

OPEN SCIENCE – OPEN ACCESS

4 - DATI FAIR E EOSC

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Impareremo in questo modulo

1. Cosa succede in Europa

2. Cosa significa FAIR nella ricerca quotidiana

3. come scrivere un DMP

MESSAGGI CHIAVE

- FAIR è il futuro

(se no si resta tagliati fuori)

- È più facile di quanto sembri, basta provarci

- I dati FAIR sono una ENORME opportunità di lavoro

«make science fit for the 21th century»

Transition to open science is a multidimensional and multistage process. There is value and risk of being a first mover, but there is higher risk of being a follower. The European Commission has taken

RISCHI A ESSERE I PRIMI, RISCHI
MAGGIORI A ESSERE GLI ULTIMI

RE ARTICLE [Provisionally accepted](#) [The full-text will be published soon.](#) [Notify me](#)

Front. Big Data | doi: 10.3389/fdata.2019.00043

Open science, open data and open scholarship: European policies to make science fit for the 21st century

Jean-Claude Burgelman^{1*}, Corina Pascu^{1*}, Katarzyna Szkuta¹, Rene Von Schomberg¹, Athanasios Karalopoulos¹, Konstantinos Repanas¹ and Michel Schouppe¹

Open science will make science more efficient, reliable, and responsive to societal challenges. The European Commission

Open science (or in fact, open scholarship) has shifted the prime focus of researchers away from publishing toward knowledge sharing.

and access will be maximized. In Horizon Europe, research data will be open by default while taking into account the need to balance openness and protection of scientific information, commercialization and Intellectual Property Rights, privacy concerns and security, following the principle “as open as possible, as closed as necessary.” Data management plans (DMP) will become mandatory, even if not making research data open. The requirement for responsible data management will be separated from the requirement for providing open access to research data. Emphasis will be placed on supporting as much as possible the proliferation of data that are findable, accessible, interoperable, and re-usable (FAIR). Finally, the use of trusted or certified repositories and infrastructures like the European Open Science Cloud (EOSC) will be required for research data in some Horizon Europe work programs.

SINTESI DELEI POLITICHE DI APERTURA DEGLI ULTIMI 15 ANNI

Changing the reward and incentive system for researchers is a key open science challenge and a broader issue for which primarily the responsibility lies in the scientific community (universities and funders). This includes making open science practices rewardable and fundable as well as the employment of specific indicators for researchers' engagement with open science. A change of the reward and incentive system can only be stakeholders-driven, and it has to be bottom-up. This change also includes changing mind-sets of researchers to open up and share data and “seduction” to make open science easy, useful, and affordable³.

The European Open Science agenda contain the ambition to make FAIR data sharing the default for scientific research by 2020. To

... as Open as possible



Carlos Moedas
@Moedas

Segui

2/4 "Open as possible, as closed as necessary" is the new principle for all #data from publicly

Access



Iryna Kuchma @irynakuchma · 18 nov 2015

#Openscience is about making sure that science serves innovation & growth –
Günther Oettinger & Carlos Moedas

HORIZON 2020

TESTI E DATI OPEN
BY DEFAULT
(GUIDA)

HORIZON2020: AS OPEN AS POSSIBLE
HORIZON EUROPE: ANCORA MAGGIORE
APERTURA + UNITED NATIONS
SUSTAINABLE DEVELOPMENT GOALS



Horizon Europe

THE NEXT EU RESEARCH & INNOVATION
INVESTMENT PROGRAMME (2021 – 2027)

2019



Open Science across the programme

Open Science

Better dissemination and exploitation of
R&I results and support to active
engagement of society

Mandatory Open Access to publications: beneficiaries shall ensure that they or the authors retain sufficient intellectual property rights to comply with open access requirements

Open Access to research data ensured: in line with the principle "as open as possible, as closed as necessary"; Mandatory Data Management Plan for FAIR (Findable, Accessible, Interoperable, Re-usable) and Open Research Data

- Support to researcher skills and reward systems for open science
- Use of European Open Science Cloud



May 2019 | Version 25

Our vision

A sustainable, fair and **prosperous**
future for **people** and **planet** based on
European values.

- Tackling **climate change**
(35 % budgetary target)
- Helping to achieve **Sustainable Development Goals**
- Boosting the Union's
competitiveness and growth



May 2019 | Version 25

...Open Access by default in 2020...

12. AGREES to further promote the mainstreaming of open access to scientific publications by continuing to support a transition to immediate open access as the default by 2020, using the various models possible and in a cost-effective way, without embargoes or with as short as possible embargoes, and without financial and legal barriers, taking into account the diversity

in research systems and disciplines, and that open access to scientific publications should be

Brussels, 27 May 2016
(OR. en)

9526/16

RECH 208
TELECOM 100

the principle that no researcher should be prevented from
mission, Member States and relevant stakeholders, including
to catalyse this transition; and STRESSES the importance of
reements.

OUTCOME OF PROCEEDINGS

From:	General Secretariat of the Council
To:	Delegations
No. prev. doc.:	8791/16 RECH 133 TELECOM 74
Subject:	The transition towards an Open Science system - Council conclusions (adopted on 27/05/2016)



European Council
Council of the European Union

[The European Council](#) [The Council of the EU](#) [Topics](#) [Policies](#) [Meetings](#) [Documents & Publications](#)

[Home](#) > [Meetings](#) > [Competitiveness Council, 26-27/05/2016](#)

ncil of the EU

Competitiveness Council, 26-27/05/2016

- [Indicative programme - Competitiveness Council of 26-27/05/2016](#)
- [Background brief](#)

Research and Innovation

Following a debate on **open science**, the Council adopted conclusions on the transition towards an open science system.

“

“Open Science is a topic which is very dear to our hearts. During the Netherlands presidency, we have aimed at bringing Europe to the forefront of global change and at leading the transition to a new way of doing research and science based on openness, big data and cloud computing.”

Sander Dekker, State Secretary of Education, Culture and Science of the Netherlands

It also adopted conclusions on the lessons learnt from the **7th research framework programme and the future outlook** and on the creation of a friendly regulatory **environment for research and innovation**.

Chairing the Council, Sander Dekker, State Secretary of Education, Culture and Science of the Netherlands, made the following statement:

“Open Science is a topic which is very dear to our hearts. During the Netherlands presidency, we have aimed at bringing Europe to the forefront of global change and at leading the transition to a new way of doing research and science based on openness, big data and cloud computing. Open Science breaks down the barriers around universities and ensures that society benefits as much as possible from all scientific insights. In that way we maximize the input of researchers, universities and knowledge institutions”.

Today, building on work done during recent months, particularly at the April conference when we approved the “Amsterdam Call for Action on Open Science”, I can say that we have made a major step forward”.



Highlights of the Competitiveness Council, taking place on 27 May in Brussels.

...sulla

science

- Rewards and Incentives
- Research Indicators and Next-Generation Metrics
- Future of Scholarly Communication
- European Open Science Cloud

FAIR Data

Research Integrity

Skills and Education

Citizen Science

Integrated advice of the Open Science Policy Platform on 8 prioritised Open Science ambitions

2018

2019



Future of Scholarly Publishing and Scholarly Communication

Report of the Expert Group to the European Commission



Apr. 25, 2018



Mutual Learning Exercise Open Science: Altmetrics and Rewards

Horizon 2020 Policy Support Facility

Removing barriers to open science

1. Change assessment, evaluation and reward systems in science
2. Facilitate text and data mining of content
3. Improve insight into IPR and issues such as privacy 12
4. Create transparency on the costs and conditions of academic communication 4

Developing research infrastructures

5. Introduce FAIR and secure data principles 16
6. Set up common e-infrastructures 18

Fostering and creating incentives for open science

7. Adopt open access principles 22
8. Stimulate new publishing models for knowledge transfer 23
9. Stimulate evidence-based research on innovations in open science 26

Mainstreaming and further promoting open science policies

10. Develop, implement, monitor and refine open access plans 30

Stimulating and embedding open science in science and society

11. Involve researchers and new users in open science 32
12. Encourage stakeholders to share expertise and information on open science 34

Amsterdam Call for Action
on Open Science
2016

Providing researchers with the skills and competencies they need to practise Open Science

Open Science Skills Working Group Report

2017



Evaluation of Research Careers fully acknowledging Open Science Practices

Rewards, incentives and/or recognition for researchers practicing Open Science

Report on OS and careers, July 2017

...sulla via della Open science

Open Science for its own sake has never been the goal. While a focus on Open Science as a mechanism must be emphasised in any transition, Open Science must ultimately be embedded as part of a larger more systemic effort to foster all practices and processes that enable the creation, contribution, discovery and reuse of research knowledge more reliably, effectively and equitably. Research cannot be 'excellent' without such attributes at its core.

to help co-create, develop and maintain a 'Research System based on shared knowledge' by 2030. As a start, we commit to working together to implement a system with the five attributes outlined below.

1. An academic career structure that fosters outputs, practices and behaviours to maximise contributions to a shared research knowledge system. To this
2. A research system that is reliable, transparent and trustworthy. To achieve this, Member States should
3. A research system that enables innovation. Five key elements were identified as necessary to facilitate such a research system:
4. A research culture that facilitates diversity and equity of opportunity. To enable such a culture to
5. A research system that is built on evidence- based policy and practice. To enable this, we recommend



Raccomandazione 790/2018

Open access to scientific publications

1. Member States should set and implement clear policies (as detailed in national action plans) for the dissemination of and open access to scientific publications resulting from publicly funded research. Those policies and action plans should provide for:

- researchers, when entering into contractual agreements with scientific publishers, retain the necessary intellectual property rights, inter alia, to comply with the open access policy requirements. This concerns in particular self-archiving and re-use (notably through text and data mining);

2. Member States should ensure that research funding institutions responsible for managing public research funding and academic institutions receiving public funding implement the policies and national action plans referred to in point 1 at national level in a coordinated way by:

- setting institutional policies for the dissemination of and open access to scientific publications, and establishing implementation plans;
- including requirements for open access as a condition to give out grant agreements or to provide other financial support for research, together with mechanisms for monitoring compliance with these requirements and follow up actions to correct cases of non-compliance;
- making the necessary funding available for dissemination (including open access and re-use) in a transparent and non-discriminatory manner allowing for different channels, including digital infrastructures where appropriate, as well as new and experimental methods of scholarly communication;
- providing guidance to researchers on how to comply with open access policies, and supporting them to do so, especially regarding the management of their intellectual property rights to ensure open access to their publications;
- conducting joint negotiations with publishers to obtain transparent and the best possible terms for access to publications, including use and re-use;

Open Access policy
nazionale

Mantenere i diritti

Open Access policy per
Ateneo

- Legate alla valutazione
- Disseminazione in canali diversi
- Formazione e supporto

Raccomandazione 790/2018



- (12) The move towards open access is a worldwide endeavour. Member States have been part of this endeavour and should be supported in enhancing an open, collaborative research environment based on reciprocity at a global level. Open science is a key feature of Member States' policies for responsible research and for open innovation. As new digital technologies become available, research and funding policies should adapt to this new environment.

Management of research data, including open access

3. Member States should set and implement clear policies (as detailed in national action plans) for the management of research data resulting from publicly funded research, including open access. Those policies and action plans should provide for:

- research data that results from publicly funded research becomes and stays findable, accessible, interoperable and re-usable ("FAIR principles") within a secure and trusted environment, through digital infrastructures (including those federated within the European Open Science Cloud (EOSC), where relevant), unless this is not possible or is incompatible with the further exploitation of the research results ("as open as possible, as closed as necessary"). This could be for reasons, in particular, of privacy, trade secrets, national security, legitimate commercial interests and to intellectual property rights of third parties. Any data, know-how and/or information whatever its form or nature which is held by private parties in a joint public/private partnership prior to the research action should not be affected by these policies or national action plans;

4. Member States should ensure that research funding institutions responsible for managing public research funding and academic institutions receiving public funding implement the policies and national action plans referred to in point 3 at national level in a coordinated way by:

- providing guidance to researchers on how to comply with research data management policies, and supporting them to do so, especially regarding the development of sound data management planning skills and digital infrastructures that support access to and preservation of research data;

Data policy
(a livello nazionale)

Dati FAIR per EOSC

Data policy
(livello istituzionale)

Competenze
Infrastrutture

Bruxelles non sta mai f

26.6.2019

IT

Gazzetta ufficiale dell'Unione europea Open data directive L 172/56

DIRETTIVA (UE) 2019/1024 DEL PARLAMENTO EUROPEO E DEL CONSIGLIO

del 20 giugno 2019

relativa all'apertura dei dati e al riutilizzo dell'informazione del settore pubblico

I DATI DELLA RICERCA ORA RIENTRANO NELLA DIRETTIVA DATI SETTORE PUBBLICO

- Stimulate the publishing of dynamic data and the uptake of Application Programme Interfaces (APIs).
- Limit the exceptions which currently allow public bodies to charge more than the marginal costs of dissemination for the re-use of their data.
- **Enlarge the scope of the Directive to:**
 - data held by public undertakings, under a specific set of rules. In principle, the Directive will only apply to data which the undertakings make available for re-use. Charges for the re-use of such data can be above marginal costs for dissemination;
 - **research data resulting from public funding – Member States will be asked to develop policies for open access to publicly funded research data. New rules will also facilitate the re-usability of research data that is already contained in open repositories.**
- Strengthen the transparency requirements for public-private agreements involving public sector information, avoiding exclusive arrangements.



Brussels, 19.2.2020
COM(2020) 66 final

COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN
PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL
COMMITTEE AND THE COMMITTEE OF THE REGIONS

A European strategy for data

In order to release Europe's potential we have to find our European way, balancing the flow and wide use of data, while preserving high privacy, security, safety and ethical standards.

I DATI SONO POSSONO ESSERE RIUSATI SENZA PERDERE VALORE.

3. The vision

The Commission's vision stems from European values and fundamental rights and the conviction that the human being is and should remain at the centre. The Commission is convinced that businesses and the public sector in the EU can be empowered through the use of data to make better decisions. It is all the more compelling to seize the opportunity presented by data for social and economic good, as data – unlike most economic resources – can be replicated at close to zero cost and its use by one person or organisation does not prevent the simultaneous use by another person or organisation. That potential should be put to work to address the needs of individuals and thus create value for the economy and society. To release this potential, there is a need to ensure better access to data and its responsible usage.

The EU should create an attractive policy environment so that, by 2030, the EU's share of the data economy – data stored, processed and put to valuable use in Europe – at least corresponds to its economic weight, not by *fiat* but by choice. The aim is to create a single European data space – a genuine single market for data, open to data from across the world – where personal as well as non-personal data, including sensitive business data, are secure and businesses also

EOSC! 23 novembre 2018

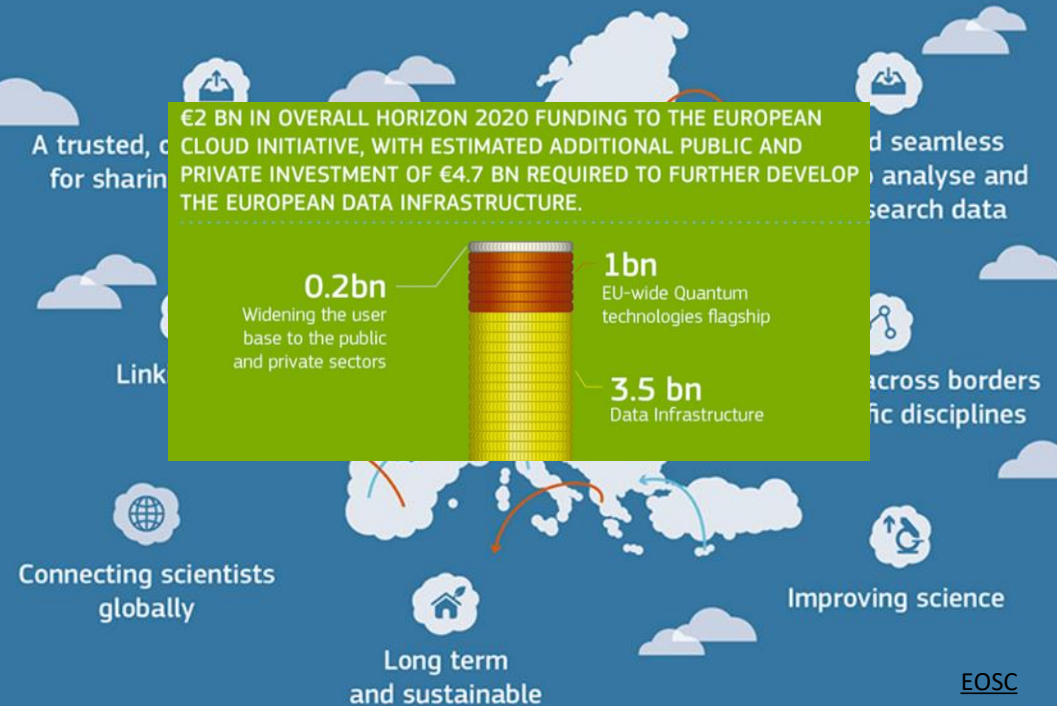
The Vienna Declaration

Vienna, 23 November 2018

We, Ministers, European Open Science Cloud

1. **Recall** the challenge of the European Open Science Cloud, as declared in the Declaration of the European Open Science Cloud in Brussels on 10 July 2018.
2. **Reaffirm** the potential of the European Open Science Cloud to realise the vision of the European Open Science Cloud, sustainable and inclusive.
3. **Recognise** that the European Open Science Cloud is an iterative and based on consensus among scientists and stakeholders.
4. **Highlight** that the European Open Science Cloud is a service for Science. Reaching out over time to the European Open Science Cloud.
5. **Recall** that the Council of the European Union, in its Declaration of the European Open Science Cloud, has called for the European Open Science Cloud to be a reality, hinting at the need to further strengthen the ongoing dialogue across institutions and with stakeholders, for a new governance framework to be launched in Vienna, on 23 November 2018.

BRINGING TOGETHER CURRENT AND FUTURE DATA INFRASTRUCTURES



na, Nov.23, 2018

of the

declaration" signed in Europe. Confirm that disciplines and Member by its nature due to build trust and

SEAMLESS ACCESS TO OPEN BY DEFAULT FAIR DATA

9. **Call** for the European Open Science Cloud to provide all researchers in Europe with seamless access to an open-by-default, efficient and cross-disciplinary environment for storing, accessing, reusing and processing research data supported by FAIR data principles.

9. **Note** that the 2018 EOSC Summit (held on 17 June 2018) called for acceleration towards making the European Open Science Cloud a reality, hinting at the need to further strengthen the ongoing dialogue across institutions and with stakeholders, for a new governance framework to be launched in Vienna, on 23 November 2018.

[EOSC – cosa?]

UN AMBIENTE CHE SUPPORTA LA OPEN SCIENCE E
NON UN «OPEN CLOUD» PER LA SCIENZA



THE EUROPEAN OPEN SCIENCE CLOUD? SOME NUANCES AND DEFINITIONS

Imagine a federated, globally accessible environment where researchers, innovators, companies and citizens can publish, find and re-use each other's data and tools for research, innovation and educational purposes. Imagine that this all operates under well-defined and trusted conditions, supported by a sustainable and just value for money model. This is the environment that must be fostered in Europe and beyond to ensure that European research and innovation contributes in full to knowledge creation, meet global challenges and fuel economic prosperity in Europe. This we believe encapsulates the concept of the European Open Science Cloud (EOSC), and indeed such a federated European endeavour might be expressed as the European contribution to an Internet of FAIR Data and services.

The European Open Science Cloud is a supporting environment for Open Science and not an 'open Cloud' for science.

The EOSC aims to accelerate the transition to more effective Open Science and Open Innovation in a Digital Single Market by removing the technical, legislative and human barriers to the re-use of research data and tools, and by supporting access to services, systems and the flow of data across disciplinary, social and geographical borders. The term European Open Science Cloud requires some reflection to dispel incorrect associations and clarify boundaries; in fact the term 'cloud' is a metaphor to help convey the idea of seamlessness and a commons.

EOSC Declaration

- necessario cambiamento culturale e formazione
- NESSUNA DISCIPLINA, NESSUNA ISTITUZIONE E NESSUN PAESE DEVE ESSERE LASCIATO INDIETRO

Data culture and FAIR data

- [Data culture] European science must be grounded in a common culture of data stewardship, so that research data is recognised as a significant output of research and is appropriately curated throughout and after the period conducting the research. Only a considerable cultural change will enable long-term reuse for science and for innovation of data created by research activities: no disciplines, institutions or countries must be left behind.
- [Open access by-default] All researchers in Europe must enjoy access to an open-by-default, efficient and cross-disciplinary research data environment supported by FAIR data principles. Open access must be the default setting for all results of publicly funded research in Europe, allowing for proportionate limitations only in duly justified cases of personal data protection, confidentiality, IPR concerns, national security or similar (e.g. 'as open as possible and as closed as necessary').
- [Skills] The necessary skills and education in research data management, data stewardship and data science should be provided throughout the EU as part of higher education, the training system and on-the-job best practice in the industry. University associations, research organisations, research libraries and other educational brokers play an important role but they need substantial support from the European Commission and the Member States.

EOSC Declaration

Brunnath, 26 October 2017

European Open Science Cloud
New Research & Innovation Opportunities



Oct. 2017

EOSC



EUROPEAN OPEN
SCIENCE CLOUD

EC President Ursula von der
Leyen talks EOSC in Davos

[Check out the video clip here!](#)

sustainable and a data economy. Data is a renewable resource as much as sun and wind. Every 18 months we double the amount of data we produce. **Industrial and commercial data, 85% of which is never used.**

This is not sustainable. Within those data, there are hidden treasures and untapped opportunities for business and society. Europe is going to

co-create a framework to allow the use of these data. It should consist of a trusted pool of non-personal data that governments, businesses and other stakeholders can contribute to. This pool will be a resource for open innovation, and bring new solutions to the market. And our scientists are already beginning to do this.

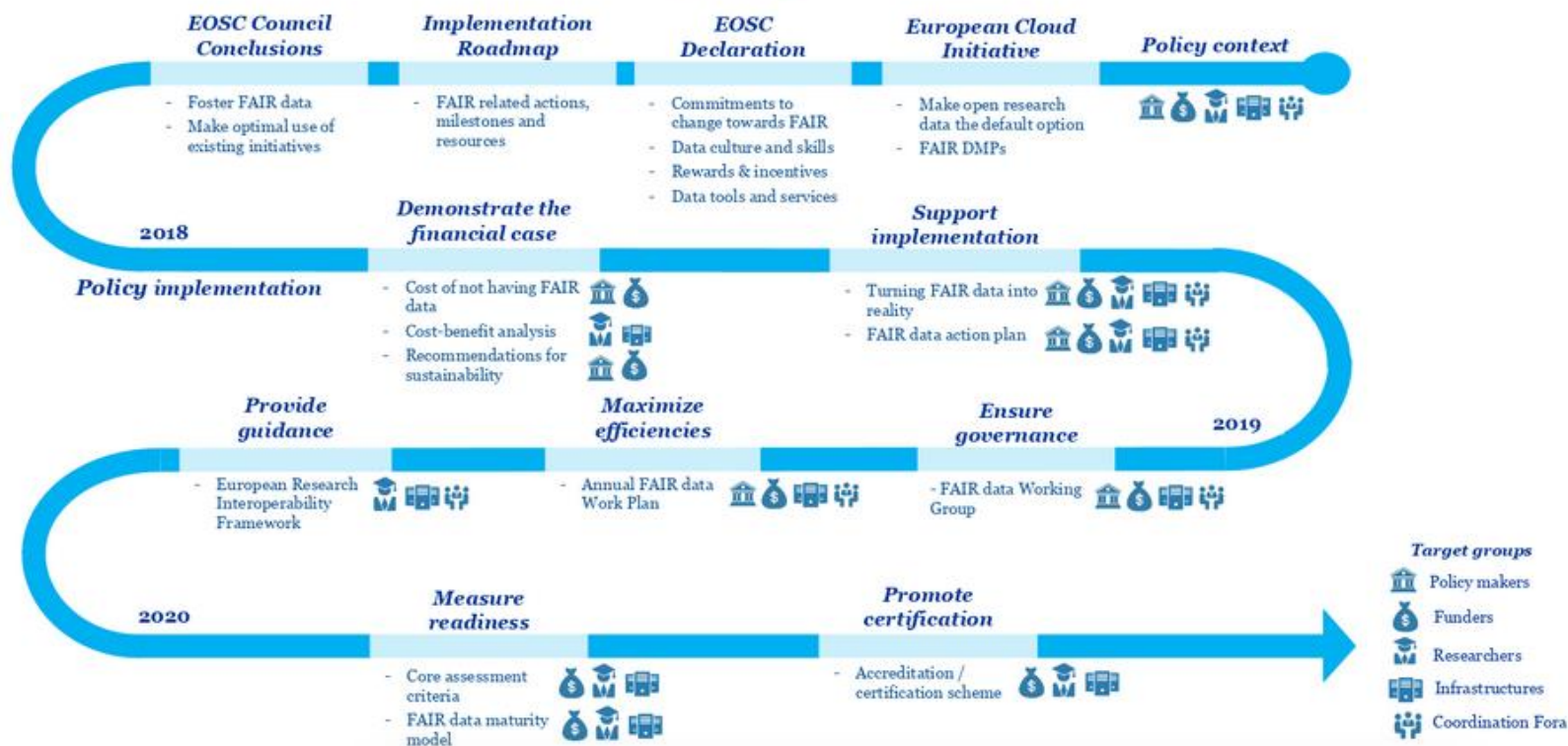
We are creating a European Open Science Cloud now. It is a trusted space for researchers to store their data and to access data from researchers from all other disciplines. We will create a pool of interlinked information, a 'web of research data'. Every researcher will be able to better use not only their own data, but also those of others. They will thus come to new insights, new findings and new solutions.

**85% DEI DATI PRODOTTI NON
VIENE USATO. INSOSTENIBILE**

This is what we call the European Open Science Cloud and we are the first in the world to do that. It is being developed in Europe for Europe and for European researchers. The idea is that once we have the rules of the game ready, then we will open this up to the broader public sector and to business as well. So that companies can come in, store the data and use the data. And the idea is that it will also open up to international players.

**A QUESTO SERVE EOSC.
LA STIAMO CREANDO ADESSO**

EC proposal for FAIR building blocks



Slide courtesy of Jean Claude Burgelman

Europe's decision to develop the European Open Science Cloud reflects the willingness to embrace change, but also to empower 1.7 million European researchers and 70 million professionals in science and technology. The ultimate goal is to achieve a fundamental transformation of the whole research lifecycle and to make it more credible with increased integrity, more efficient, collaborative and more responsive to societal challenges.

I am convinced that the Cloud will allow a new generation of scholars to find, combine and analyse data and discoveries in a way that supersedes anything we have ever seen before. It will accelerate the transition to Open Science and Open Innovation and bring science and research closer to societal needs.

Carlos Moedas

Carlos Moedas,

Commissioner for Research, Science and Innovation.

EOSC timeline

Timeline

2019



Apr - Jun
Annual FAIR WG
Workplan 2019

July

Publication of the
EOSC Strategic
Implementation
Plan (SIP)

Jul - Sep



- Initial Landscape Mapping
- Initial EOSC Rules of

August

Publication of the
EOSC Workplan
2019-2020



Oct - Dec



- Final Landscape Mapping
- Initial Federating Core
- Registry of Infrastructures
- Updated Catalogue and Portal

- PID Policy Outline
- FAIR Metrics
- Repository Certification

PROVIDE FEEDBACK

PROVIDE FEEDBACK

PROVIDE FEEDBACK



Apr - May



- Preliminary connection of
infrastructures and services
- EOSC Catalogue of datasets

Jan - Mar

EOSC EB Work Plan
FAIR Work Plan 2020



Jul - Sep

- Report on EOSC Readiness
- Strategic and Financing Options
post 2020
- EOSC Interoperability
Framework
- Final EOSC Rules of Participation



Oct - Dec

- Updated PID Policy
- Updated FAIR Metrics &
Repository Certification

EOSC IN OPERATION

European Commission

English

Home > Research and Innovation > Strategy > Goals of research and innovation policy > Open Science >

European Open Science Cloud (EOSC)

This is a cloud for research data in Europe. Background, policy information, events and publications related to the EOSC

Home Open Access European Open Science Cloud Open Science Policy Platform Groups Open Science Monitor

Deed of association of the new EOSC Association signed on 29 July 2020

7 August 2020
The Commission services were informed that the European Open Science Cloud Association (EOSC Association) was established on 29 July 2020 as a private law body with public service mission under Belgian law.

This is a major step towards the implementation of EOSC under the Horizon Europe Framework Programme and beyond.

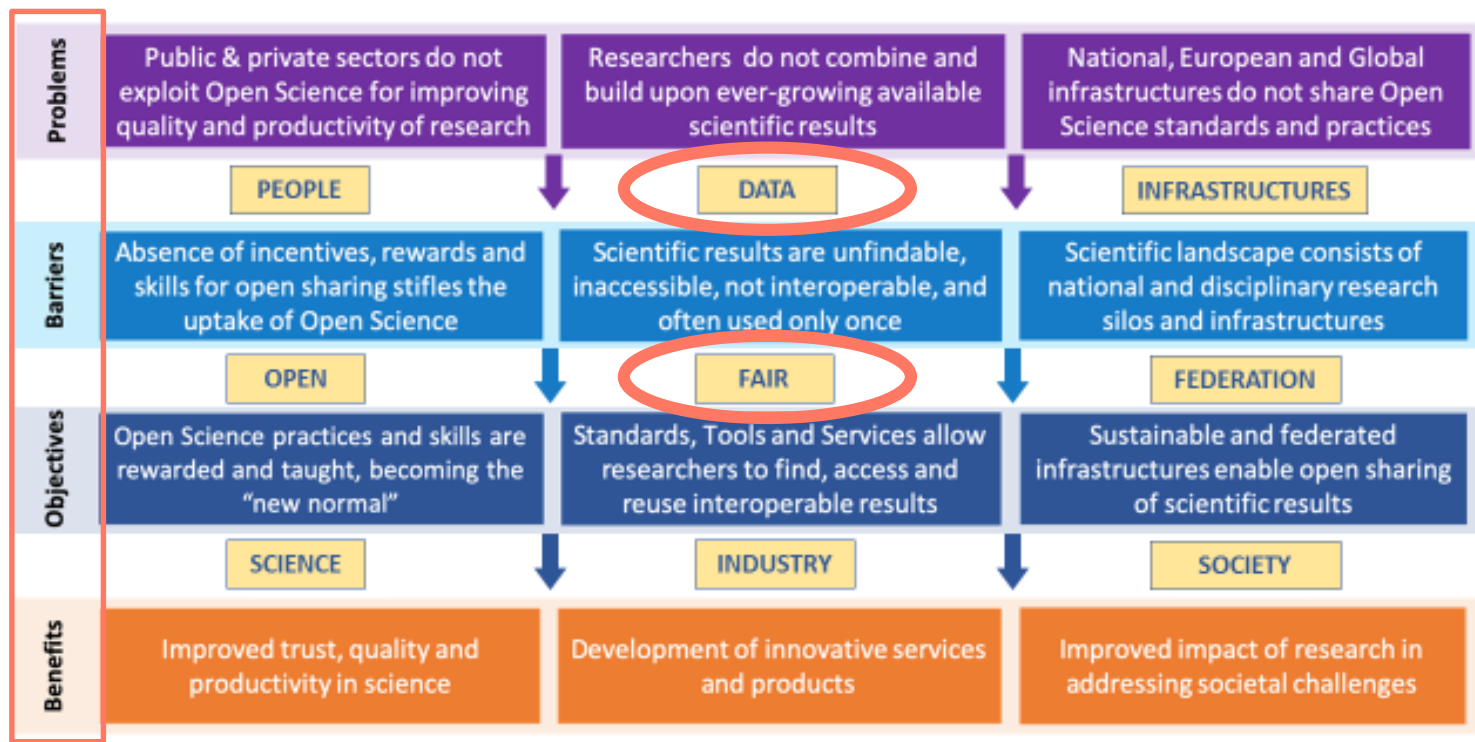
European Open Science Cloud (EOSC) Work Plan 2019-2020

This work plan, produced by the EOSC Executive Board, outlines activities from mid-2019 until the end of 2020.

EOSC, albero degli obiettivi

EOSC Hub week May 18 2020, C. Stover

The EOSC Objective Tree



[EOSC eI data stewards]



The number of people with these skills needed to effectively operate the EOSC is, we estimate, likely exceeding **half a million within a decade**. As we further argue below, we believe that the implementation of the EOSC needs to include instruments to help train, retain and recognise this expertise, in order to support the 1.7 million scientists and over 70 million people working in innovation⁹. The success of the EOSC depends upon it.

≠ DATA SCIENTIST

Open Working

An Experiment in Open Working from 4TU.Centre for Research Data & TU Delft Research Data Services (Note! This is a test)

[HOME](#) [ABOUT OPEN WORKING AT TU DELFT](#) [DRAFT DATA MANAGEMENT PLAN CATALOGUE](#) [DATA STEWARDSHIP](#) [CONTACT](#)

FEBRUARY 23, 2018

We are hiring (again!) – Data Steward position at TU Delft

WE ARE HIRING

≠ DATA ANALYST

[competenze]

Competence Profile

A data steward is a data specialist with strong domain-specific knowledge who understands and appreciates the relevance of data, data sources, data infrastructure and constraints within a scientific or other application domain.

The future Data Steward must assume ownership and responsibility for data, data quality, and the data life-cycle as their primary function. They should ensure collaboration and coherence between IT competences, quality assurance, security, rules & regulations, and facilitate the application and use of data internally and externally in the organisation.

Competence profile examples

- Domain-specific data understanding
- Ability to ensure that structured and unstructured data and meta data is modelled, harvested, stored, and maintained in a documented, and regulated fashion with focus and findability, accessibility, interoperability, and reusability.
- Competences to facilitate HPC (High Performance Computing) during development and research through handling of large-scale data in public and private enterprises.
- Understanding of and competences within legal, ethical and security aspects of data handling, data sharing, e.g., integrity and GDPR.

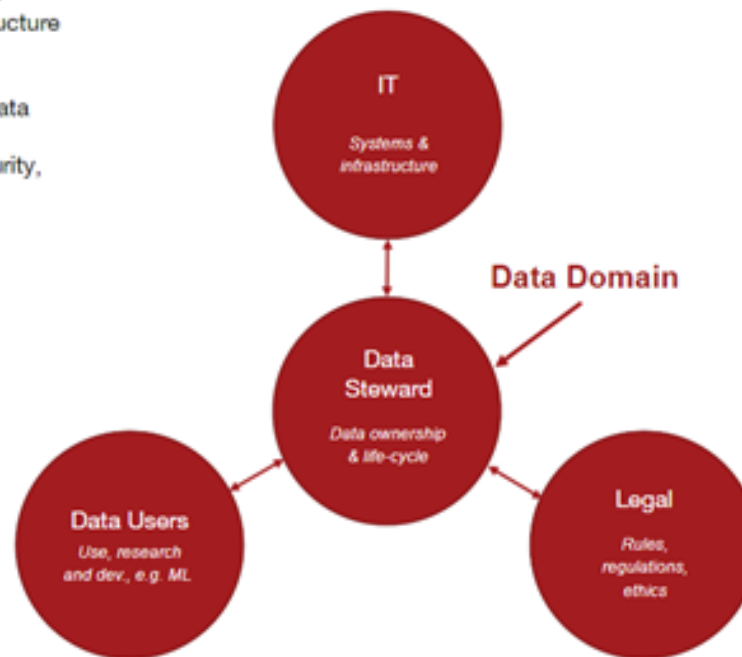
Education core content

This 1-year degree should build upon students' educational/job background through domain specific data knowledge and leverage with theoretical and practical competences.
The education can be viewed as a Data Steward specialisation within the domain of their previous degree/jobs. The education contains **60 ECTS** and is expected to finish with a 15 ECTS project.

Preliminary Content

The 60 ECTS should be distributed among the following main areas:

- 22,5-30 ECTS: IT competences – including computational thinking, data modelling, data management, data harvesting, cleaning, and storing, infra-structure (storage & compute). An introduction to data science, machine learning, and their derived data needs.
 - 7,5-15 ECTS: Legal and ethical competences – including GDPR, FAIR, data security, and data & AI ethics.
 - 7,5-15 ECTS: Domain specific data competences – including knowledge about data, infrastructure, and practice within the students primary domain, e.g., health, life-science, finance/fintech, or the public sector.
 - 15 ECTS: Graduate project (possibly in collaboration with academia, industry, or the public sector)
- Competences such as project management, communication skills, and change management should be incorporated as well



Perché occuparci dei dati?



[Video]



... È L'INCUBO DEL DATA STEWARD:

- NESSUN BACKUP
- NESSUN SOFTWARE DI ACCOMPAGNAMENTO
- NESSUNA LEGENDA DATI

... E IN PIÙ:

- DATI PRODOTTI CON FONDI PUBBLICI
- PUBBLICATI SU SCIENCE CHE LI RICHIEDE
- UTILI A UNA RICERCATRICE DI AREA DIVERSA

...parliamo di dati

QUANTI DI VOI
AVREBBERO PROBLEMI
SE IL PC SI ROMPESSSE ORA?

QUANTI DI VOI AVREBBERO
PROBLEMI SE PERDESSERO ORA
LA CHIAVE USB?

QUANTI DI VOI AVREBBERO
PROBLEMI SE I FILES SU DRIVE
SCOMPARISSE?

 COPYRIGHT-Italia®

Avv. Simone Aliprandi, Ph.D. - Copyright-Italia.it / Array Law Firm
www.copyright-italia.it - www.aliprandi.org - www.array.eu

 ARRAY

il backup: definizione (meno seria)

Il backup è quella cosa che andava fatta prima.

(fonte: Proverbio cinese)

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

Perché occuparci dei dati?

How and why you should manage your research data: a guide for researchers

An introduction to engaging with research data management processes.

JISC Guide

EVITARE DI
PERDERLI

ALCUNI SONO
UNICI E
IRRIPETIBILI
(meteorologia)

ORGANIZZARLI PER
RENDERE PIÙ EFFICACE
LA RICERCA

(SE APERTI)
ESSERE PIÙ
VISIBILI

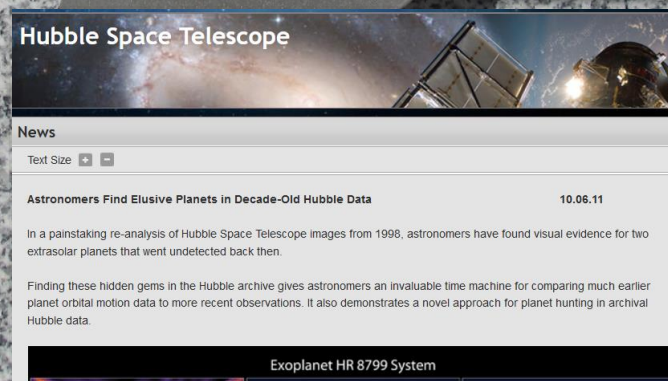
PERMETTERE
VALIDAZIONE E
CONTROLLI

(SE APERTI)
FAVORIRE
COLLABORAZIONI

MIGLIORARE
INTEGRITÀ DELLA
RICERCA

(SE APERTI)
FAVORIRE
RIUSO INEDITO

ESSERE
RIPRODUCIBILI



«the coolest thing to do with your data will be thought of by someone else» [R.Pollock]

Perché occuparci di dati?

DATA AB INITIO

GETTING RESEARCH DATA RIGHT, FROM THE START

K.Birney, 2015

and think, "surely I've covered this one my blog!"
up when I wrote [December's Exit Strategy post](#).

and, as you don't want to be stuck with
it. Promiscuous, out-of-date, little-used formats



PER SCOPRIRE ERRORI

Il debito pubblico deprime la crescita? Il clamoroso errore di Carmen Reinhart e Kenneth Rogoff

2013

Publicato da keynesblog il 18 aprile 2013 in consigliati, Economia, ibt, Teoria economica



Does High Public Debt Consistently Stifle Economic Growth? A Critique of Reinhart and Rogoff

Thomas Herndon*

Michael Ash

Robert Pollin

April 15, 2013

Herndon, 2013

JEL CODES: E60, E62, E65

Abstract

We replicate Reinhart and Rogoff (2010a and 2010b) and find that coding errors,

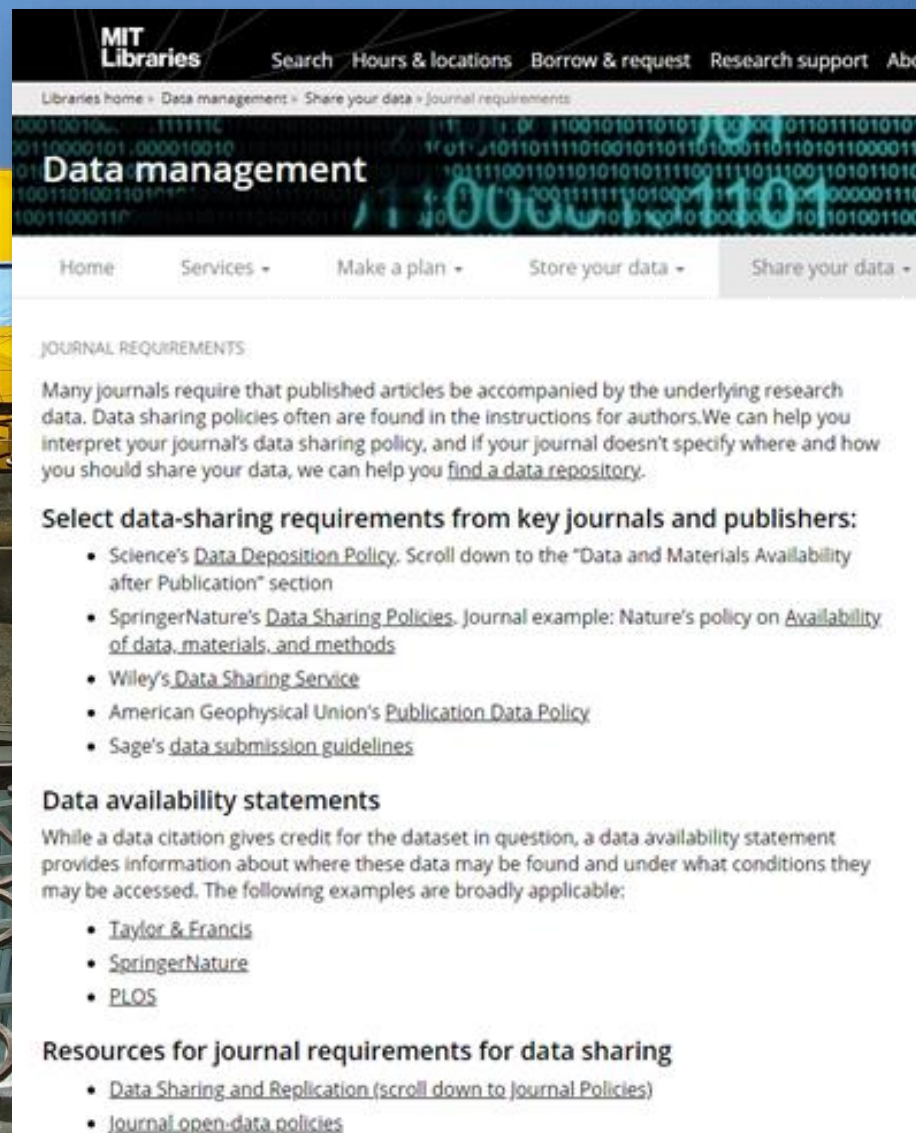
1. l'esclusione selettiva di alcune osservazioni nei dati;
2. uno schema di bilanciamento dei dati non convenzionale;
3. un errore di codice nel foglio di calcolo originale utilizzato per selezionare i dati.

debt loads greater than 90 percent of GDP consistently reduce GDP growth.

Perché occuparci dei dati?

PER INTERESSE...
PERCHÉ SE I DATI NON
SONO «ESPOSTI» LE
RIVISTE NON ACCETTANO IL
LAVORO...

E UN NUMERO CRESCENTE DI ENTI
FINANZIATORI LO RICHIEDE

A screenshot of the MIT Libraries website, specifically the 'Data management' section. The page has a dark header with the MIT Libraries logo and navigation links like 'Search', 'Hours & locations', 'Borrow & request', 'Research support', and 'About'. Below the header, there's a breadcrumb trail: 'Libraries home > Data management > Share your data > Journal requirements'. The main content area is titled 'Data management' and features a navigation bar with links: 'Home', 'Services', 'Make a plan', 'Store your data', and 'Share your data'. The 'JOURNAL REQUIREMENTS' section explains that many journals require data sharing and offers help in interpreting policies and finding data repositories. It lists 'Select data-sharing requirements from key journals and publishers' with links to Science's Data Deposition Policy, SpringerNature's Data Sharing Policies, Wiley's Data Sharing Service, American Geophysical Union's Publication Data Policy, and Sage's data submission guidelines. The 'Data availability statements' section explains their purpose and provides examples from Taylor & Francis, SpringerNature, and PLOS. Finally, the 'Resources for journal requirements for data sharing' section lists links to 'Data Sharing and Replication' and 'Journal open-data policies'.

Nessun dato?



Alastair Dunning

@alastairdunning

Following

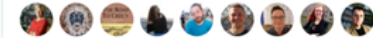
To me, data are like footnotes. I might not always read them, but I get suspicious if they are not there.

Traduci dalla lingua originale: inglese

12:49 - 27 feb 2018

<https://twitter.com/alastairdunning/status/968453078218395648>

2 Retweet 8 Mi piace



Is withholding your data simply bad science, or should it fall under scientific misconduct?



A recent study sent data requests to 200 authors of economics articles where it was stated 'data available upon request'. Most of the authors refused. What does the scientific community think about those withholding their data? Are they guilty of scientific misconduct? **Nicole Janz** argues that if you don't share your data, you are breaking professional standards in research, and are thus committing scientific misconduct. Classifying data secrecy as misconduct may be a harsh, but it is a necessary step.

NESSUN DATO? PIGRIZIA O FRODE? I DATI COME NOTE A PIE' PAGINA: POSSO NON LEGGERLE, MA DIVENTO SOSPETTOSO SE NON CI SONO

Gold Standard
Research Integrity

Questionable Research
Practices

Scientific
Misconduct



Data secrecy

Open data
Open code
Pre-registration
Version control

P-hacking
Sloppy statistics
Peer review abuse
Inappropriate research design
Not answering to replicators
Lying about authorships

Fabrication
Falsification
Plagiarism

I dati creano ponti

Data creates a bridge between traditional disciplines, spawning discovery and innovation from the humanities to the hard sciences. Data dissolves barriers, opening up new channels of communication, lines of research, and commercial opportunities. Data will be the engine, the spark to create a better world for all.

World Economic Forum 2012,

I DATI CREANO PONTI FRA LE DISCIPLINE...
...E NON È INDIFFERENTE NEL CONTESTO
MISSION-ORIENTED DI HORIZON EUROPE...

Missions in Horizon Europe

Mission areas

5 mission areas have been identified, each with a dedicated mission board and help specify, design and implement specific missions in Horizon Europe.

[Mission area: Adaptation to climate change including societal transformation](#)

[Mission area: Cancer](#)

[Mission area: Climate-neutral and smart cities](#)

[Mission area: Healthy oceans, seas, coastal and inland waters](#)

[Mission area: Soil health and food](#)

I dati rendono la ricerca più trasparente

Box 1. Some Research Practices that May Help Increase the Proportion of True Research Findings

- › Large-scale collaborative research
- › Adoption of replication culture
- › Registration (of studies, protocols, analysis codes, datasets, raw data, and results)
- › Sharing (of data, protocols, materials, software, and other research outputs)
- › Reproducibility practices
- › Containment of conflicted sponsors and authors
- › More appropriate statistical methods
- › Standardization of definitions and analyses
- › More stringent thresholds for claiming discoveries or “successes”
- › Improvement of study design standards
- › Improvements in peer review, reporting, and dissemination of research
- › Better training of scientific workforce in methods and statistical literacy

OPEN ACCESS

ESSAY

How to Make Research More Reproducible

John P. A. Ioannidis

Published: October 21, 2014

OPEN ACCESS

ESSAY

Why Most Published Research Findings Are False

John P. A. Ioannidis

Published: August 30, 2005 • <https://doi.org/10.1371/journal.pmed.0050122>



OSFPREPRINTS

<https://dx.doi.org/10.17605/OSF.IO/2DXU5>

The Preregistration Revolution

Brian Nosek, Charles Ebersole, Alexander DeHaven, David Mellor

Created on: June 16, 2017 | Last edited: March 12, 2018

nature
human behaviour



Altmetric: 2520

Citations: 63

Perspective | OPEN

A manifesto for reproducible science

Marcus R. Munafò, Brian A. Nosek, Dorothy V. M. Bishop, Katherine S. Button, Christopher D.

Chambers, Nathalie Percie du Sert, Uri Simonsohn, Eric-Jan Wagenmakers, Jennifer J. Ware & John

P. A. Ioannidis

Manifesto, Jan 2017

ALLEA
All European
Academies

integrity [in]
the quality of being b
integrity.

The European
Code of Conduct for
Research Integrity
REVISED EDITION

Research Integrity

[i tre passi for
Dati Open li]

Dati FAIR

Dati gestiti correttamente

1. I DATI DEVONO ESSERE «AS OPEN AS POSSIBLE»

2. MA SE I DATI NON SONO «FAIR», APRIRLI COMPORTA RISCHI
(USO SCORRETTO, CATTIVE INTERPETAZIONI, ...)

3. MA SE I DATI NON SONO CORRETTAMENTE GESTITI, RENDERLI
«FAIR» COSTA TROPPO TEMPO E DENARO

E GESTIRE I DATI CORRETTAMENTE È NELL'INTERESSE PRIMARIO DEL RICERCATORE,
PERCHÉ L'INTERA RICERCA SCORRE PIÙ FLUIDA

1. I dati vanno gestiti

CONSERVAZIONE
SUL LUNGO
PERIODO

ASPETTI LEGALI

ORGANIZZAZIONE
(file naming,
folders,
versioning...)

METADATI

BACKUP E
STORAGE

Data management is an active process by which digital resources remain discoverable, accessible and intelligible over the longer term, a process that invests data and datasets with the potential to accrue value as assets enjoying far wider use than their creators may have anticipated. In the world of research, such a value-adding process is a significant contributor to the much desired achievement of impact.

...una via veloce al data management

escience
vidensportal

eScience

Få styr på data

Supercomputing

Træningskurser

Om os

Podcasts

Open x73 styr på data : eLearning course about the importance of good research data management (RDM)

eLearning course about the importance of good research data management (RDM)

Within the framework of the Danish National Forum for Data Management, the Danish Universities have developed the eLearning course "Research Data Management".

90% of the world's data was created within the last two years

Take the course

Module 1: Introduction



Reference: Viachos, E., Larsen, A.V., Zürcher, S., Hansen, A.F. (2019). 'Introduction'. In: Holmstrand, K.F., den Boer, S.P.A., Viachos, E., Martínez-Lavanchy, P.M., Hansen, K.K. (Eds.), *Research Data Management* (eLearning course). doi: 10.11581/dtu.00000048

Module 2: FAIR principles



Reference: Martínez-Lavanchy, P.M., Hüser, F.J., Buss, M.C.H., Andersen, J.J., Begtrup, J.W. (2019). 'FAIR Principles'. In: Holmstrand, K.F., den Boer, S.P.A., Viachos, E., Martínez-Lavanchy, P.M., Hansen, K.K. (Eds.), *Research Data Management* (eLearning course). doi: 10.11581/dtu.00000049

Module 3: Data Management Plans



Reference: den Boer, S.P.A., Buss, M.C.H., Hüser, F.J., Smed, U. (2019). 'Data Management Plans'. In: Holmstrand, K.F., den Boer, S.P.A., Viachos, E., Martínez-Lavanchy, P.M., Hansen, K.K. (Eds.), *Research Data Management* (eLearning course). doi: 10.11581/dtu.00000050

...formazione più strutturata

<https://www.cessda.eu>

Data Management Expert Guide

1. Plan
2. Organise & Document
3. Process
4. Store
5. Protect
6. Archive & Publish
7. Discover



Plan

In this introductory tour, you will become aware of what data management and a data management plan (DMP) are and why they are important. General concepts such as social science data and FAIR data will be explained. Based on our recommendations and good practice examples, you will be able to start writing your DMP.

Organise & Document

If you are looking for good practices in designing an appropriate data file structure, naming, documenting and organising your data files within suitable folder structures, this chapter is for you.

Process

Adapt your DMP: part 6

This is the sixth 'Adapt your DMP' section in this tour guide. To adapt your DMP, consider the following elements and corresponding questions:



⊖ Deposit your data

- Will the data you produce and/or used in the project be useable by third parties, in particular after the end of the project?
- Which data and associated metadata, documentation and code will be deposited?
- What methods or software tools are needed to access the data?
- Is documentation about the software needed to access the data included?
- Is it possible to include the relevant software (e.g. in open source code)?
- What data quality assurance processes will you apply?

[dati personali]

⊖ Legal Basis

Personal data can only be processed when there is a valid legal basis to do so. The GDPR recognises six bases (grounds):

- consent of the data subject
- necessary for the performance of a contract
- legal obligation placed upon the data controller
- necessary to protect the vital interests of the data subject
- carried out in the public interest or in the exercise of official authority (public task)
- legitimate interest pursued by the data controller

The research exemption

The GDPR contains an exemption which entails that some of the principles above are slightly different when you collect and process personal data for research purposes. This is called the 'research exemption'.

Processing for archiving purposes in the public interest, scientific or historical research purposes or statistical purposes, shall be subjected to appropriate safeguards, in accordance with this Regulation, for the rights and freedoms of the data subject. Those safeguards shall ensure that technical and organisational measures are in place in particular in order to ensure respect for the principle of data minimisation. Those measures may include pseudonymisation provided that those purposes can be fulfilled in that manner. Where those purposes can be fulfilled by further processing which does not permit or no longer permits the identification of data subjects, those purposes shall be fulfilled in that manner | General Data Protection Regulation, [Article 89](#).

In practice, this means that Principle II. and V. are less strict. Further processing of personal data for the purposes of archiving, scientific or historical research purposes and statistical purposes is not



**ART. 89 ECCEZIONI PER
LA RICERCA MA
SEMPRE SU UNA BASE
LEGALE**



CESSDA guide
Data Management Expert Guide

[dati personali]

I. Process lawfully, fair and transparent



The participant is informed of what will be done with the data and data processing should be done accordingly.

II. Keep to the original purpose



Data should be collected for specified, explicit and legitimate purposes and not further processed in a manner that is incompatible with those purposes.

III. Minimise data size



Personal data that are collected should be adequate, relevant and limited to what is necessary.

IV. Uphold accuracy



Personal data should be accurate and, where necessary kept up to date. Every reasonable step must be taken to ensure that personal data that are inaccurate are erased or rectified without delay.

V. Remove data which are not used



Personal data should be kept in a form which permits identification of data subjects for no longer than is necessary for the purposes for which the personal data are processed.

VI. Ensure data integrity and confidentiality



Personal data are processed in a manner that ensures appropriate security of the personal data, including protection against unauthorised or unlawful processing and against accidental loss,

2. I dati devono essere FAIR

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.

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.

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.

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.

«ACCESSIBLE»
≠ «OPEN»
= DOVE E A QUALI
CONDIZIONI
I DATI SONO
ACCESSIBILI

FAIR/Open

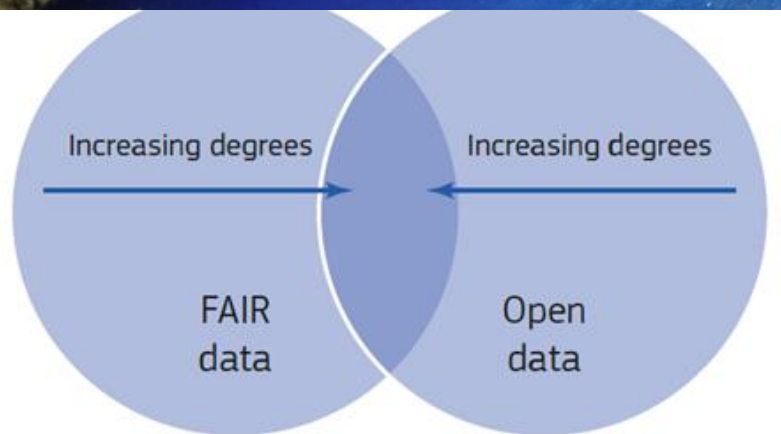


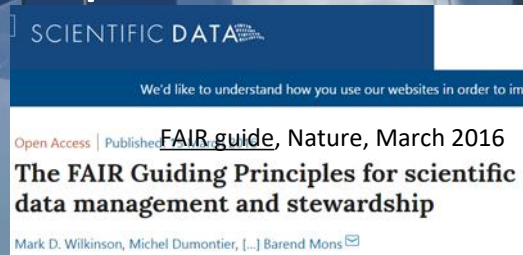
Figure 4. The relationship between FAIR and Open



Turning FAIR into reality 2016

A TENDERE, I DUE INSIEMI SARANNO SEMPRE PIÙ
SOVRAPPOSTI. MA ESISTERANNO SEMPRE DATI
PERFETTAMENTE FAIR CHE NON POSSONO ESSERE OPEN

...FAIR SIGNIFICA [anche e soprattutto per le macchine]



FINDABLE

- IDENTIFICATIVI
- METADATI

INTEROPERABLE

- STANDARDS
- ONTOLOGIE

IL TUTTO, LEGGIBILE DALLE MACCHINE

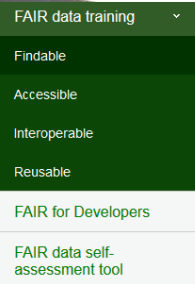
ACCESSIBLE

- DOVE SONO CONSERVATI E A QUALI CONDIZIONI DI ACCESSO
 - **NON SIGNIFICA «OPEN»**
 - FORMATI APERTI

REUSABLE

- LICENZE D'USO
- DOCUMENTAZIONE

FAIR in sintes



F1. (meta)data are assigned a globally unique and eternally

There are many resources created by the ARDC on the topic of [metadata](#)

- [Metadata guide](#)
- [Data versioning](#)

The ARDC has information on persistent identifiers on three different levels

- [Persistent identifiers: awareness level](#)
- [Persistent identifiers: working level](#)
- [Persistent identifiers: expert level](#)

It is also a provider of services for minting persistent identifiers of many different types of data (the types of the data being identified):

- [Digital Object Identifier \(DOI\) System for research data](#)
- [Handle minting Service \(Identify My Data\)](#)
- [International Geo Sample Numbers \(IGSN\)](#)

Complementary to the assignment of persistent identifiers is their proper



I miti su FAIR

Let's talk about FAIR data...

"FAIR data do not have to be openly available. FAIR data can be kept private, but information about the data should be shared"



www.vidensportal.deic.dk/FAIR

FAIR data are: Findable, Accessible, Interoperable and Reusable.
Making your data FAIR means maximizing the project's output, increasing your impact and enhancing your recognition as a researcher.

©2018 by DeIC, Deff, DTU, CBS, MAU, KU, Helsekøbenhavn, Øst Kystbibliotek. Public is made available under a Creative Commons 4.0 license International.

Let's talk about FAIR data...

"The FAIR principles for research data are not a standard. They are a set of common guidelines to make any data more valuable"



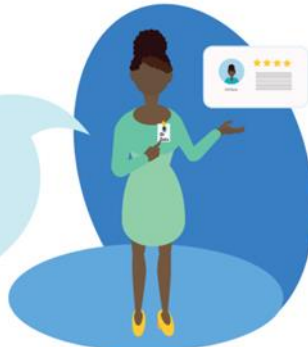
www.vidensportal.deic.dk/FAIR

FAIR data are: Findable, Accessible, Interoperable and Reusable.
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Let's talk about FAIR data...

"With FAIR data, you can improve the impact of your publications, and make sure that you will get all the credit you deserve"



www.vidensportal.deic.dk/FAIR

FAIR data are: Findable, Accessible, Interoperable and Reusable.
Making your data FAIR means maximizing the project's output, increasing your impact and enhancing your recognition as a researcher.

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EOSC Podcast Special
Making Open Science FAIR For Researchers



Sarah Jones
EOSC Executive Board - FAIR WG Chair



07 Sep 2020

07 Sep 2020

News EOSC Podcast Special: Making Open Science FAIR For Researchers

EOSCsecretariat.eu is launching a series of podcasts, focusing on different topics surrounding EOSC. The first episode featured EOSC FAIR Working Group Chair, **Sarah Jones**, discussing Open Science, FAIR Data, and how and when researchers should be engaged. The conversation is fascinating as she pulls back the curtain on what EOSC is looking to achieve, explaining **what Open Science and FAIR Data mean**. Read more

CONTINUE READING

... sfumature di FAIR

Findable

Does the dataset have any identifiers assigned?

No identifier

Is the dataset identifier included in all metadata records/files describing the data?

No

How is the data described with metadata?

The data is not described

What type of repository or registry is the metadata record in?

The data is not described in any repository

Accessible

How accessible is the data?

No access to data or metadata

Is the data available online without requiring specialised protocols or tools once access has been approved?

No access to data

Will the metadata record be available even if the data is no longer available?

Unsure



Training

Search for Research Data

Enter Keywords

Search the ANDS Site

Enter Keywords

About us

News and Events

Partners and Communities

Working with data

Online Services

Guides and resources

Working with data

The FAIR data principles

FAIR webinar series (Aug/Sep 2017)

FAIR data training

Findable

Accessible

Interoperable

Reusable

FAIR data training

markana

ANDS | Working with data | The FAIR data principles

FAIR data training

Facebook Twitter LinkedIn YouTube SoundCloud

If you intend to run workshops on FAIR data, or include FAIR in training that you are already running here are some ideas and resources.

- A basic checklist (or more comprehensive breakdown) as a tool for discussing the components of FAIR
- Use the FAIR data self-assessment tool in training or consultation
- Discussing the components via a process of transforming a dataset to be more FAIR
- Case studies of domain specific consideration of the principles

<https://www.ands-nectar-rds.org.au/fair-tool>



home

news

events

programs

about

FAIR self-assessment tool

Welcome to the ARDC FAIR Data self-assessment tool. Using this tool you will be able to assess the 'FAIRness' of a dataset and determine how to enhance its FAIRness (where applicable).

UTILISSIMO PER PORSI
LE DOMANDE GIUSTE...
MA SOGGETTIVO...

FAIR maturity evaluator

Evaluating FAIR maturity through a scalable, automated, community-governed framework

Mark D. Wilkinson , Michel Dumontier, Susanna-Assunta Sansone , Luiz Olavo Bonino da Silva Santos, Mario Prieto, Dominique Batista, Peter McQuilton, Tobias Kuhn, Philippe Rocca-Serra, Mercè Crosas & Erik Schultes 

Scientific Data 6, Article number: 174 (2019) | Download Citation 

13 Altmetric | Metrics 

Sept. 20, 2019

FAIR Evaluation Services

Resources and guidelines to assess the FAIRness of digital resources.

patience ! If you notice any unexpected failures in the tests, please report them to mark.wilkinson@upm.es



Import MI Tests

Import Maturity Indicators Tests as YAML [smartAPI](#) interface annotation

Get started



Create collections

Assemble Maturity Indicators Tests into community centered collections

Get started



Evaluate resources

Evaluate resources FAIRness against Collections of Maturity Indicator Tests

Get started

FAIR Evaluation Services

Resources and guidelines to assess the FAIRness of digital resources.

FAIR evaluation service



FAIR METRICS GEN2 - IDENTIFIER PERSISTENCE

Status: Failure

Principle tested: F1

Description: Metric to test if the unique identifier of the metadata resource is likely to be persistent. Known schema are registered in FAIRSharing (https://fairsharing.org/standards/?q=&selected_facets=type_exact:identifier%20schema). For URLs that don't follow a schema in FAIRSharing we test known URL persistence schemas (purl, oclc, fdlp, purlz, w3id, ark).

Created on: Feb 18, 2019 by [Mark D Wilkinson](#) (updated on Feb 20, 2019).

Test results

INFO: The metadata GUID appears to be a URL. Testing known URL persistence schemas (purl, oclc, fdlp, purlz, w3id, ark).

FAILURE: The metadata GUID does not conform with any known permanent-URL system.

Philosophy of FAIR testing

- OGGETTIVO
- LEGGIBILE DALLE MACCHINE –
COME I DATI FAIR

FAIR Data management wizard

Data Stewardship Wizard

Data integration 7

Data interpretation 3

Information and insight 14

Is there any pre-existing data?

Are there any data sets available?

 Data Stewardship for Open Science

☐ No

☒ Yes 

Will reference data be created?

Will any of the data that you create be shared with others?

 Data Stewardship for Open Science

☐ No

☒ Yes 

Will you be storing samples?

ELIXIR
Data Stewardship Wizard

Smart Data Management Plans for FAIR Open Science

For serious researchers and data stewards

 Data Stewardship Wizard

[Questionnaire Demo](#)

[Log In](#)

[Sign Up](#)

Will you store licenses with the data?

What's up?

Always consider the use of your data beyond the original purpose. One of the issues with re-using other people's data is that they cannot be assumed to be reusable from an ethical or legal standpoint without explicit permission. Assuming that unlicensed data are 'free to use for whatever purpose' is intrinsically wrong, and in the case of for instance Pharmaceutical industry can lead to court cases later on. Therefore, whenever you publish a data set or any other kind of information or digital object, it is important to define a license for reuse. For software many licences exist, and for data, increasingly, standard licenses are available or under development. Please note that a given license is also a defined concept and therefore deserves a Persistent Identifier and a URI pointing to where the license can be studied (machine readable licenses are also under development in some areas). This means that in the metadata, the license under which the data or the workflow can be reused is 'just another PID in the right place'. Users can then specify in their search or workflow container that 'only data with the following licenses should be included'.

For instance, if you include some data in your analysis that cannot be used for commercial purposes, that decision may render your entire results not usable for commercial purposes (at least in the view of some lawyers). This means that not licensing your data at all, even if you don't care who uses them and for what purpose is very counterproductive and will severely undermine the actual reuse of your data by others and in particular by industry. It will also lower the attribution-rate (usually part of the license conditions) and thus the citation and the impact score of your data.

Do

- Always carefully choose a license to be attached to your data upon publication.
- Include and clearly mark the licenses PID as a concept + attributes in the metadata.
- Store and 'expose' the license as part of the metadata in Open Access environments where search engines can easily find the license, even of the data they describe are not (yet) FAIR or even highly restricted in access. The 'fact' that a data set with a specific license is 'out there' is a first step toward effective reuse of your data or information source.
- Make sure, especially when you restrict use of your data, that you are able to enforce the license you choose. Licenses that are not enforceable make no sense. (please note that the enforcement is usually not done by an individual research group but at institutional or repository level)

Don't

- Ever publish data without a license attached or choose a license lightly, without considerations of anticipated reuse of your data.
- Choose a license that is not transitive (i.e. can not be transferred with subsets of the data), but make sure its transitivity does not unduly restrict the reuse of your data.
- Choose an unnecessary complicated license with many clauses and wherever possible one that is already widely adopted in the research community for either software

- SI COSTRUISCE IN BASE ALLE RISPOSTE
- APRE I CAPITOLI DEL MANUALE DI BAREND MONS SULLA DATA STEWARDSHIP

... un pilastro: FAIRsharing

FAIRsharing.org
standards, databases, policies

<https://fairsharing.org>

Search all of FAIRsharing

Standards Databases Policies Collections Add/Claim Content Stats Log In or Register

A curated, informative and educational resource on data and metadata *standards*, inter-related to *databases* and data *policies*.

HOW CAN WE HELP?

We guide consumers to discover, select and use these resources with confidence, and producers to make their resource more discoverable, more widely adopted and cited.

Icon	Name	FAIRsharing ID	Type	Keywords	Related Standards	Related Databases	Related Policies	Related Collections	Related Add/Claim Content	Related Stats	Related Log In or Register
	AnaEE Thesaurus	anaeeThes	Standard	Agricultural Engineering Atmospheric Science Biodiversity Ecology Ecosystem Science Plus 1 more...	Experimental Measurement Ecosystem Modeling And Simulation Protocol Unit	All	None	OBOE	No		
	Analytical Data Interchange Protocol for Chromatographic Data	ANDI-MS	Standard	Data Management Life Science	Chromatography Data Model Mass Spectrometry Assay	All	None	AniML netCDF	No		
	Analytical Information Markup Language	AniML	Standard	Chemistry	Analysis Mass Spectrometry Spectra Raman Spectroscopy Infrared Spectroscopy Material Processing Plus 2 more...	All	ASTM Standards	JCAMP-DX InChi XML ANDI-MS	No		
	ANALYZE 7.5 File Format	HDR/IMG	Standard	Biomedical Science	Image	All	SMIR	None	No		
	Anatomical Entity Ontology	AEO	Standard	Anatomy Life Science Ontology And Terminology	None	Fungi Invertebrata Plantae	OBO	CARO EHDA2	No		
	Acyclostetium Gene Database	Acyclostetium Gene Database	Database	Genomics Life Sciences Transcriptomics	DNA Sequence Data Gene Model Annotation	Acyclostetium subgenus	None	None	None	None	R
	Addgene	Addgene	Database	Life Sciences	Biotechnology Deoxyribonucleic Acid Plasmids	AI	None	GenBank Sequence Format RRID FASTA	Springer Nature - Nature Photonics - Availability of Data and eThICS Standards Starter Pack	None	R

Domains

- Chemical Entity
- Protein
- Molecular Entity
- Sequence Feature

Subjects

- Natural Sciences
- Life Sciences
- Biology

1120
1087
454

R= Reusable. License

Copyright: protects the STRUCTURE, selection or arrangement of their contents" (Art. 3) NOT THE DATA

Sui generis database right: protects the «substantial effort» in OBTAINING data [NOT «CREATING»]... the right owner often is the institution

Database=a collection of independent works, data or other materials arranged in a systematic or methodical way (Art.1)

DIRECTIVE 96/9/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
of 11 March 1996

on the legal protection of databases

COUNCIL OF THE EUROPEAN UNION,
in Community, and in particular Article 57 (2), 66 and 100a thereof,

Simone Aliprandi

la QUALI DIRITTI SUI DATI?

RICORDA: NESSUN
COPYRIGHT SUI DATI
(NON CREATIVI)

semplici dati e
informazioni

nessuna tutela

database
non creativo

solo diritto
sui generis

database
creativo

diritto sui generis
+ diritto d'autore

livello diritto
d'autore

livello diritto
sui generis

[DMP]

[webinar]



The screenshot shows the OpenAIRE website with a navigation bar at the top containing links for SERVICES, SUPPORT, OPEN SCIENCE IN EUROPE, and ABOUT. Below the navigation bar, there is a section for the 2019 webinar series, including links to data management plan, OA to research data, and open science. The main content area features a green and blue graphic with the text "Aspetti legali nella gestione dei dati della ricerca" (Legal aspects in the management of research data) by Thomas Margoni, University of Glasgow - CREATE OpenAIRE project. To the left of the graphic are logos for RDA (Research Data Alliance Europe), IT (National Node), and OpenAIRE. To the right is a dark blue sidebar with a "Support" section containing links to RESOURCES (Open Science Primers, Guides, Factsheets, Use cases), HELPDESK (FAQs, Ask a Question), and TRAINING (Webinars, Workshops, Community of Practice).

OpenAIRE

SERVICES SUPPORT OPEN SCIENCE IN EUROPE ABOUT

More Information about the 2019 webinar series.

data management plan | OA to research data | open science

RDA
RESEARCH DATA ALLIANCE
EUROPE

IT NATIONAL NODE

OpenAIRE

Aspetti legali nella gestione dei dati della ricerca

Thomas Margoni
University of Glasgow - CREATE
OpenAIRE project

Support

RESOURCES
Open Science Primers
Guides
Factsheets
Use cases

HELPDESK
FAQs
Ask a Question

TRAINING
Webinars
Workshops
Community of Practice

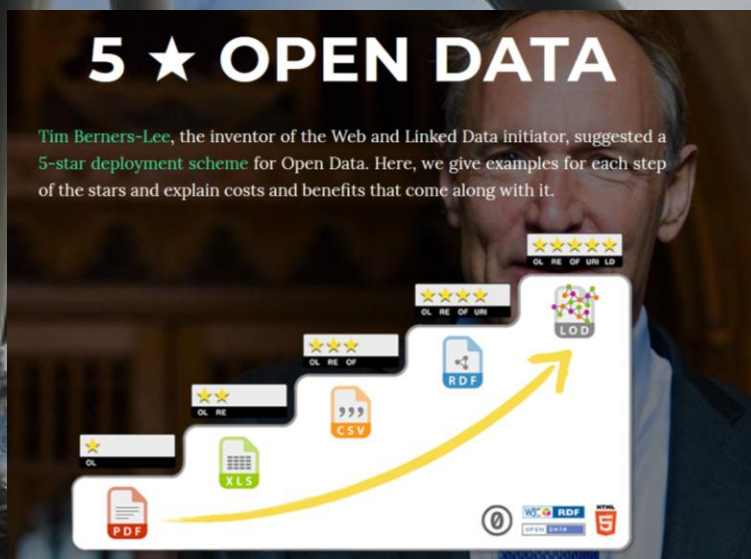
- POSSONO ESSERCI ALTRE FORME DI PROTEZIONE DEI DATI (ES. CONTRATTI)
- PER DATI CHE RICADONO SOTTO GDPR VA SEMPRE ESPLICITATA LA BASE LEGALE SULLA QUALE SI CONDUCE LA RICERCA

OpenAIRE Legal Policy Webinars

Supporting researchers on the reuse of data: legal aspects to consider

29th April and May 4th, at 2 PM CEST

3. I dati POSSONO essere Open



"Open data is like a renewable energy source: it can be reused without diminishing its original value, and reuse creates new value."



Wilma van Wezenbeek

@wvanwezenbeek

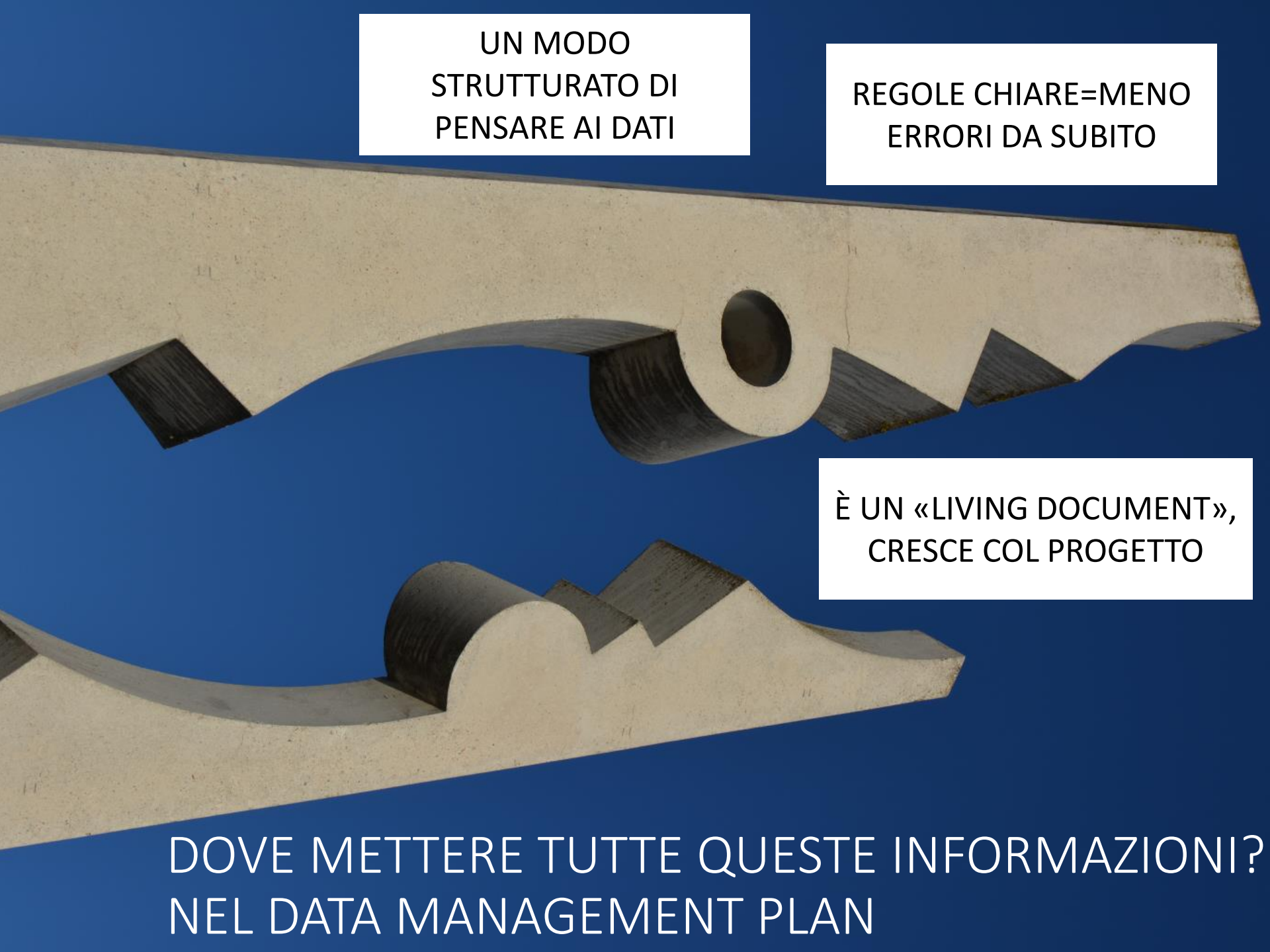
Following

#osc2018 @sjDCC I really like what Sarah said just now "There is more risk in losing your data than sharing your data #openscience

Traduci il Tweet

11:14 - 13 mar 2018

2018



UN MODO
STRUTTURATO DI
PENSARE AI DATI

REGOLE CHIARE=MENO
ERRORI DA SUBITO

È UN «LIVING DOCUMENT»,
CRESCe COL PROGETTO

DOVE METTERE TUTTE QUESTE INFORMAZIONI?
NEL DATA MANAGEMENT PLAN

Trucchi e suggerimenti

**SINTETICO E
SPECIFICO**

Top tip - keep it short and specific!

This very short extract from a presentation by Peter Dukes, Medical Research Council, is really useful advice on writing a DMP from the funding body perspective. The advice applies to all disciplines. The quality of the video isn't great, but the advice is definitely is!



FOSTER toolkit

NON COPIATE

OGNI DATASET È
UNICO, OGNI
INFRASTRUTTURA È
UNICA, OGNI RICERCA
HA LA SUA
IMPOSTAZIONE



- USATE TABELLE,
ELENCHI PUNTATI
- SIATE SCHEMATICI E
NON DILUNGATEVI

ESSERE GENERICI NON SERVE
A NULLA

[we expect a huge size of
data; data will be available]

CIÒ CHE DICHIARATE NEL
DMP POI VA FATTO
VERAMENTE... QUINDI

- A) NON FATE GLI
SPLENDIDI
 - B) NON IMPEGNATEVI A
FARE COSE CHE
SAPETE IMPOSSIBILI
- Es. DATI PSEUDONIMIZED, non
ANONIMIZED

Vantaggi di un DMP

CESSDA Guide



⊖ Benefit 3. Clarifies needed budget

Data management is not free. You do not want to find yourself running out of funding before the end of the project because you have ignored or underestimated the cost of structured, detailed, and safe data management. Therefore, an important aspect of a DMP is its use in calculating how much money will be required for managing your research data during your research project.

A DMP can be useful in the process of applying for funding. Grant applications should not only include time and resources for collecting, analysing, and publishing on data in their budget, time and resources for careful documentation as well as server space, backup solutions, and documentation software need to be included as well. A DMP is also useful once funding is granted to plan and manage your expenses. Many research funders require a DMP as part of the application and decision-making process. The arguments for making data available are several, the most popular being that the data produced by public funds should be used to the greatest extent possible and available to the public. Unless there are legal, ethical or commercial barriers, data should also be openly available so that research results can be verified, replicated and reused.

Examples of Data Management cost assessments are given by the [University of Utrecht](#) (n.d.) and the Dutch Landelijk Coördinatiepunt Research Data Management ([LCRDM](#), n.d.) inspired by the '[Data management costing tool](#)' by UK Data Service, 2013.

È FONDAMENTALE PER
STIMARE I COSTI DI GESTIONE
- STIMATE LA DATA
STEWARDSHIP (IN-KIND?)
-POSSIBILI COSTI DI STORAGE
COSTI SONO RIMBORSABILI IN
H2020 (6.2.D.3 AMGA)

DMP Core Requirements

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?

SEZIONI MINIME IN UN DMP

- ☐ **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)?

CORE REQUIREMENTS
FOR DATA MANAGEMENT PLANS



DMP questions



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?

UTILI COME
SPUNTO PER LE
PRIME VOLTE,
PER CAPIRE
QUALI
DOMANDE FARSI

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?

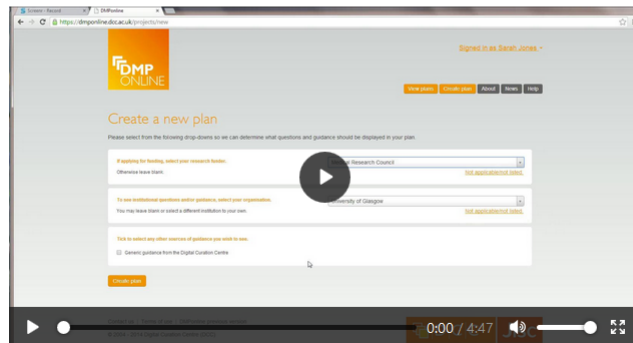
DMP online

[Home](#)[About](#)[Future plans](#)[Help](#)[Change language](#)<https://dmponline.dcc.ac.uk/>

Welcome.

DMPonline helps you to create, review, and share data management plans that meet institutional and funder requirements. It has been jointly developed by the Digital Curation Centre (DCC) and the University of California Curation Center (UC3).

Screencast on how to use DMPonline



Sign in

[Forgot your password?](#)☐ Remember me[Sign in](#)[Or, sign in with your institutional credentials](#) (UK users only)

Create account

New to DMPonline? Create an account today.

REGISTRAZIONE LEZIONE SUL DATA MANAGEMENT
PLAN <https://doi.org/10.5281/zenodo.3900981>

A wooden sign made of several vertical planks, painted white, with a motivational quote in black, bold, sans-serif capital letters. The sign is placed on a paved surface next to a wooden bench. The background shows a brick wall and a wooden chair.

**"IF YOU ARE NOT
DOING WHAT
YOU LOVE,
YOU ARE
WASTING
YOUR TIME."**

... ora tocca a voi!