-General for Research and Innovation (European Commission) , PwC EU Services
Cost of not having FAIR research data

Following this approach, we found that the annual cost of not having FAIR research data costs the European economy at least €10.2bn every year. In addition, we also listed a number of consequences from not having FAIR which could not be reliably estimated, such as an impact on research quality, economic turnover, or machine readability of research data. By drawing a rough parallel with the European open data economy, we concluded that these unquantified elements could account for another €16bn annually on top of what we estimated. These results relied on a combination of desk research, interviews with the subject matter experts and our most conservative assumptions.

Moreover, while building on top of other available studies and being heavily reliant on existing material, we have come to realise ourselves how important is to have FAIR research data. Not only the time invested in this study could have been reduced by a significant amount, but the content could have been enhanced if more material had been accessible and reusable.

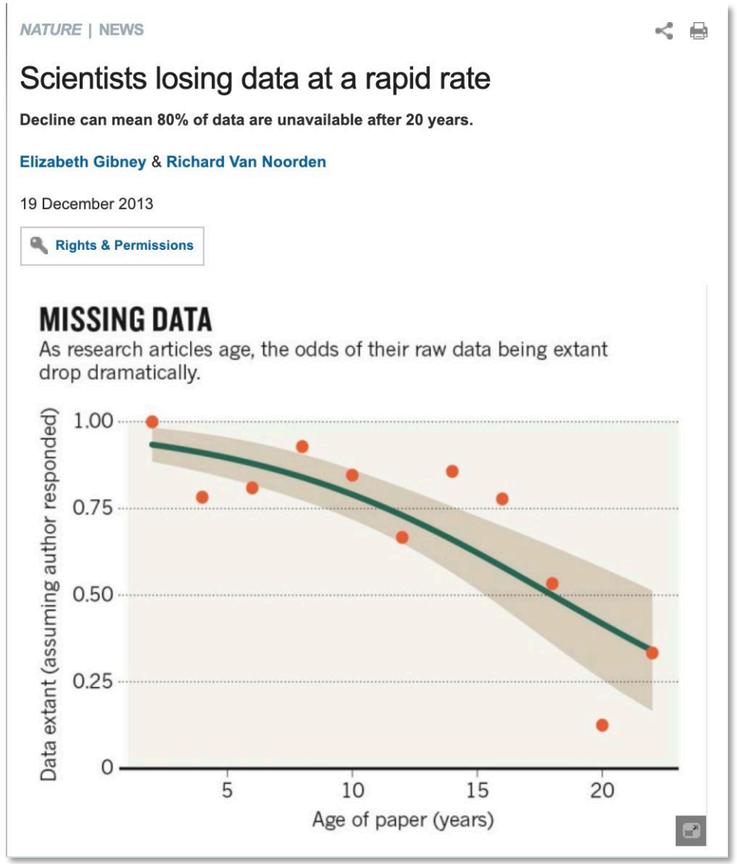
I dati sono così fragili

Per questo dobbiamo **Gestirli nel modo corretto (Research Data Managen**

The authors of the study, which is published today in *Current Biology*[1], looked for the data behind 516 ecology papers published between 1991 and 2011. The researchers selected studies that involved measuring characteristics associated with the size and form of plants and animals, something that has been done in the same way for decades. By contacting the authors of the papers, they found that, whereas data for almost all studies published just two years ago were still accessible, the chance of them being so fell by 17% per year. Availability dropped to as little as 20% for research from the early 1990s.

“Most of the time, researchers said ‘it’s probably in this or that location’, such as their parents' attic, or on a zip drive for which they haven’t seen the hardware in 15 years," says Timothy Vines, the lead author on the study and an evolutionary ecologist at the University of British Columbia in Vancouver. "In theory, the data still exist, but the time and effort required by the researcher to get them to you is prohibitive.”

Another challenge was simply tracking down authors and receiving a response, something at which the team was successful in just 37% of cases. The likelihood of being able to find a working e-mail address, even after an extensive online search, declined by 7% per year. Meanwhile, only around half of the authors with valid addresses responded to the requests, however old the paper.



https://www.nature.com/news/scientists-losing-data-at-a-rapid-rate-1.14416

Che cosa sono i dati?

- **Oggetti digitali di vario tipo**
- Dataset
- Software
- Codice
- Modelli
- Grafici
- Tabelle
- Immagini e video
- Interviste
- Articoli
- ….

Anche le discipline umanistiche o artistiche.

“Quali informazioni espongo?”
“Come sostengo le mie conclusioni?”
“Cosa permette ad altri di replicare e arrivare alle stesse conclusioni?”

=

Dati!

OpenAIRE

European Commission

Perché dovrei gestire i miei dati?

Perché…

- Se gestite i dati nel modo corretto, probabilmente non li perderete
- Organizzare i vostri dati renderà il vostro lavoro più efficiente
- Alcuni dati sono unici e non riproducibili (metereologici, archeologici, osservazioni sul campo…), per questo dovreste averne cura
- Gestendo correttamente i dati, migliorerete la qualità e l'integrità della (vostra) ricerca
- Gestendo correttamente i dati, potrete assicurare il controllo e la validazione della vostra ricerca
- Qualcuno potrebbe utilizzare i vostri dati in futuro…

Hubble Space Telescope

News

Text Size + −

Astronomers Find Elusive Planets in Decade-Old Hubble Data **10.06.11**

In a painstaking re-analysis of Hubble Space Telescope images from 1998, astronomers have found visual evidence for two extrasolar planets that went undetected back then.

Finding these hidden gems in the Hubble archive gives astronomers an invaluable time machine for comparing much earlier planet orbital motion data to more recent observations. It also demonstrates a novel approach for planet hunting in archival Hubble data.

Il bastone e la carota del RDM

Obblighi

- Ottemperanza ai regolamenti (di istituzioni e enti finanziatori)
- Alcune riviste richiedono di allegare i dati sottostanti la pubblicazione
- Essere responsabili (migliorare l'integrità della ricerca e consentire la validazione dei risultati)

Vantaggi

- Tenere al sicuro la vostra ricerca
- Aumentare l'efficienza del vostro lavoro
- Rendere i vostri risultati più visibili (curare i dati facilita la loro condivisione)
- Facorisce la collaborazione (all'interno o al di fuori della propria disciplina)

OpenAIRE

European Commission

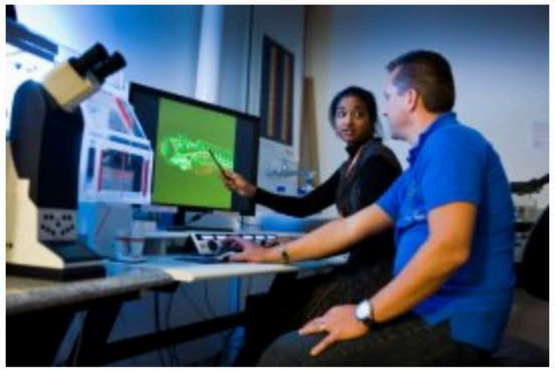
How and why you should manage your research data: a guide for researchers An introduction to engaging with research data management processes. Caroline Ingram, JISC Guides

La pagina del RDM support dell'università di Utrecht

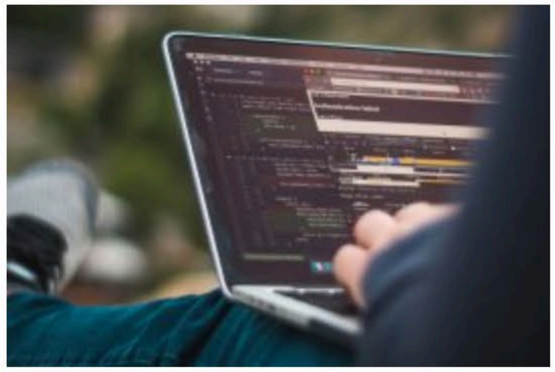
Research Data Management Support

Guides | Tools & Services | Training & Workshops | RDM Stories | FAQ | Contact us | About | Index

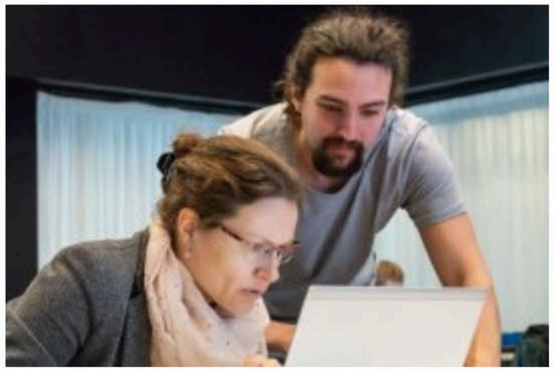
Utrecht University pursues integrity, sustainability and transparency in dealing with research data. Research Data Management Support, a multidisciplinary network of data experts within Utrecht University, offers its researchers and research groups the associated training, tools, infrastructure, guidance and support.



Guides



Tools & Services



Training & workshops

RDM Stories

https://www.uu.nl/en/research/research-data-management

Quindi…
Che cos’è il Research Data Management?

Il Research Data Management è semplicemente la gestione efficace dell'informazione che viene creata nel corso del ciclo della ricerca.

How and why you should manage your research data: a guide for researchers
An introduction to engaging with research data management processes.
Caroline Ingram, JISC Guides

Per ora e per dopo

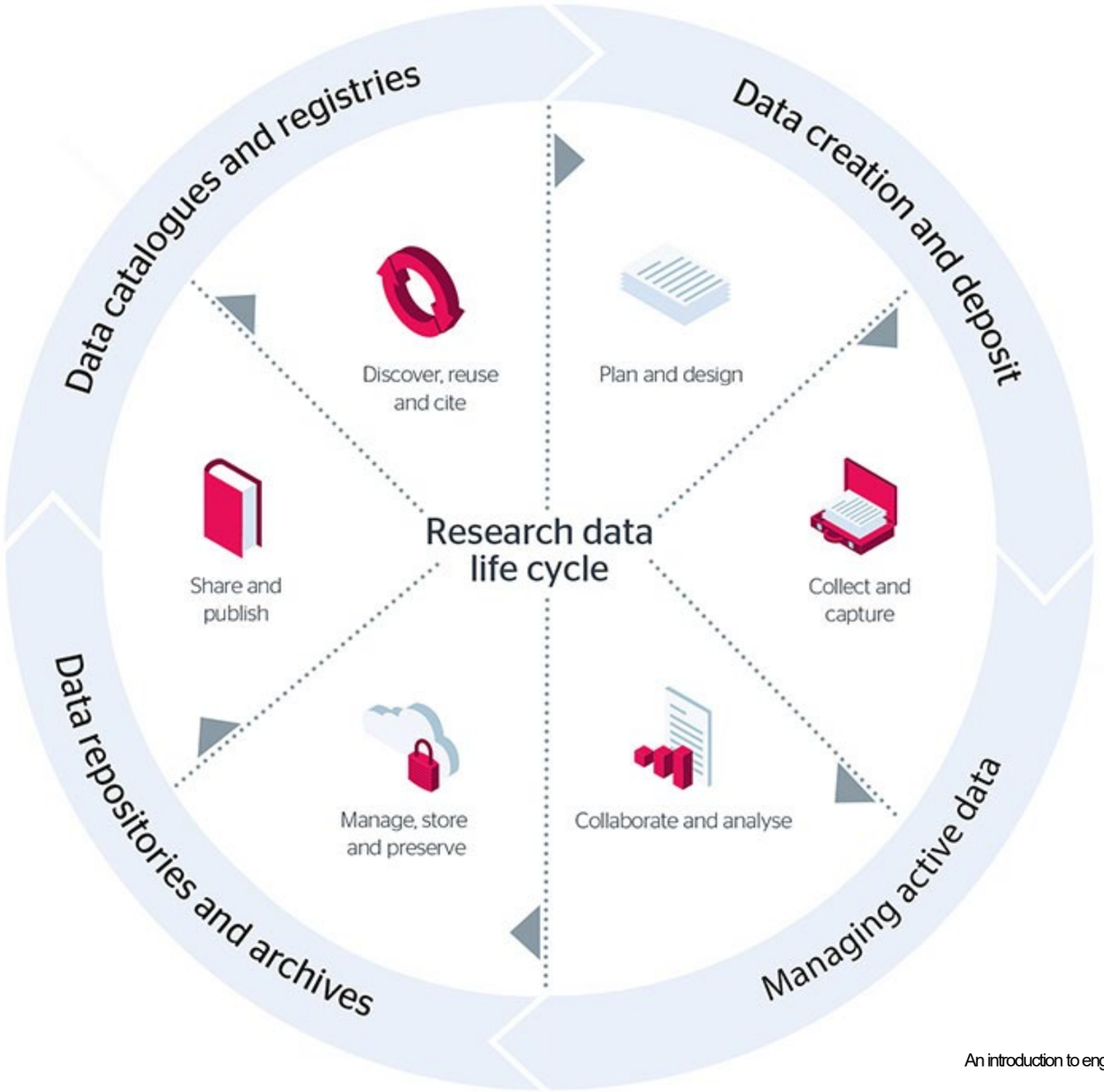
Lavoro quotidiano

Azioni per tenere tutto sotto controllo: organizzazione del materiale, nominare i file in un certo modo, documentare

Lungo termine

Conservazione e condivisione a distanza di anni, e anche dopo la fine del progetto

Il ciclo dei dati della ricerca



How and why you should manage your research data: a guide for researchers
An introduction to engaging with research data management processes. Caroline Ingram, JISC Guides

Non abbiate timore…

- Gestire i dati è una operazione che solitamente fa parte del processo di ricerca, **quindi probabilmente lo state già facendo**. Probabilmente avete solo bisogno di **migliorare le vostre pratiche**.
- La maggior parte delle attività legate al RDM vi sono probabilmente familiari:
  - **Nominare** correttamente i fille per renderli facilmente trovabili;
  - Tenere traccia delle diverse **versioni**, e cancellare quelle che non servono;
  - **Eseguire un backup** dei dati e dei risultati importanti;
  - Controllare chi ha **accesso** ai vostri dati.

Le tecnologie per supportare i ricercatori nella gestione dei dati esistono già

E consentono ai ricercatori di collaborare per fare avanzare in modo rapido la ricerca

Danno Accesso ai Dati
Consentono di Analizzare i Dati
Consentono di Trasferire i Dati

La gestione dei dati deve garantire l'adesione alle politiche e ai regolamenti del contesto di riferimento: Enti finanziatori, Istituzioni di ricerca, …

Data Management Plan

OpenAIRE

European Commission

EOSC-Pillar
Coordination and Harmonisation of National &Thematic Initiatives to support EOSC

EOSCsecretariat.eu
Setup and management of the EOSC Secretariat supporting the EOSC Governance

Data Management Plan

- È un piano per gestire i dati all'interno di un progetto di ricerca (ogni tipo di progetto o attività)
- È un «living document» (deve essere aggiornato quando necessario)
- È un piano, quindi dovreste pensare al DMP dall'inizio (idealmente il DMP nasce con la proposta di progetto perché ad esempio aiuta a definire i costi della gestione dei dati) regole chiare significano meno errori dall'inizio della vostra attività!
- È un modo strutturato di pensare ai vostri dati

Che cosa deve essere incluso in un DMP?

- Identificazione dei dati che verranno inclusi nelle attività del progetto (quelli prodotti e quelli utilizzati ma provenienti da altre fonti)
- Definizione della strategia per organizzare i dati e degli standard che verranno utilizzati per raccoglierli e descriverli
- Gestione giornaliera dei dati (come/chi produce i dati, dove li conserva, …)
- Come si intende condividere i dati e con chi
- Quali ostacoli alla apertura dei dati
- Quali risorse (tempo e denaro) serviranno per la gestione dei dati

Una Checklist per il DMP

1. Dati amministrativi

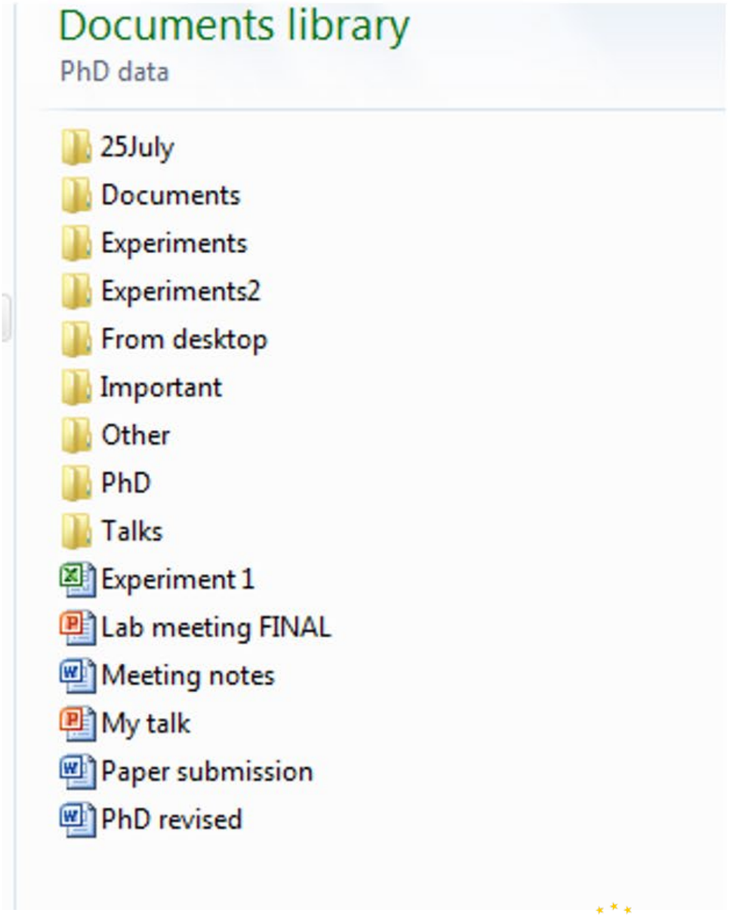
- Informazioni sul progetto: titolo, acronimo, ID, persone e contatti di riferimento
- Un breve abstract del progetto che sottolinei lo scopo della creazione/collezione dei dati
- Dettagli relativi alle procedure e ai regolamenti di riferimento

2. Data Collection

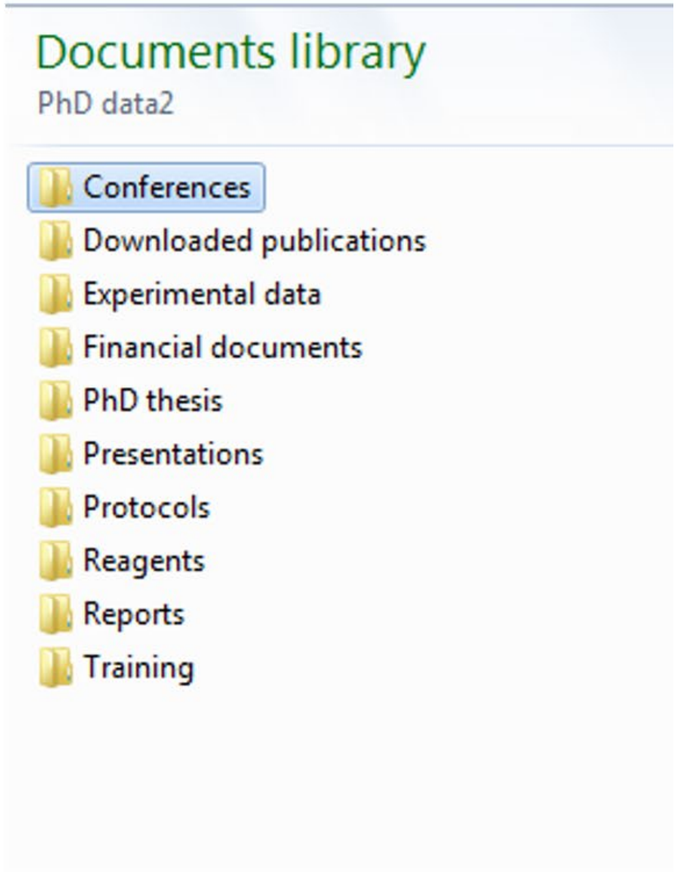
- Utilizzi dati già esistenti o ne stai creando di nuovi?
- Quali sono le standard e le metodologie utilizzate per collezionare i dati?
- Quali formati e software o altri strumenti verranno utilizzati?
- Come strutturerai le tue cartelle e come nominerai i file?

Qual è la tua strategia?

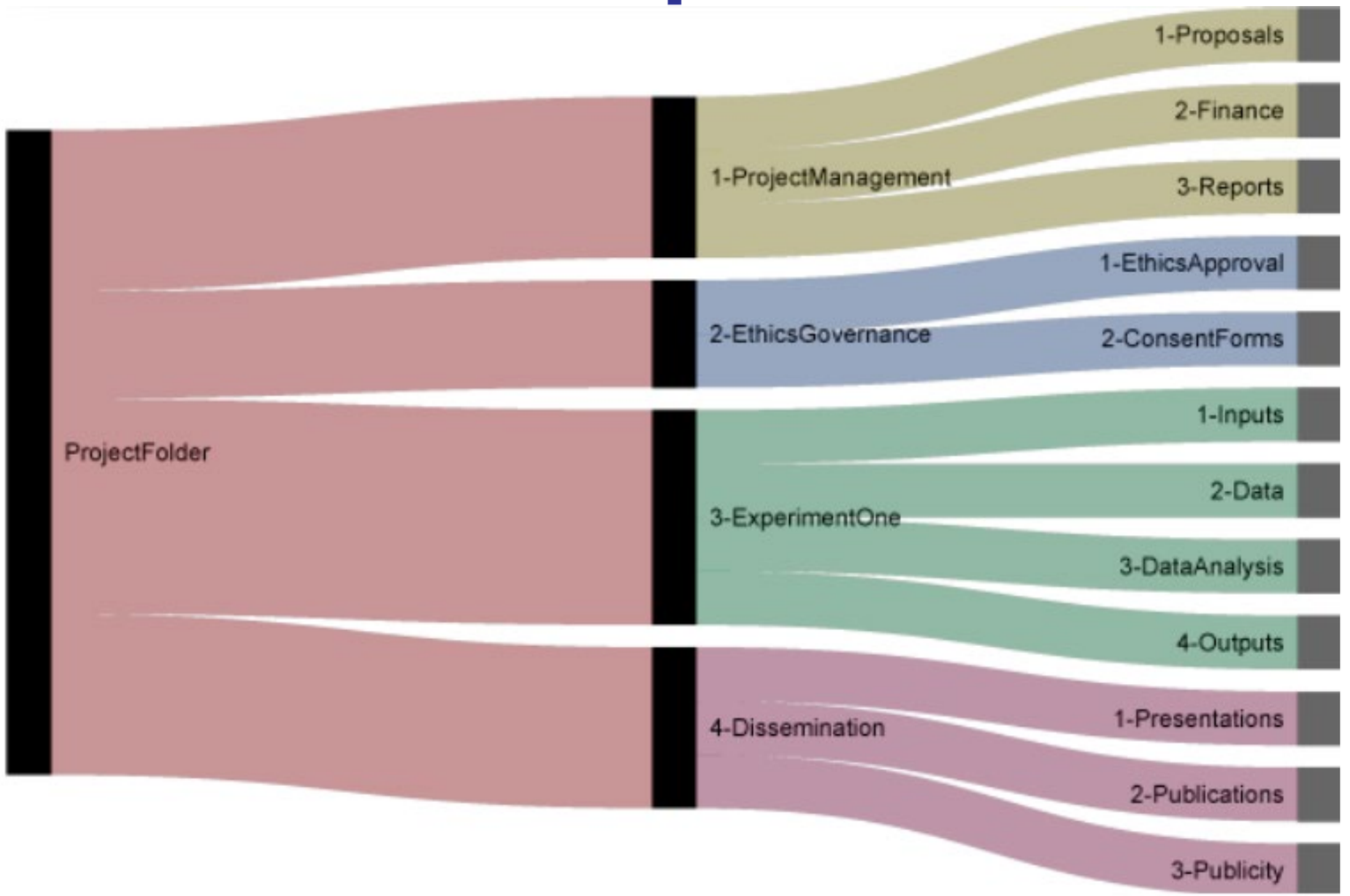
Example·A¶



Example·B¶



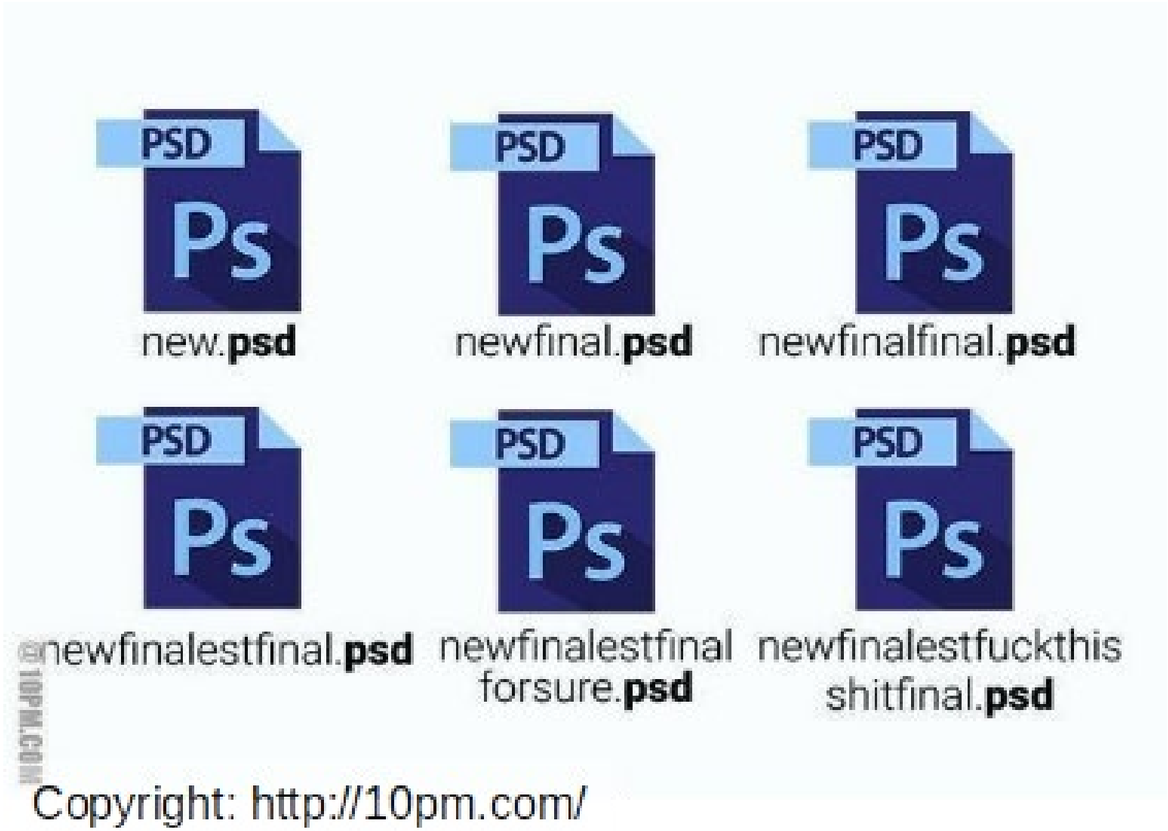
Un buon esempio



Qui trovate un ottimo esempio e anche strumenti per organizzare le vostre cartelle (un esempio scaricabile, uno script per generare in modo automatico le cartelle)

http://nikola.me/folder_structure.html

Nominare i File



Un buon esempio: TILS document naming convention

http://www.data.cam.ac.uk/files/gdl_tilsdocnaming_v1_20090612.pdf

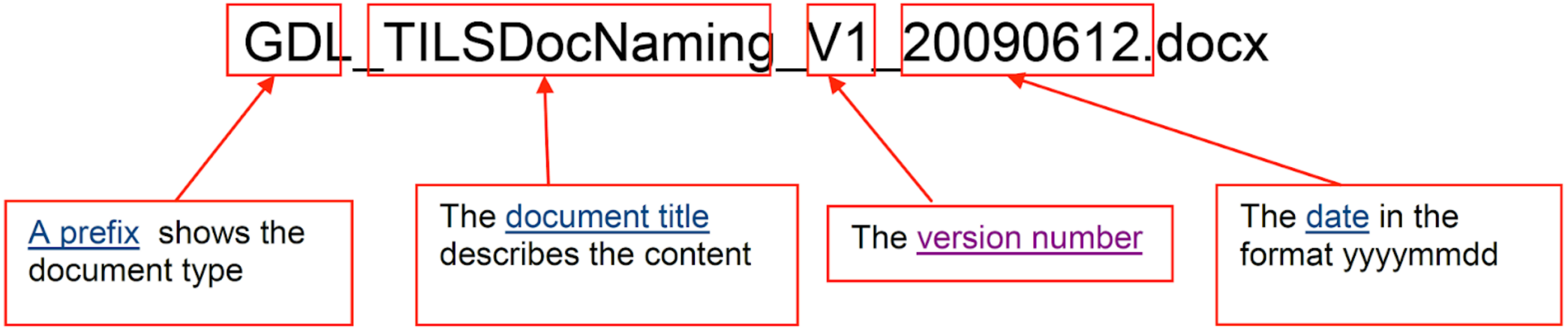
3. Version

(upper case, max 4 chars, optional)

For documents that will continue in various versions use V followed by the version number. Use an underscore to indicate a decimal point if necessary.
Eg. PMF_PRP_ZenMonkeyProject_V2_20090607.docx

New versions should not be created for each iteration of the document, but rather at significant changes or when it has been reviewed or changed by another author.

Document naming for the TILS Division should follow this convention:



Prefix	Meaning
AGD	Agenda
AGR	Agreement
GDL	Guideline
MEM	Memorandum
MIN	Minutes and Notes
PRE	Presentation
PRO	Procedure
PRP	Proposal
REP	Report
TEM	Template

2. Document title/ Description

(mixed case, max 30 chars, no spaces)

- Describes the purpose or "business" of the document. Acronyms, capitalisations, abbreviations can be used, keep in mind that descriptions should be **meaningful** to anyone reading the file name.
- In the case of project documentation use the **project name** or its usual abbreviation
- If possible Departmental Branch and/or Section should be integrated into this field to indicate origin / ownership of document.
- Use only alpha-numeric characters, plus the hyphen and underscore.
- **Do not use spaces.**

3. Metadata e Documentazione di Supporto

- Quali metadati e quale documentazione di supporto descriveranno i vostri dati?
- Come creerete la documentazione e i metadati?
- Quali standard utilizzerete per i metadati?

Molti modi per descrivere i dati…

Come creare dei file README **utili**: https://data.research.cornell.edu/content/readme

Cornell

AUTHOR_DATASET_ReadmeTemplate.txt

```
This DATSETNAMEreadme.txt file was generated on [YYYYMMDD] by [Name]


-------------------
GENERAL INFORMATION
-------------------


1. Title of Dataset


2. Author Information


  Principal Investigator Contact Information
        Name:
           Institution:
           Address:
           Email:
```

Un file readme dovrebbe dire:

- Cosa si sta facendo, per chi e perché
- Aspetti di interesse del progetto
- Da dove cominciare
- Dove trovare le risorse chiave

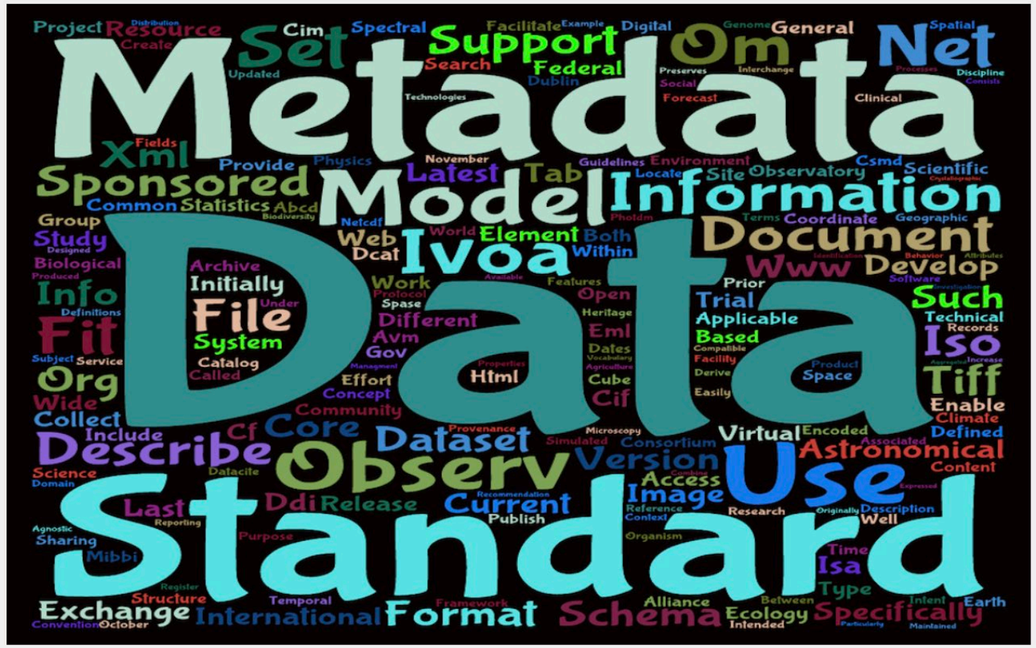
https://the-turing-way.netlify.app/collaborating_github/1/readme_communication.html

README files template:
https://cornell.app.box.com/v/ReadmeTemplate

Standard specifici per le varie discipline

FAIRsharing.org
standards, databases, policies

https://fairsharing.org/standards/



Metadata Standards Directory Working Group

The RDA Metadata Standards Directory Working Group is supported by individuals and organizations involved in the development, implementation, and use of metadata for scientific data. The overriding goal is to develop a collaborative, open directory of metadata standards applicable to scientific data can help address infrastructure challenges.

http://rd-alliance.github.io/metadata-directory/

OpenAIRE

European Commission

4. Aspetti etici e legali

- Hai distribuito un consenso informato per condividere e conservare i dati?
- Come proteggerai i dati personali?
- Quali licenze d'uso utilizzerai?

5. Conservazione dei dati e backup

- Hai abbastanza spazio per conservare i tuoi dati localmente o farai uso servizi di cloud? Prevedi di aumentare la tua capacità di storage? Utilizzerai servizi di terze parti? Sono affidabili?
- Come condividerai i dati con i tuoi collaboratori?
- Come pianificherai il backup dei dati? Con quale frequenza? Utilizzerai strategie condivise fra vari partner del progetto?

Non lasciate tutto a Google

Google services Terms of Use:

When you upload, submit, store, send or receive content to or through our Services, you give Google (and those we work with) a worldwide license to use, host, store, reproduce, modify, create derivative works (such as those resulting from translations, adaptations or other changes we make so that your content works better with our Services), communicate, publish, publicly perform, publicly display and distribute such content. The rights you grant in this license are for the limited purpose of operating, promoting, and improving our Services, and to develop new ones. This license continues even if you stop using our Services (for example, for a business listing you have added to

https://policies.google.com/terms?hl=en

Esistono alternative migliori

https://www.switch.ch/services/drive/

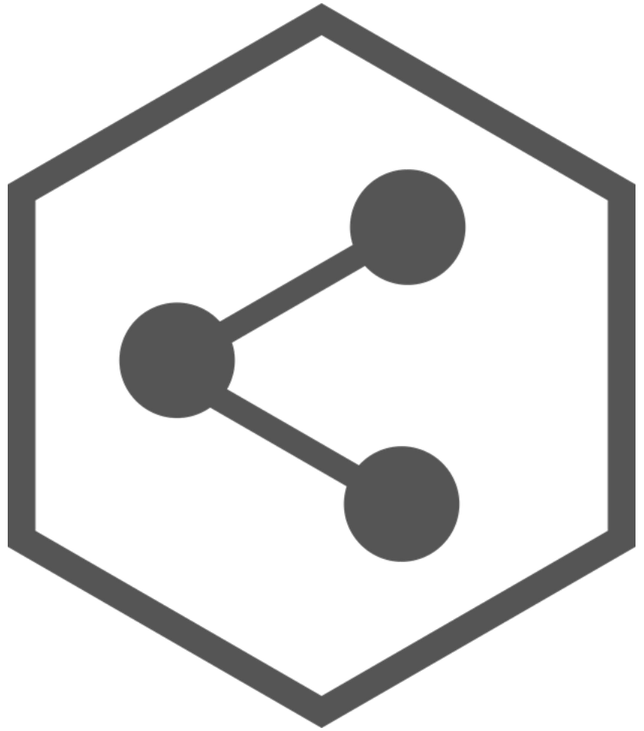
https://www.surf.nl/en

6. Selezione e conservazione

- Quali dati devono essere conservati e quali, invece, devono essere distrutti per motivi contrattuali, legali o amministrativi?
- Quali usi prevedi possano essere fatti per motivi di ricerca?
- Quali dati devono essere conservati e possibilmente (o potenzialmente) condivisi?
- Qual è la tua strategia di conservazione a lungo termine?
- Hai considerato nel budget del tuo progetto il tempo e i costi necessari a preparare i tuoi dati a scopo di conservazione e condivisione?

7. Condivisione dei dati

- Con chi condividerai i tuoi dati? Sotto quali condizioni
- Quando renderai i tuoi dati accessibili?
- Applicherai restrizioni per l'accesso?
- Quali azioni prevedi per ridurre o evitare la restrizione all'accesso? (ad esempio anonimizzazione dei dati personali)
- Come faranno altri ricercatori/utenti a trovare i tuoi dati?



Diversi repository di dati

General purpose

DRYAD

figshare

zenodo

Discipline specific

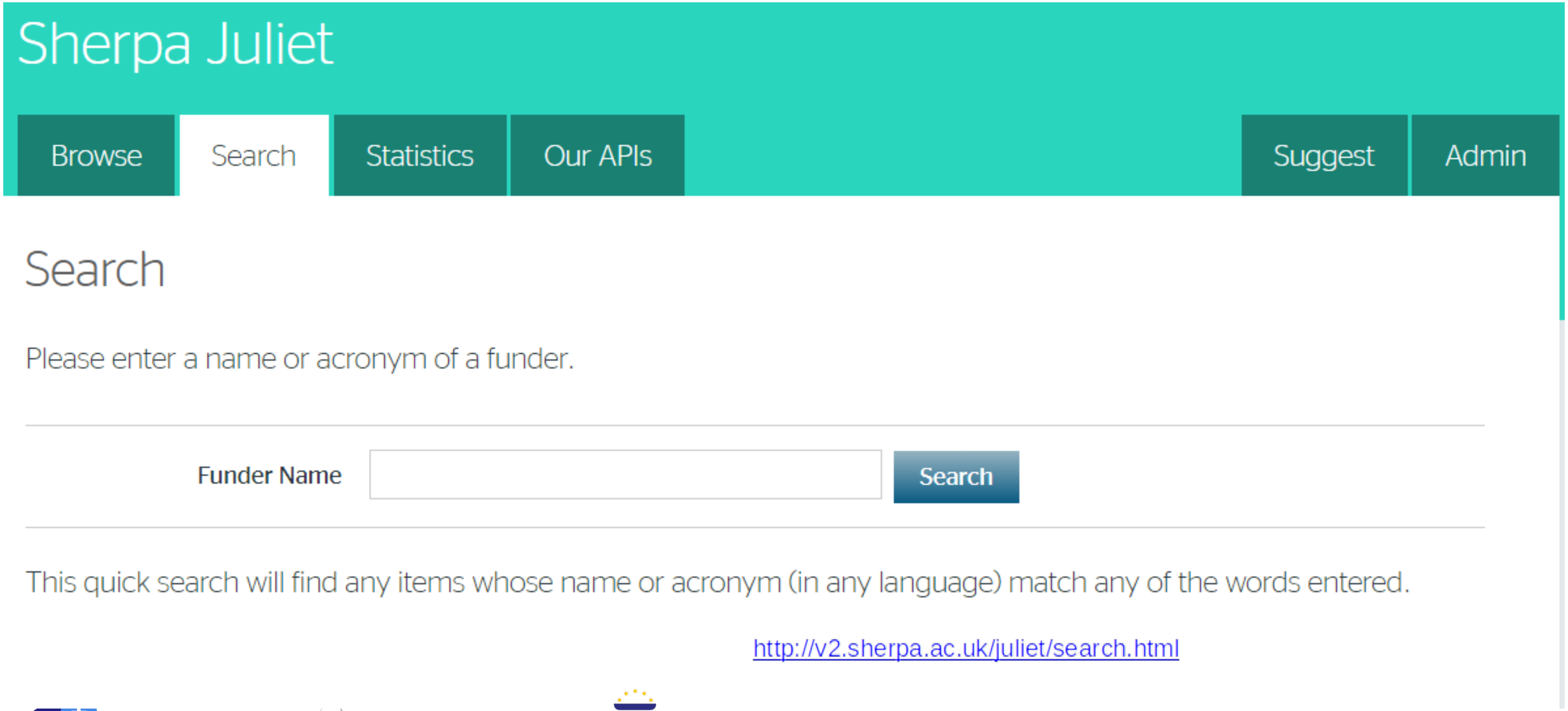
European Genome-phenome Archive

UniProt

ENA
European Nucleotide Archive

IDR
Image Data Resource

Obblighi degli enti finanziatori su Open Access



OpenAIRE

European Commission

EOSC-Pillar
Coordination and Harmonisation of National &Thematic Initiatives to support EOSC

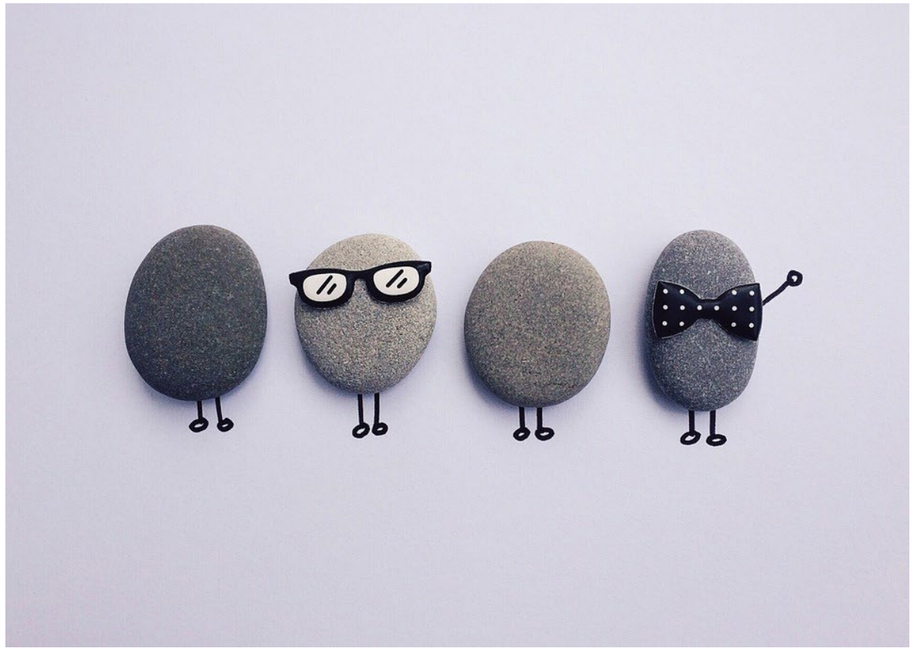
EOSCsecretariat.eu
Setup and management of the EOSC Secretariat supporting the EOSC Governance

Software: renderlo citabile

https://guides.github.com/activities/citable-code/

8. Responsabilità e risorse

- Chi è responsabile dell'implementazione, monitoraggio e revisione del DMP?
- Queste responsabilità verranno condivise tra i partner di un progetto collaborativo?
- Di quali risorse avrai bisogno per implementare il tuo DMP?
- Avrai bisogno di competenze o strumenti specifici forniti da terzi?



Commissione Europea e DMP

Un DMP descrive il ciclo di vita della gestione dei dati per i dati che devono essere raccolti, elaborati e/o generati da un progetto Horizon 2020. Per rendere i dati di ricerca reperibili, accessibili, interoperabili e riutilizzabili (FAIR), un DMP dovrebbe includere informazioni su:

- la gestione dei dati di ricerca durante e dopo la fine del progetto
- quali dati saranno raccolti, elaborati e/o generati
- quale metodologia e standard saranno applicati
- se i dati saranno condivisi/resi accessibili e
- come i dati saranno curati e conservati (anche dopo la fine del progetto).

È richiesto un DMP per tutti i progetti che partecipano al pilotaggio ORD esteso, a meno che non si esca dall'ORD pilot. Tuttavia, i progetti che rinunciano sono ancora incoraggiati a presentare un DMP su base volontaria.

Ci sono tantissimi strumenti per il DMP

Vediamone alcuni…

Core Requirements

OpenAIRE

European Commission

CORE REQUIREMENTS
FOR DATA MANAGEMENT PLANS

When developing solid data management plans, researchers are required to deal with the following topics and answer the following questions:

1. Data description and collection or re-use of existing data

a. How will new data be collected or produced and/or how will existing data be re-used?

b. What data (for example the kinds, formats, and volumes) will be collected or produced?

2. Documentation and data quality

a. What metadata and documentation (for example the methodology of data collection and way of organising data) will accompany data?

b. What data quality control measures will be used?

3. Storage and backup during the research process

a. How will data and metadata be stored and backed up during the research process?

b. How will data security and protection of sensitive data be taken care of during the research?

4. Legal and ethical requirements, codes of conduct

a. If personal data are processed, how will compliance with legislation on personal data and on data security be ensured?

b. How will other legal issues, such as intellectual property rights and ownership, be managed? What legislation is applicable?

c. How will possible ethical issues be taken into account, and codes of conduct followed?

5. Data sharing and long-term preservation

a. How and when will data be shared? Are there possible restrictions to data sharing or embargo reasons?

b. How will data for preservation be selected, and where will data be preserved long-term (for example a data repository or archive)?

c. What methods or software tools will be needed to access and use the data?

d. How will the application of a unique and persistent identifier (such as a Digital Object Identifier (DOI)) to each data set be ensured?

6. Data management responsibilities and resources

a. Who (for example role, position, and institution) will be responsible for data management (i.e. the data steward)?

b. What resources (for example financial and time) will be dedicated to data management and ensuring that data will be FAIR (Findable, Accessible, Interoperable, Re-usable)?

https://www.scienceeurope.org/wp-content/uploads/2018/12/SE_RDM_Practical_Guide_Final.pdf

CESSDA DMP Expert guide

PLAN

Overview

Title of the project

Date of this plan

Description of the project
- What is the nature of the project?
- What is the research question?
- What is the project time line?

Origin of Data
- What kind of data will be used during the project?
- If you are reusing existing data: What is the scope, volume and format? How are different data sources integrated?
- If you are collecting new data can you clarify why this is necessary?

Principal researchers
- Who are the main researchers involved?
- What are their contact details?

Collaborating researchers (if applicable)
- What are their contact details and their roles in the project?

Funder (if applicable)
- If funding is granted, what is the reference number of the funding granted?

Data producer
- Which organisation has the administrative responsibility for the data?

Project data contact
- Who can be contacted about the project after it has finished?

Data owner(s)
- Which organisation(s) own(s) the data?
- If several organisations are involved, which organisation owns what data?

Roles
- Who is responsible for updating the DMP and making sure that it's followed?
- Do project participants have any specific roles?
- What is the project time line?

Costs
- Are there costs you need to consider to buy specific software or hardware?
- Are there costs you need to consider for storage and backup?
- Are potential expenses for (preparing the data for) archiving covered?

ORGANISE & DOCUMENT

Organising and documenting your data

Data collection
- How will the data be collected?
- Is specific software or hardware or staff required?
- Who will be responsible for the data collection?
- During which period will the data be collected?
- Where will the data be collected?

Data organisation
- How will you organise your data?
- Will the data be organised in simple files or more complex databases?
- How will the data quality during the project be ensured?
- If data consists of many different file types (e.g. videos, text, photos), is it possible to structure the data in a logical way?

Data type and size
- What type(s) of data will be collected?
- What is the scope, quantity and format of the material?
- After the project: What is the total amount of data collected (in MB/GB)?

File format
- In what format will your data be?
- Does the format change from the original to the processed/final data?
- Will your (final) data be available in an open format?

Folder structure and names
- How will you structure and name your folders?

File structure and names
- How will you structure and name your files?

Documentation
- What documentation will be created during the different phases of the project?
- How will the documentation be structured?

Metadata
- What metadata will be provided with the collected/ generated/ reused data?
- How will metadata for each object be created?
- Is there any program that can be used to document the data?
- Can metadata be added directly into the files or will the metadata be produced in another program or document?

Metadata standard (if applicable)
- What metadata standard(s) will you use?

https://www.cessda.eu/content/download/4302/48656/file/TTT_DO_DMPExpertGuide_v1.2.pdf

Adapt your Data Management Plan

A list of Data Management Questions based on the Expert Tour Guide on Data Management

DCC guides

DCC because good research needs good data

Home | Digital curation | About us | News | Events | Resources | Training | Projects

Home > Resources > How Guides > How Develop Rdm Services

In this section

How to Develop RDM Services - a guide for HEIs

Establishing criteria for selection decisions

You should establish criteria to guide selection decisions. The DCC's How to Select and Appraise Research Data for Curation[56] proposes seven criteria as outlined below:

1. **Relevance to mission**: the resource content fits any priorities stated in the institution's mission, or funding body policy including any legal requirement to retain the data beyond its immediate use.
2. **Scientific or historical value**: is the data scientifically, socially, or culturally significant? Assessing this involves inferring anticipated future use, from evidence of current research and educational value.
3. **Uniqueness**: the extent to which the resource is the only or most complete source of the information that can be derived from it, and whether it is at risk of loss if not accepted, or may be preserved elsewhere.
4. **Potential for redistribution**: the reliability, integrity, and usability of the data files may be determined; these are received in formats that meet designated technical criteria; and Intellectual Property or human subjects issues are addressed.
5. **Non-replicability**: it would not be feasible to replicate the data/resource or doing so would not be financially viable.
6. **Economic case**: costs may be estimated for managing and preserving the resource, and are justifiable when assessed against evidence of potential future benefits; funding has been secured where appropriate.
7. **Full documentation**: the information necessary to facilitate future discovery, access, and reuse is comprehensive and correct; including metadata on the resource's provenance and the context of its creation

OpenAIRE

European Commission

How to develop

Citing data

Citing data is important in order to:

- Give the data producer appropriate credit
- Allow easier access to the data for repurposing or reuse
- Enable readers to verify your results

Citation Elements

A dataset should be cited formally in an article's reference list, not just informally in the text. Many data repositories and publishers provide explicit instructions for citing their contents. If no citation information is provided, you can still construct a citation following generally agreed-upon guidelines from sources such as the Force 11 Joint Declaration of Data Citation Principles and the current DataCite Metadata Schema.

Core elements

- There are 5 core elements usually included in a dataset citation, with additional elements added as appropriate.
  - **Creator(s)** – may be individuals or organizations
  - **Title**
  - **Publication year** when the dataset was released (may be different from the Access date)
  - **Publisher** – the data center, archive, or repository
  - **Identifier** – a unique public identifier (e.g., an ARK or DOI)
- Creator names in non-Roman scripts should be transliterated using the ALA-LC Romanization Tables.

Common additional elements

- Although the core elements are sufficient in the simplest case – citation to the entirety of a static dataset – additional elements may be needed if you wish to cite a dynamic dataset or a subset of a larger dataset.
  - **Version** of the dataset analyzed in the citing paper
  - **Access date** when the data was accessed for analysis in the citing paper
  - **Subset** of the dataset analyzed (e.g., a range of dates or record numbers, a list of variables)
  - **Verifier** that the dataset or subset accessed by a reader is identical to the one analyzed by the author (e.g., a Checksum)
  - **Location** of the dataset on the internet, needed if the identifier is not "actionable" (convertable to a web address)

Example citations

- Kumar, Sujai (2012): 20 Nematode Proteomes. figshare. https://doi.org/10.6084/m9.figshare.96035.v2 (Accessed 2016-09-06).
- Morran LT, Parrish II RC, Gelarden IA, Lively CM (2012) Data from: Temporal dynamics of outcrossing and host mortality rates in host-pathogen experimental coevolution. Dryad Digital Repository. https://doi.org/10.5061/dryad.c3gh6
- Donna Strahan. "08-B-1 from Jordan/Petra Great Temple/Upper Temenos/Trench 94/Locus 41". (2009) In Petra Great Temple Excavations. Martha Sharp Joukowsky (Ed.) Releases: 2009-10-26. Open Context. https://opencontext.org/subjects/30C3F340-5D14-497A-B9D0-7A0DA2C019F1 ARK (Archive): http://n2t.net/ark:/28722/k2125xk7p
- OECD (2008), Social Expenditures aggregates, OECD Social Expenditure Statistics (database). https://doi.org/10.1787/000530172303 (Accessed on 2008-12-02).
- Denhard, Michael (2009): dphase_mpeps: MicroPEPS LAF-Ensemble run by DWD for the MAP D-PHASE project. World Data Center for Climate. https://doi.org/10.1594/WDCC/dphase_mpeps
- Manoug, J L (1882): Useful data on the rise of the Nile. Alexandria : Printing-Office V Penasson. http://n2t.net/ark:/13960/t44q88124

https://dmptool.org/general_guidance#metadata-data-documentation

OpenAIRE: una guida per il DMP

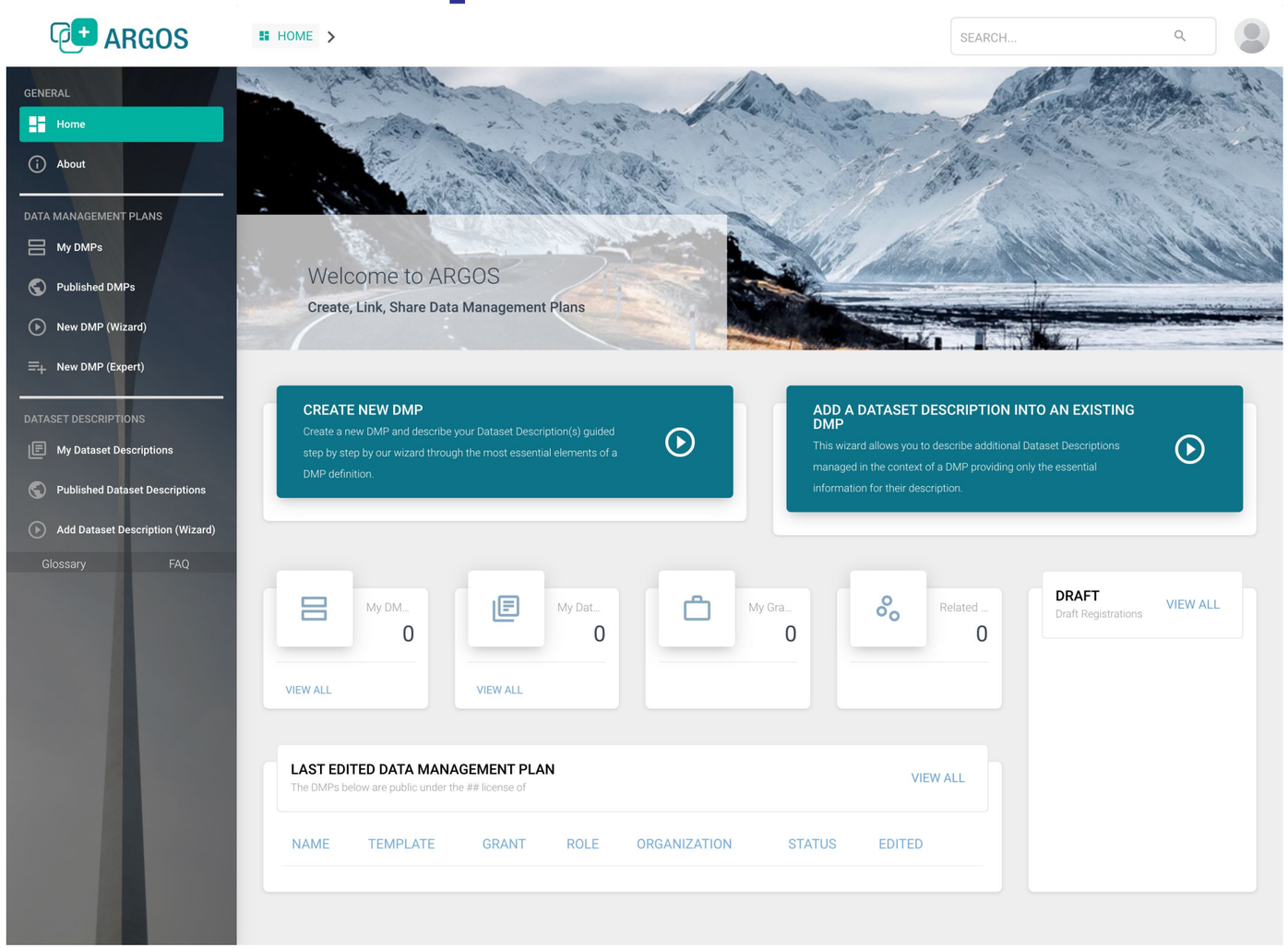
- **OpenAIRE guides**
  - How to create a Data Management Plan
  - How to comply with H2020 mandate - for research data
  - How to make your data FAIR
- **OpenAIRE services guides**
  - Zenodo - A universal repository for all your research outcomes
  - Amnesia - Anonymize your data before publishing
- **OpenAIRE Fact sheet**
  - Factsheet - H2020 Open Data Pilot
- **OpenAIRE FAQs**
  - When do I have to create a Data Management Plan?
  - What is a Data Management Plan (DMP) and how do I create one?
- **Webinars**
  - Data Management Plans
  - Basics of Research Data Management
  - Webinar in italiano 2018 e 2019

https://www.openaire.eu/argos/

OpenAIRE

European Commission

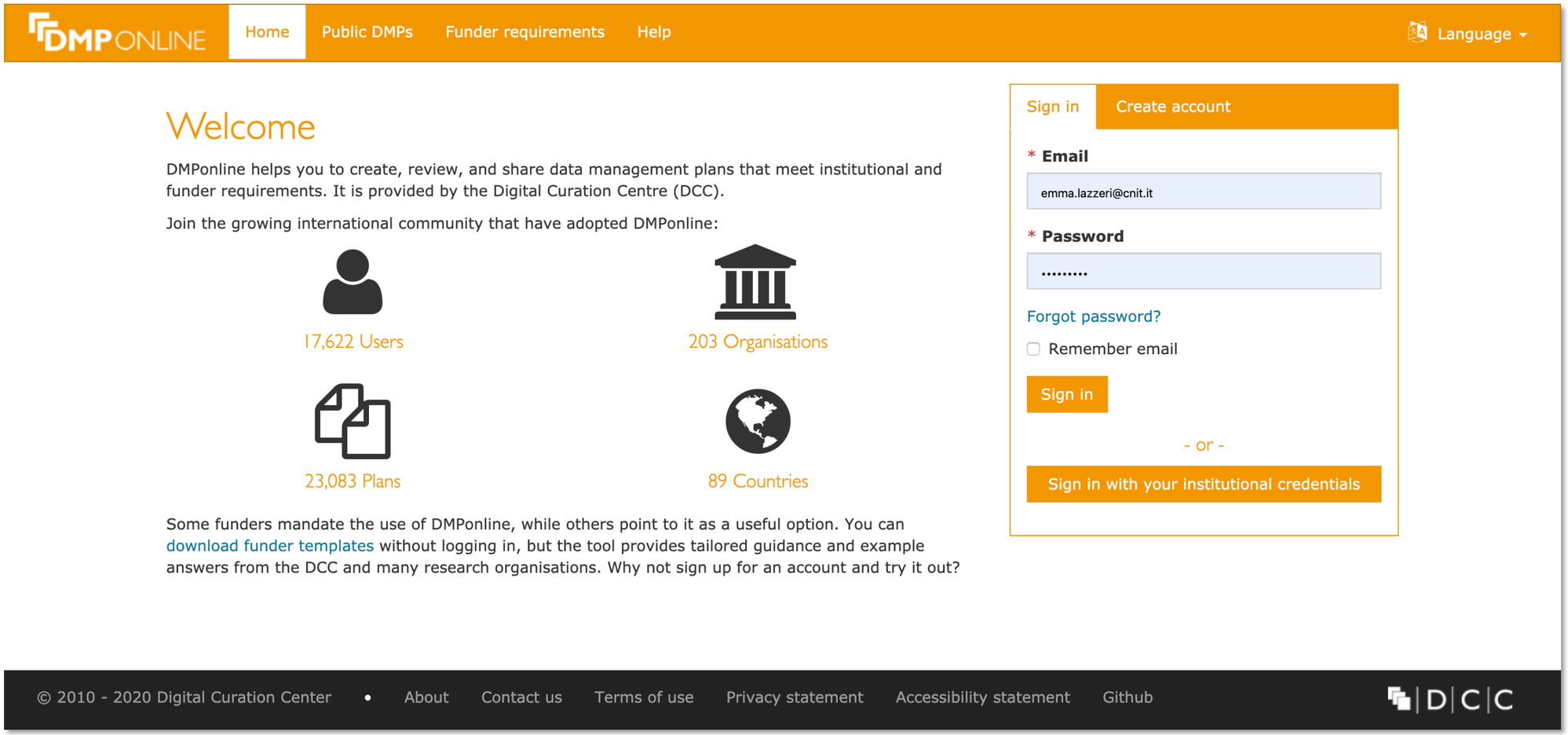
Strumenti per creare un DMP: ARGOS



Machine Actionable DMPs

https://argos.openaire.eu/home

Strumenti per creare un DMP: DMPOnline



https://dmponline.dcc.ac.uk/

OpenAIRE

European Commission

EOSC-Pillar
Coordination and Harmonisation of National &Thematic Initiatives to support EOSC

EOSCsecretariat.eu
Setup and management of the EOSC Secretariat supporting the EOSC Governance

Risorse utili

OpenAIRE Portal
Content provider Dashboard
https://provide.openaire.eu/home
OpenAIRE Connect: Build a Gateway for your community
https://connect.openaire.eu/
OpenAIRE Support
https://www.openaire.eu/support

FAIR Data
How FAIR are your data? Checklist
https://zenodo.org/record/1065991#.Xrvx1RMzZPU

Risorse utili

DMP Tools

DMPOnline (DCC)

https://dmponline.dcc.ac.uk/

ARGOS (OpenAIRE)

https://argos.openaire.eu/home

Esempi di DMP

Guida agli esempi di DMPs del DCC

http://www.dcc.ac.uk/resources/data-management-plans/guidance-examples

Catalogo DMP di LIBER (European Research Library Association):

https://libereurope.eu/dmpcatalogue/

DMPs in Zenodo:

https://zenodo.org/search?page=1&size=20&q=Data%20Management%20Plan

Thank you!

Emma Lazzeri
Gina Pavone
emma.lazzeri@isti.cnr.it
gina.pavone@isti.cnr.it

This work was partially supported by European Union's Horizon 2020
under projects grant Agreement numbers 831644, 857650, and 777541