L’Open Science in Horizon 2020 e oltre…

Chi sono...

Chi sono

Trainer

Project Manager

H2020 NCP - Food Security, Sustainable Agriculture and Forestry, Marine, Maritime and Inland Water Research and the Bioeconomy (SC2)

H2020 NCP - Climate Action, Environment, Resource Efficiency and Raw Materials (SC5)

- Bechelor Degree in Natural Science
- Master Degree in Communication and Fundraising

i miei contatti

www.apre.it

dirosa@apre.it

Via Cavour 71, Roma

https://www.facebook.com/APRE.eu

http://it.linkedin.com/in/dirosamatteo/

https://twitter.com/dirosamatteo

https://www.facebook.com/matteo.dirosa

http://instagram.com/matteodrs

www.matteodirosa.it

Introduzione alla giornata

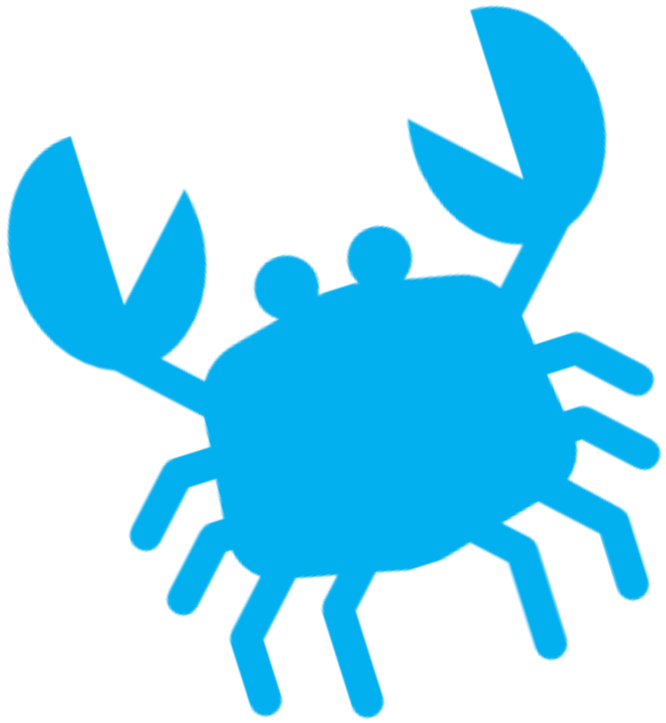
Di cosa parliamo oggi

- Il ruolo della comunicazione scientifica: Teoria e modelli
- Open Science: definizione e modelli
- I vantaggi dell'Open Science
- Comunicare la scienza in H2020: Differenze tra dissemination and Communication
- Open Access: le due vie
- Open Data
- Public Engagement e Citizen Science
- Open Science e Prospettive europee

Il ruolo della comunicazione scientifica: Teoria e modelli

Viviamo nell’epoca delle fake news

- **All'interno della specie Homo sapiens esistono le razze**
- **L'acqua frizzante disseta di più**
- **L'ulcera da stress**
- **La Grande muraglia cinese è visibile dalla Luna**
- **Usiamo solo il 10% del nostro cervello**
- **L'acqua in uno scarico ruota in senso opposto nei due emisferi**
- **La Terra piatta**
- **I vaccini causano l'autismo**



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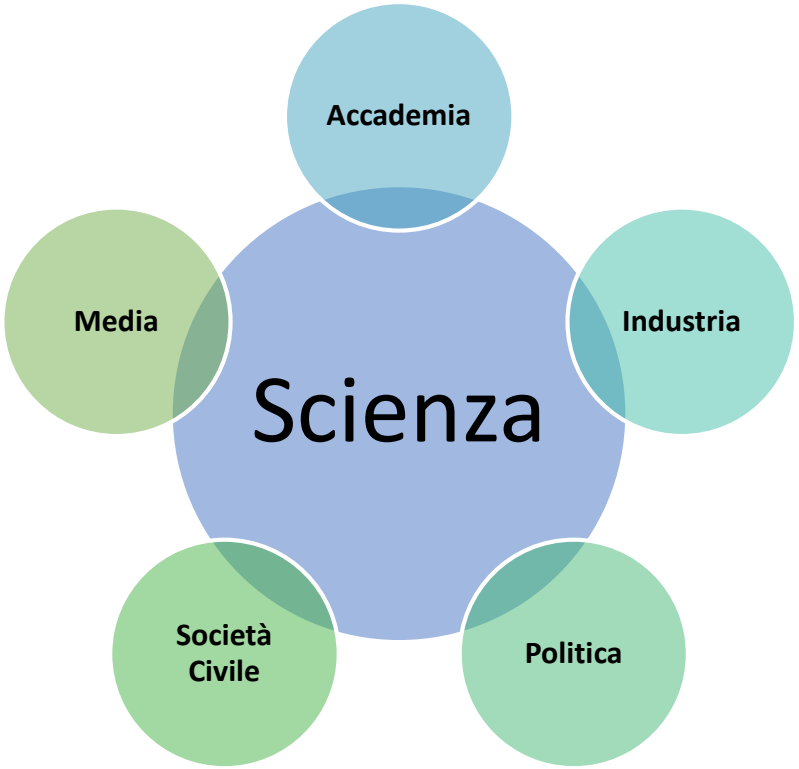


Cambiato il modo di fare scienza
Mode 1 <-> Mode 2

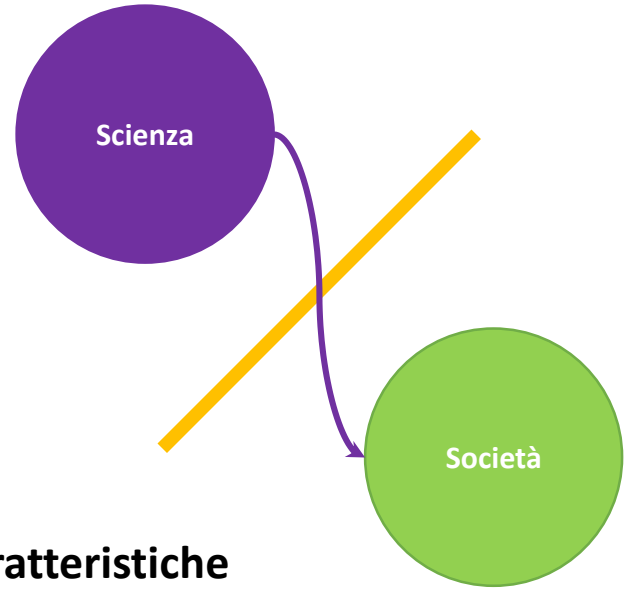
DIMENSION	MODE 1	MODE 2
KNOWLEDGE FOCUS	Produced considering interests of the scientific community	Produced considering the context of application
MODE OF KNOWLEDGE PRODUCTION	Expert-centered	Produced in network or with the interaction of diverse actors
CHARACTERISTICS	Disciplinary and hierarchical	Transdisciplinary and horizontal
RELEVANCE	Relevant to the scientific community	Relevant to society
DISSEMINATION	Through indexed journals	Diverse channels reaching a wider audience
QUALITY MARKER	Publication in an indexed journal	Quality review processes and research uptake/policy influence

Cambiate le interazioni fra i vari attori del «sistema ricerca»

Cambiato il peso nei rapporti fra i vari attori del «sistema ricerca»

Image credit: http://www.researchtoaction.org/2015/02/mechanisms-markers-research-quality-think-tanks/

Deficit Model



Caratteristiche

- Approccio top-down
- Flusso di informazioni unidirezionale
- Obiettivo di aumentare il grado di alfabetizzazione scientifica della società

I limiti

- Basato sul gap conoscitivo della società, ipotizzato ma non misurato
  - Rischio banalizzazione
- Alfabetizzazione scientifica influenza in minima parte come si formano le opinioni. Conta di più:
  - Ideologia
  - Identità religiosa
  - Appartenenza politica
- la tendenza a problematizzare, nel rapporto tra scienza e pubblico, soltanto il secondo termine della relazione, cioè il pubblico.

Deficit model?

Roberto Burioni, Medico I COMMENTI VENGONO TUTTI CANCELLATI.

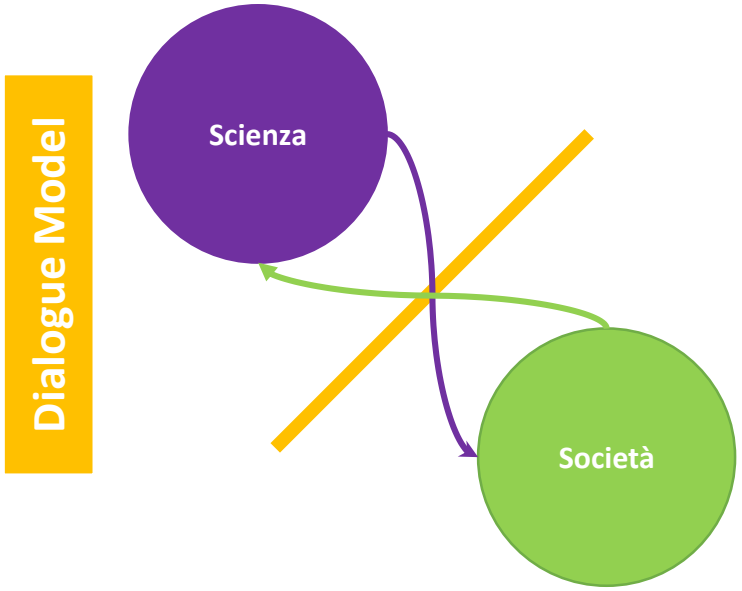
Like · Reply · 338 · December 31, 2016 at 3:02pm

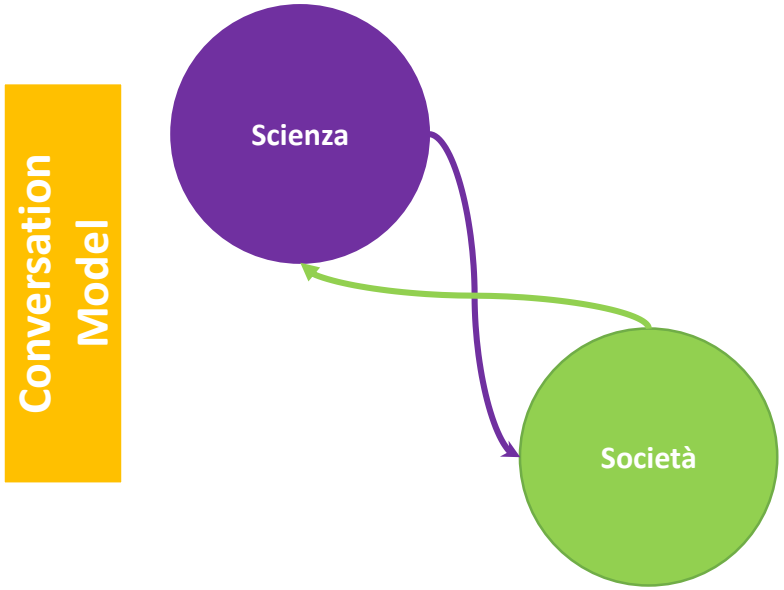
Roberto Burioni, Medico Preciso che questa pagina non è un luogo dove della gente che non sa nulla può avere un "civile dibattito" per discutere alla pari con me. E' una pagina dove io, che studio questi argomenti da trentacinque anni, tento di spiegare in maniera accessibile come stanno le cose impiegando a questo scopo in maniera gratuita il mio tempo che in generale viene retribuito in quantità estremamente generosa. Il rendere accessibili i concetti richiede semplificazione: ma tutto quello che scrivo è corretto e, inserendo io immancabilmente le fonti, chi vuole può controllare di persona la veridicità di quanto riportato. Però non può mettersi a discutere con me. Spero di avere chiarito la questione: qui ha diritto di parola solo chi ha studiato, e non il cittadino comune. La scienza non è democratica.

Unlike · Reply · 2,100 · 6 hrs · Edited

Dialogue e Conversation Model

(*Public engagement with science and technoloy*)





Caratteristiche

- Flusso bidirezionale della conoscenza
- Gap conoscitivo misurato e non ipotizzato
    - Non si corre il rischio della banalizzazione
- L'opinione del pubblico serve a calibrare il messaggio
- Il pubblico consultato e ingaggiato

Caratteristiche

- Partecipazione del pubblico attiva
- Il pubblico partecipa ed co-crea il futuro con la scienza
- Ruolo del pubblico attivo nel processo decisionale e agenda setting
- Citizen Science

Si comunicava già nel passato

Galileo: accusato dalla chiesa perché scriveva in volgare

Faraday: che ogni venerdì teneva delle conferenze alla Royal Istitution per raccontare i progressi della scienza

Ed oggi? I grandi comunicatori del nostro tempo

Richard Dawkins

Piero e Alberto Angela

ITA

«La verità è che: non c'è scienza senza comunicazione»

Pietro Greco - Vittorio Silvestrini

Open Science: definizioni

Open Science:1 termine, 5 scuole di pensiero

- **Democratic school:** Believing that there is an **unequal distribution of access to knowledge**, this area is concerned with **making scholarly knowledge (including publications and data) available freely for all**.
- **Pragmatic school:** Following the principle that the **creation of knowledge is made more efficient through collaboration** and strengthened through critique, this area seeks to harness network effects by **connecting scholars and making scholarly methods transparent**.

Open Science:1 termine, 5 scuole di pensiero

- **Infrastructure school:** This thread is motivated by the assumption **that efficient research requires readily available platforms, tools and services for dissemination and collaboration**.
- **Public school:** Based on the recognition that **true societal impact requires societal engagement** in research and readily understandable communication of scientific results, this area seeks **to bring the public to collaborate in research through citizen science**, and make scholarship more readily understandable through lay summaries, blogging and other less formal communicative methods.
- **Measurement school:** Motivated by the **acknowledgement that traditional metrics for measuring scientific impact have proven problematic** (by being too heavily focused on publications, often only at the journal-level, for instance), **this strand seeks "alternative metrics"** which can make use of the new possibilities of digitally networked tools to track and measure the impact of scholarship through formerly invisible activities.

Fecher & Friesike (2013)

Cosa è l'Open Science

- ***Open Science*** *refers to a scientific culture that is characterized by its openness. Scientists share results almost immediately and with a very wide audience. (Bartling and Friesike, 2014)*
- ***Open Science*** *is not about dogma; it is about greater efficiency and productivity, more transparency and a better response to interdisciplinary research needs (Leru 2018)*
- ***Open Science*** *is a "movement which aims to make scientific research, data and dissemination accessible to all levels of an inquiring society" (FosterOpenScience.eu)*
- ***Open science*** *is the practice of making everything in the discovery process fully and openly available, creating transparency and driving further discovery by allowing others to build on existing work (Watson, 2015)*
- ***Open Science*** *is the practice of science in such a way that others can collaborate and contribute, where research data, lab notes and other research processes are freely available, under terms that enable reuse, redistribution and reproduction of the research and its underlying data and methods. In a nutshell, Open Science is transparent and accessible knowledge that is shared and developed through collaborative networks (Vicente-Sáez & Martínez-Fuentes 2018).*

Towards a definition of open science

four major goals

1. Public accessibility and **full transparency** of scientific communication;
2. Public availability and **reusability of scientific data**;
3. **Transparency** in experimental methodology, observation, and collection of data;
4. Complete scientific **collaboration**.

Towards a definition of open science

Four essential needs

5. Strengthen **dialogue** between science and society;
6. **Linking** scientists to science policy making;
7. Developing proper **e-infrastructures**, digital tools and services for OS;
8. **Changing** legal tools and policy requirements for open science.

Towards a definition of open science

None of this is possible without taking the necessary steps to build the new structure of OS on solid foundation and values by:

- Preparing skilled people for openness;
- Demanding a responsible conduct to researchers, intrinsic to the values of research and the trust it engenders: Research Integrity.

I vantaggi dell'Open Science

Riproducibilità della ricerca

Incapacità a riprodurre i risultati pubblicati in una ricerca. Per alcuni settori un risultato su due non è replicabile. In altri casi i risultati raggiunti sono sovrastimati.


nature International weekly journal of science

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Archive > Volume 533 > Issue 7604 > News Feature > Article

NATURE | NEWS FEATURE

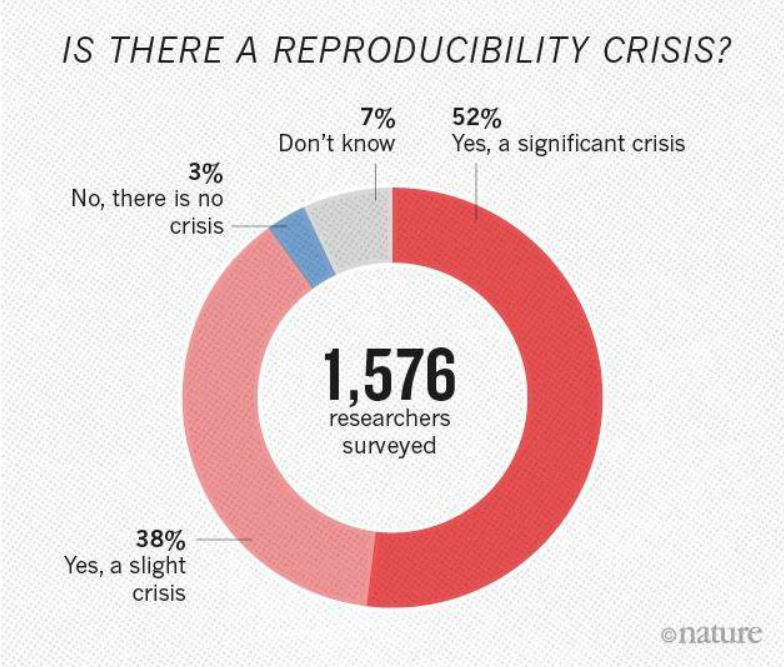
1,500 scientists lift the lid on reproducibility

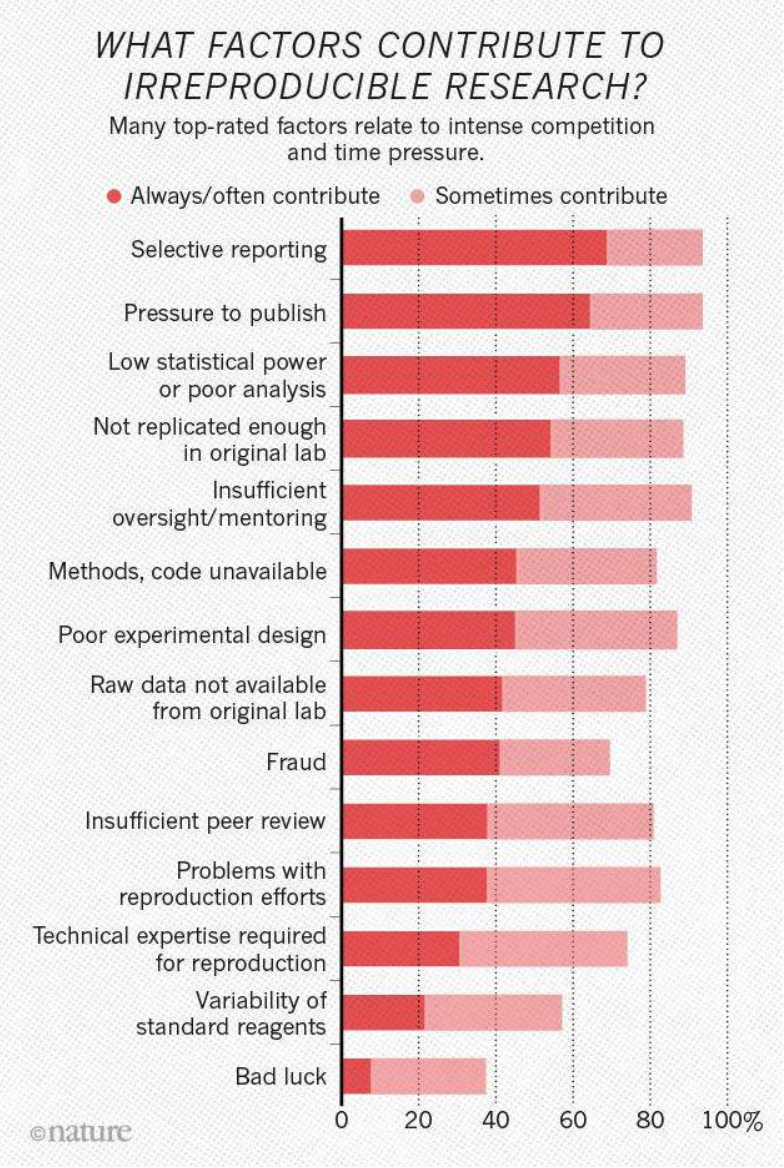
Survey sheds light on the 'crisis' rocking research.

Monya Baker

25 May 2016 | Corrected: 28 July 2016

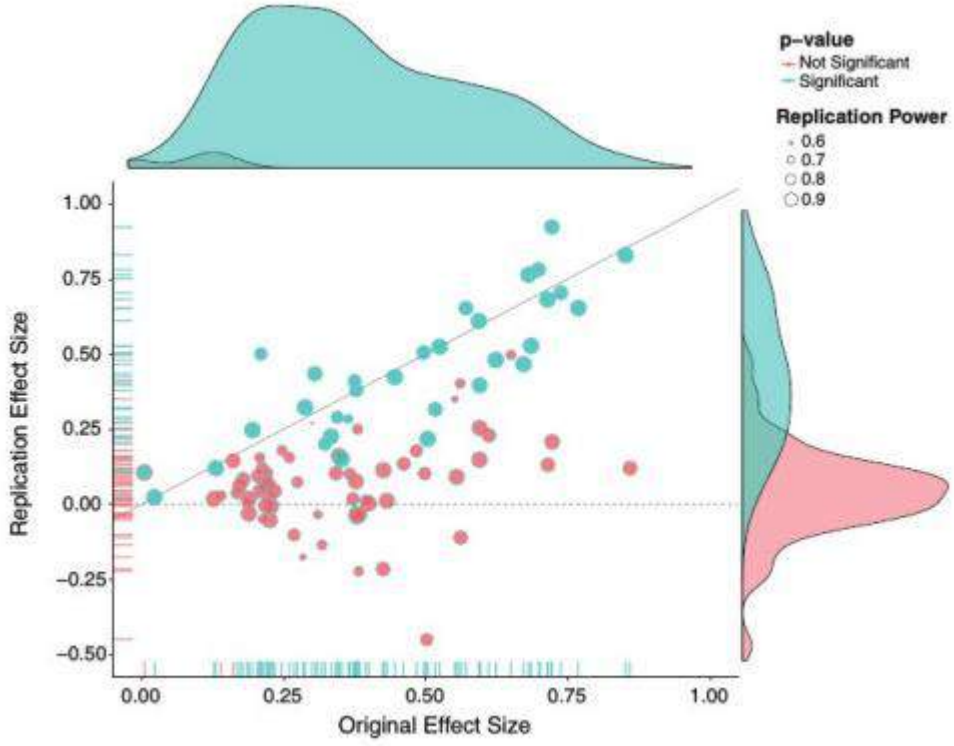
PDF | Rights & Permissions





Riproducibilità della ricerca

- Study organized by Center for Open Science
- Collaborated with researchers all over the world
- 100 replications of studies in psychological science
- Only 36% of replications had significant results



Open Science Collaboration. (2015). Estimating the reproducibility of psychological science. Science, 349(6251), aac4716. Doi: 10.1126/science.aac4716

Riproducibilità della ricerca

NATURE | NEWS

Sluggish data sharing hampers reproducibility effort

Initiative trying to validate 50 cancer papers finds difficulty in accessing original study data.

Richard Van Noorden

03 June 2015

RIO DE JANEIRO, BRAZIL

Rights & Permissions

An initiative that aims to validate the findings of key cancer papers is being slowed by an unexpected hurdle — problems accessing data from the original studies.

The Reproducibility Initiative: Cancer Biology consortium aims to repeat experiments from 50 highly-cited studies published in 2010–12 in journals such as *Nature*, *Cell* and *Science*, to see how easy it is to reproduce their findings. Although these journals require authors to share their data on

Effetto File Drawer

Visione non reale della realtà

Si tende a pubblicare quello che funziona. Quello che non funziona finisce nel file drawer

La maggior parte delle riviste scientifiche, specialmente le più importanti, competono per pubblicare i risultati più "importanti", che sono in genere quelli con di grande effetto con descrizioni impreviste di comportamento sorprendenti o impreviste

Falsi positivi

Simonsohn, U., Nelson, L. D., & Simmons, J. P. (2014).

Costi di Accesso: **Per le università**

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Open access scientific publishing

Harvard University says it can't afford journal publishers' prices

University wants scientists to make their research open access and resign from publications that keep articles behind paywalls

Ian Sample, *science correspondent*

@iansample

Tue 24 Apr 2012 17.45 BST

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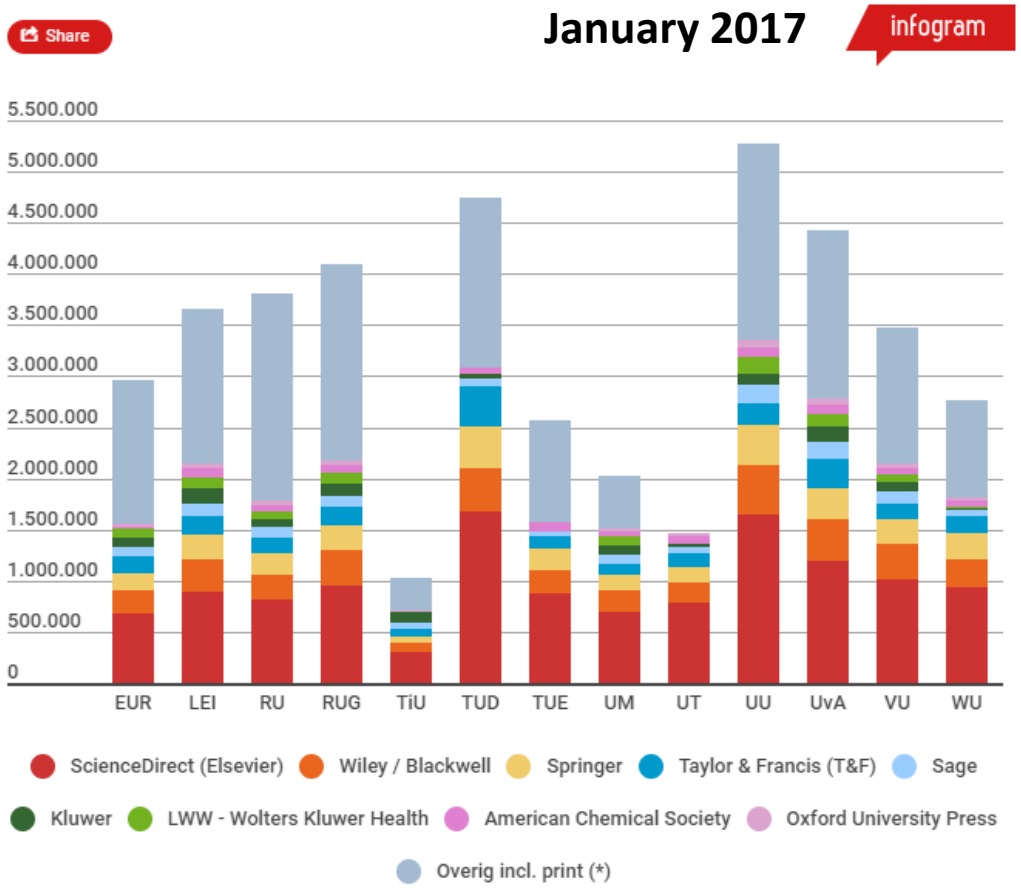
which bill the library around $3.5m a year

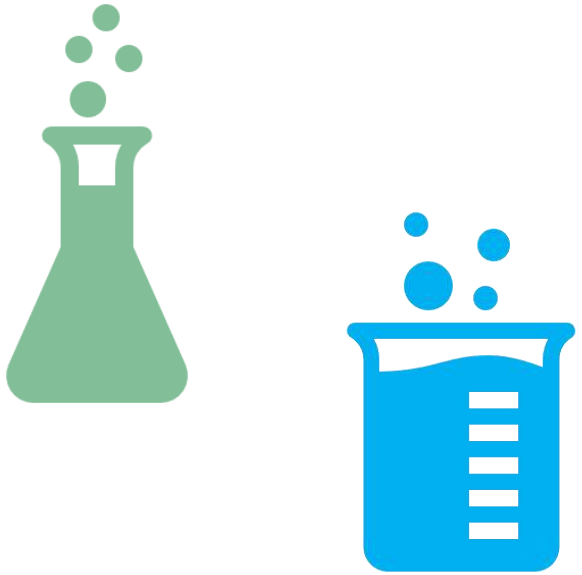
Costi di Accesso: **Per le università**



Overview of costs incurred by dutch universities for books and journals by publisher

Costi di accesso: per l'innovazione

- Ricercatori privi di abbonamento (Paesi poveri, centri di ricerca privati, start up)
- Grandi Aziende
- Piccole e medie imprese[1]
- Pubblica amministrazione
- Studenti
- ONG e Associazioni
- Cittadini



http://www.fi.dk/publikationer/2011/adgang-til-forskningsresultater-og-teknisk-information-i-danmark.

Costi di accesso: per la comunità

- **In UK We spend 1/3 of the total global research budget (~£59/175bn) on publishing & communicating results that 99% of people cannot access**
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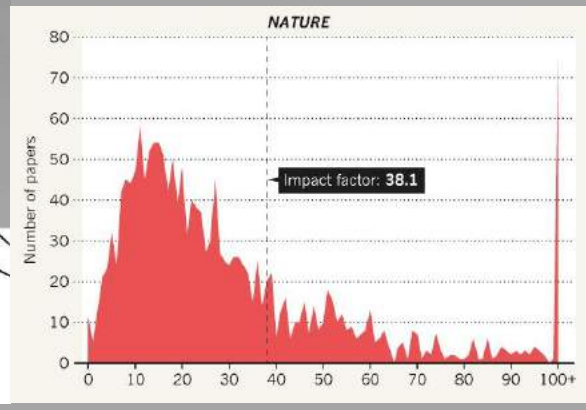
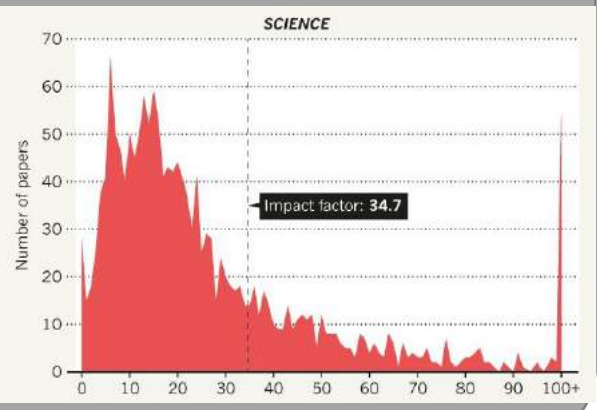
Profit	Company	Industry
10%	BMW	automobiles
23%	Rio Tinto	mining
25%	Google	search
29%	Apple	premium computing
35%	**Springer**	**scholarly publishing**
37%	**Elsevier**	**scholarly publishing**

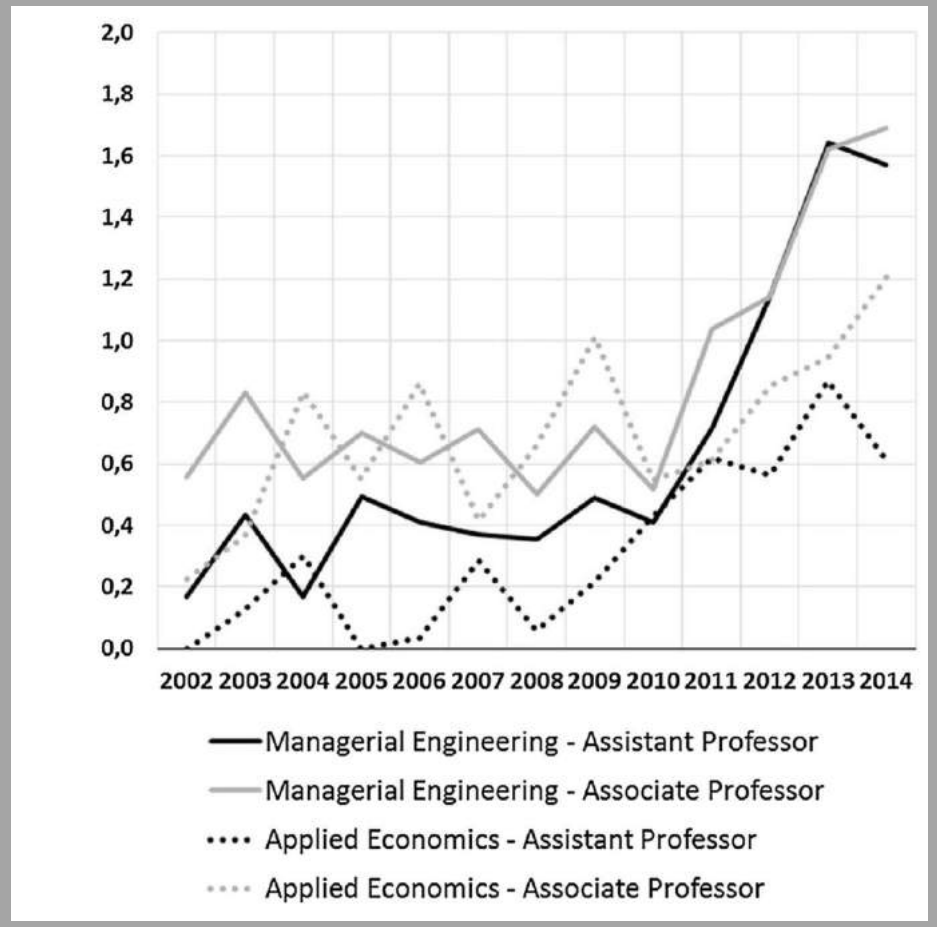
Metriche: Impact factor

- **Si è passati dal mantra 'publish or perish' a 'publish and perish'**
- **si riferisce alla rivista e non al singolo articolo**
- **è la media (non misura nulla)**
- **coglie solo impatto dentro l'accademia**

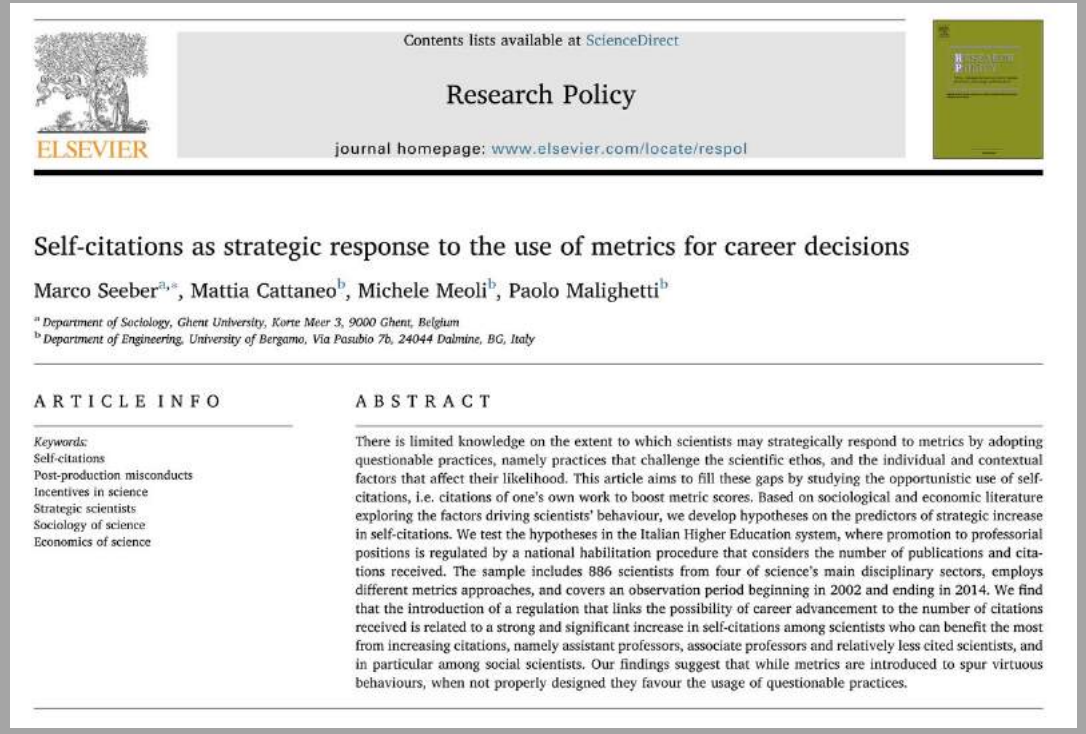




Metriche: Impact factor



When in 2010 Italian universities incorporated citations in promotion decisions, self-citation rates among social scientists went up by 81-179%



Contents lists available at ScienceDirect

Research Policy

journal homepage: www.elsevier.com/locate/respol

Self-citations as strategic response to the use of metrics for career decisions

Marco Seeber[a,*], Mattia Cattaneo[b], Michele Meoli[b], Paolo Malighetti[b]

[a] Department of Sociology, Ghent University, Korte Meer 3, 9000 Ghent, Belgium
[b] Department of Engineering, University of Bergamo, Via Pasubio 7b, 24044 Dalmine, BG, Italy

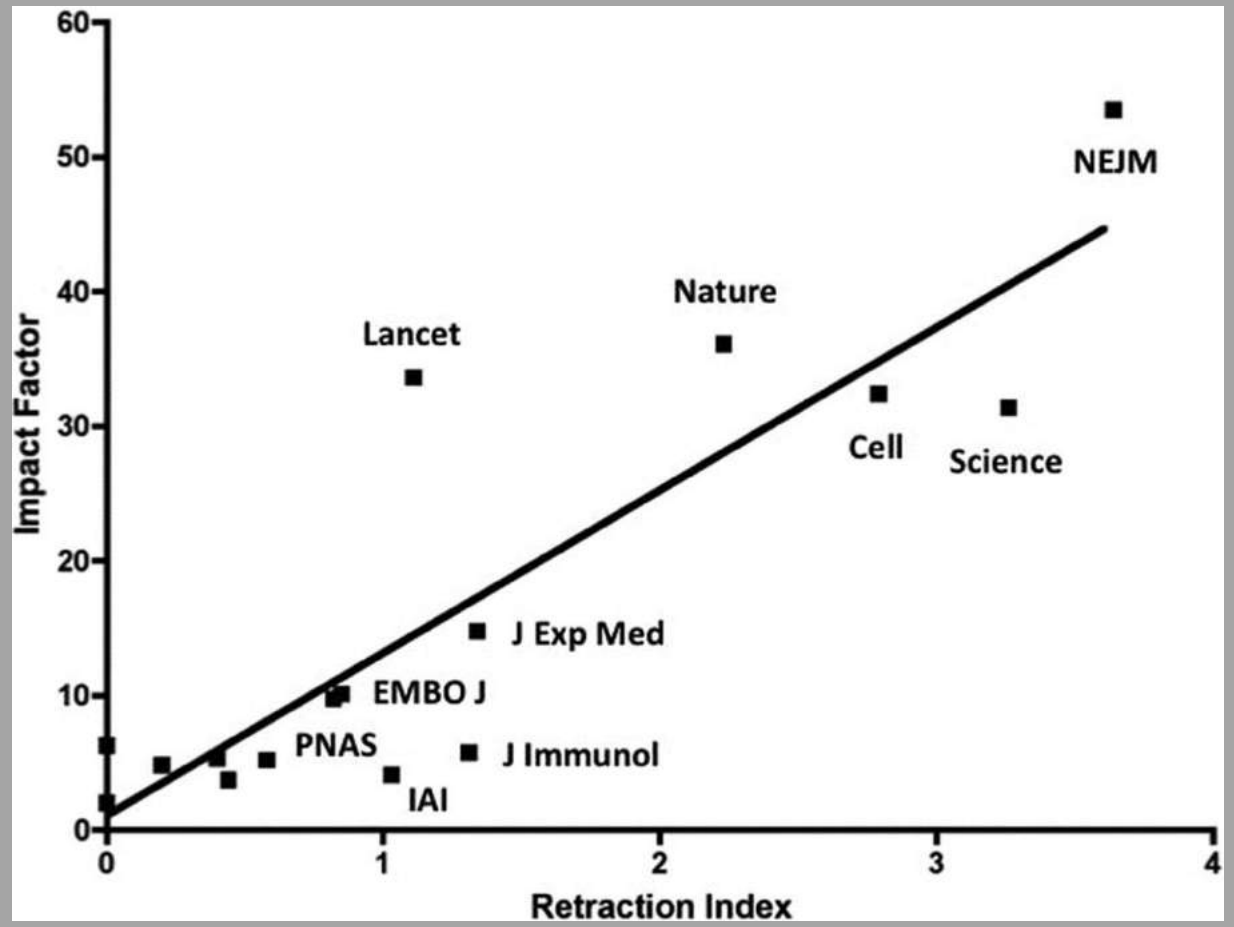
ARTICLE INFO

Keywords:
Self-citations
Post-production misconducts
Incentives in science
Strategic scientists
Sociology of science
Economics of science

ABSTRACT

There is limited knowledge on the extent to which scientists may strategically respond to metrics by adopting questionable practices, namely practices that challenge the scientific ethos, and the individual and contextual factors that affect their likelihood. This article aims to fill these gaps by studying the opportunistic use of self-citations, i.e. citations of one's own work to boost metric scores. Based on sociological and economic literature exploring the factors driving scientists' behaviour, we develop hypotheses on the predictors of strategic increase in self-citations. We test the hypotheses in the Italian Higher Education system, where promotion to professorial positions is regulated by a national habilitation procedure that considers the number of publications and citations received. The sample includes 886 scientists from four of science's main disciplinary sectors, employs different metrics approaches, and covers an observation period beginning in 2002 and ending in 2014. We find that the introduction of a regulation that links the possibility of career advancement to the number of citations received is related to a strong and significant increase in self-citations among scientists who can benefit the most from increasing citations, namely assistant professors, associate professors and relatively less cited scientists, and in particular among social scientists. Our findings suggest that while metrics are introduced to spur virtuous behaviours, when not properly designed they favour the usage of questionable practices.

Metriche: Impact factor



Correlation between impact factor and retraction index. The 2010 journal impact factor (37) is plotted against the retraction index as a measure of the frequency of retracted articles from 2001 to 2010 (see text for details). Journals analyzed were *Cell*, *EMBO Journal*, *FEMS Microbiology Letters*, *Infection and Immunity*, *Journal of Bacteriology*, *Journal of Biological Chemistry*, *Journal of Experimental Medicine*, *Journal of Immunology*, *Journal of Infectious Diseases*, *Journal of Virology*, *Lancet*, *Microbial Pathogenesis*, *Molecular Microbiology*, *Nature*, *New England Journal of Medicine*, *PNAS*, and *Science*.

Ferric C. Fang, and Arturo Casadevall Infect. Immun. 2011; doi:10.1128/IAI.05661-11

I vantaggi dell'Open Science

per gli autori:

1. - maggiore visibilità e impatto per i propri lavori *(fino al 300% in più in certe aree disciplinari);
2. possibilità di nuove metriche di valutazione dell'impatto alternative all'Impact Factor;
3. possibilità di una peer-review più trasparente ed efficace

per i ricercatori:

1. - maggiore facilità di accesso ai dati e ai risultati della ricerca rispetto agli articoli accessibili solo a pagamento;
2. - possibilità di sfruttare appieno nuove tecnologie quali il text-mining e il data-mining

I vantaggi dell'Open Science

- **per le biblioteche**: possibile risposta alla crisi dell'aumento vertiginoso dei prezzi degli abbonamenti, che, parallelamente alla diminuzione dei budget, riducono sempre più il numero dei titoli che è possibile offrire agli utenti;
- **per le Università**:
  - maggiore visibilità per i propri ricercatori;
  - possibili economie di scala sui costi degli abbonamenti;
  - razionalizzazione dell'anagrafe della ricerca se collegata all'archivio istituzionale [link interno alla pagina IR]
- **per gli enti di finanziamento**: maggiore ritorno sugli investimenti garantiti dalla massima disseminazione dei risultati della ricerca

I vantaggi dell'Open Science

Vantaggi per la comunità scientifica:

- i risultati delle ricerche si vedono di più (maggiore disseminazione), si vedono prima (grazie all'autoarchiviazione non si devono aspettare i tempi di stampa);
- grazie alla maggiore disseminazione si ottiene un maggiore impatto e una maggiore circolazione di idee
- ne guadagna la crescita complessiva e diffusa della conoscenza, che subisce una forte accelerazione
- la libera circolazione di risultati della ricerca e dei data sets contribuisce a ridurre il cultural divide

I vantaggi dell’Open Science

Vantaggi per le imprese:

- i risultati della ricerca accedemica sono agevolmente e gratuitamente accessibili e riutilizzabili. L'Open Access favorisce l'innovazione.

Vantaggi per i cittadini:

- i risultati della ricerca sono più facilmente accessibili e riutilizzabili per i cittadini che vogliano contribuire in prima persona all'avanzamento della scienza (c.s citizen science)

8 Pilastri dell’Open Science

Future of Scholarly Communication

EOSC (European Open Science Cloud)

Altmetrics

Rewards

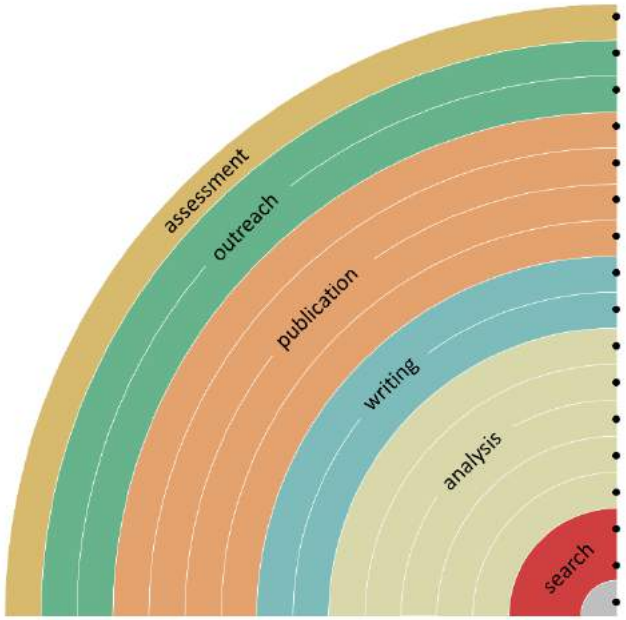
FAIR Data

Research Integrity

Skills

Open Science nella tua attività di ricerca

You can make your workflow more open by …



- adding alternative evaluation, e.g. with altmetrics
- communicating through social media, e.g. Twitter
- sharing posters & presentations, e.g. at FigShare
- using open licenses, e.g. CC0 or CC-BY
- publishing open access, 'green' or 'gold'
- using open peer review, e.g. at journals or PubPeer
- sharing preprints, e.g. at OSF, arXiv or bioRxiv
- using actionable formats, e.g. with Jupyter or CoCalc
- open XML-drafting, e.g. at Overleaf or Authorea
- sharing protocols & workfl., e.g. at Protocols.io
- sharing notebooks, e.g. at OpenNotebookScience
- sharing code, e.g. at GitHub with GNU/MIT license
- sharing data, e.g. at Dryad, Zenodo or Dataverse
- pre-registering, e.g. at OSF or AsPredicted
- commenting openly, e.g. with Hypothes.is
- using shared reference libraries, e.g. with Zotero
- sharing (grant) proposals, e.g. at RIO

Bianca Kramer & Jeroen Bosman https://101innovations.wordpress.com

DOI: 10.5281/zenodo.1147025

Casi Open Science

First Law: All data are open and all ideas are shared.
Second Law: Anyone can take part at any level of the project.
Third Law: There will be no patents.
Fourth Law: Suggestions are the best form of criticism.
Fifth Law: Public discussion is much more valuable than private email.
Sixth Law: The project is bigger than, and is not owned by, any given lab.

- Dissemination
- Communication
- Explotiation

Differenze tra Disseminazione e comunicazione

→ Disseminazione	→ Comunicazione (Outreach)
Collegato solo ai risultati	Collegato ai risultati e al progetto
Audience che può usare il risultato	Audience multiplo
Target con un alto grado di alfabetizzazione scientifica	Target con conoscenza differente
Favorire lo sfruttamento dei risultati	Aumentare la visibilità del progetto e dei suoi risultati
Inizia con la produzione dei primi risultati	Parte sin da subito
G.A. art 29	**G.A. art 38.1**

Communication and Outreach

- **Outreach** implies an interaction between the sender and the receiver of the message, there is an engagement and a two-way communication between the researcher and the public

school presentations, workshops, public talks and lab visits

- **Communication**, on the other hand, only goes in one direction from the sender to the receiver.

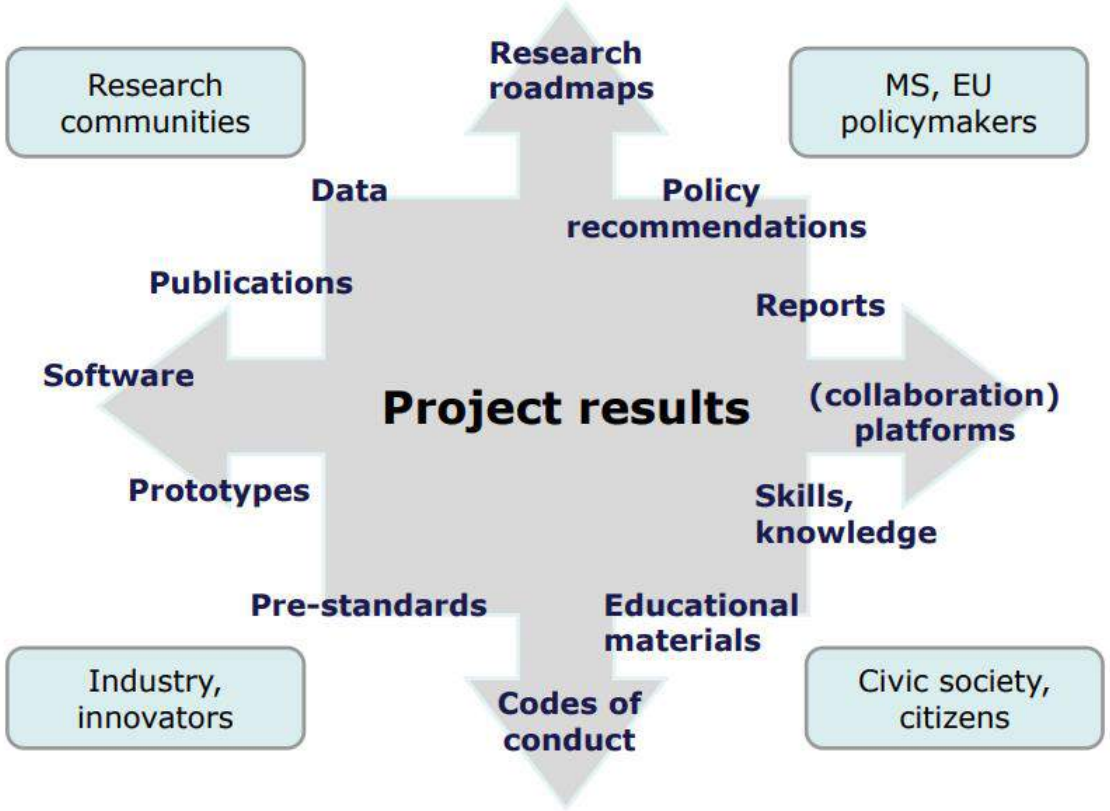
articles in mainstream newspapers and magazines, or on TV and radio channels

Differenza tra dissemination and exploitation

Dissemination	Exploitation
Describing and **making available results** so that they can be used	**Making use of results**, for scientific, societal or economic purposes
Audiences that **may make use** of results	Groups and entities that **are making concrete use of results**
All results which are not restricted due to the protection of intellectual property, security rules or legitimate interests	**All results generated during project** Participant shall make best efforts to exploit the results it owns, or to have them exploited by another legal entity
Grant Agreement Art. **29**	Grant Agreement art. **28**

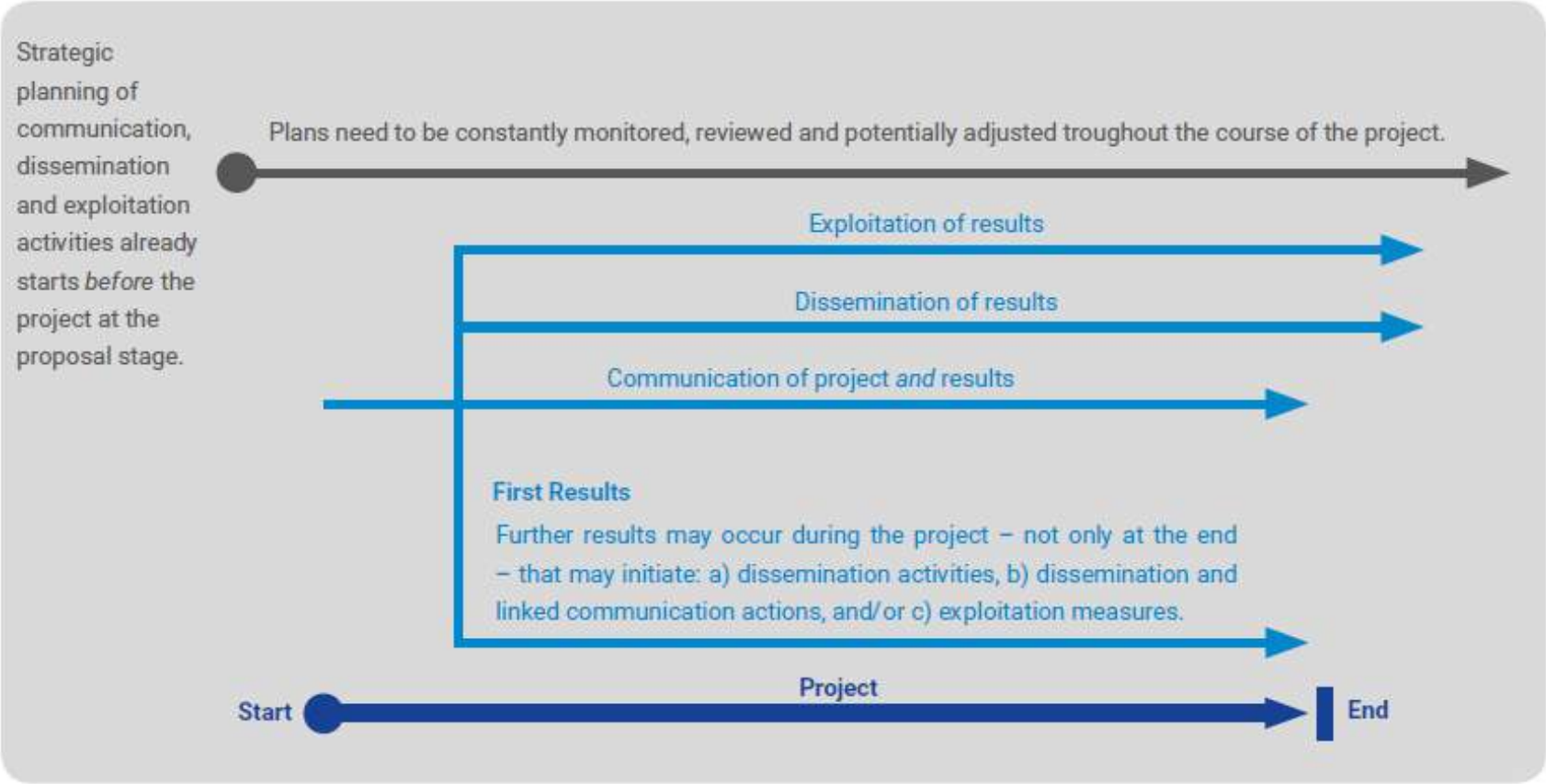
Source: http://ec.europa.eu/research/participants/data/ref/h2020/other/events/2017-03-01/8_result-dissemination-exploitation.pdf

What are project results?



Source: http://ec.europa.eu/research/participants/data/ref/h2020/other/events/2017-03-01/8_result-dissemination-exploitation.pdf

Disseminazione, Comunicazione e sfruttamente nel life-cycle del progetto



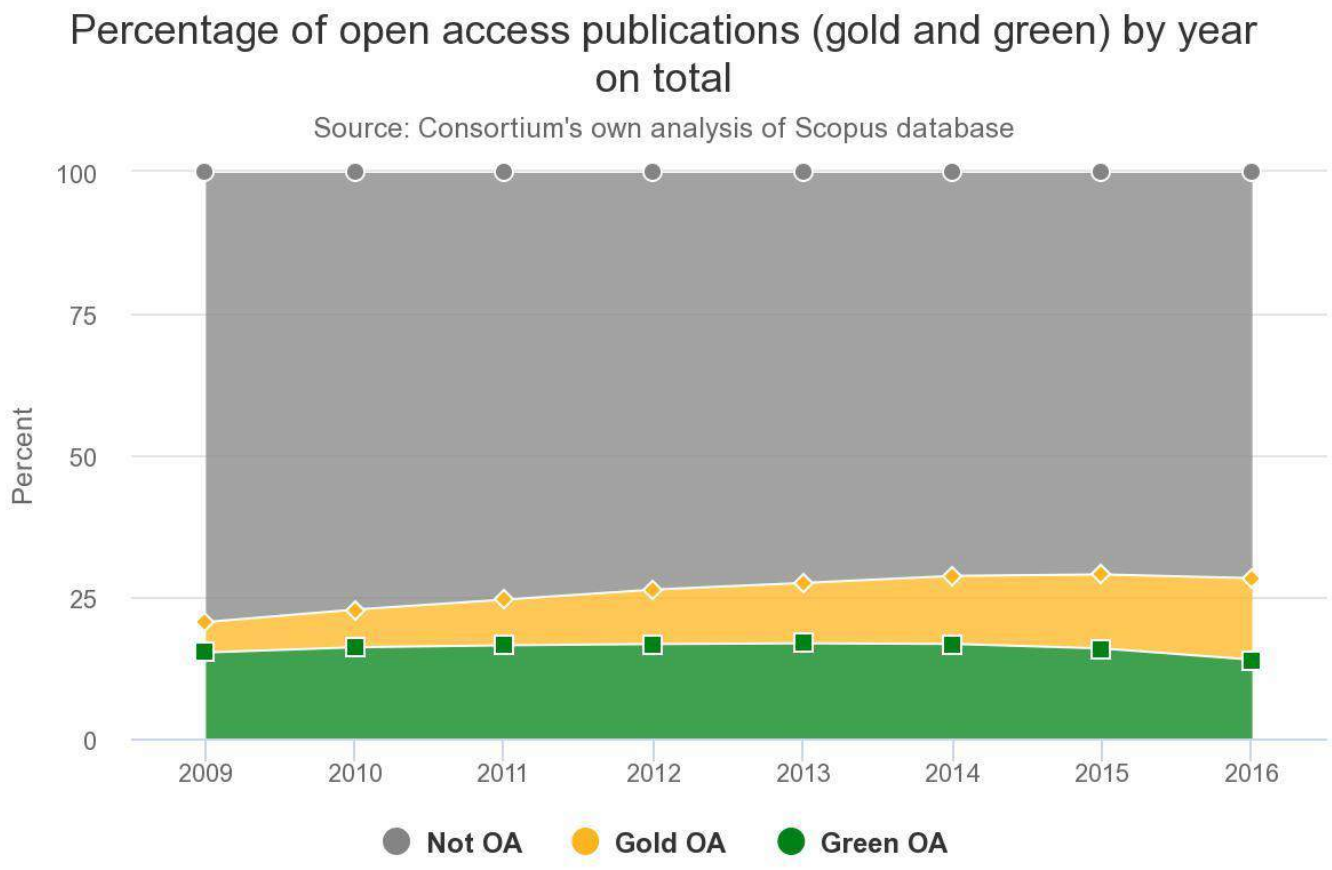
Open Access: le due vie

Open Access per la EU

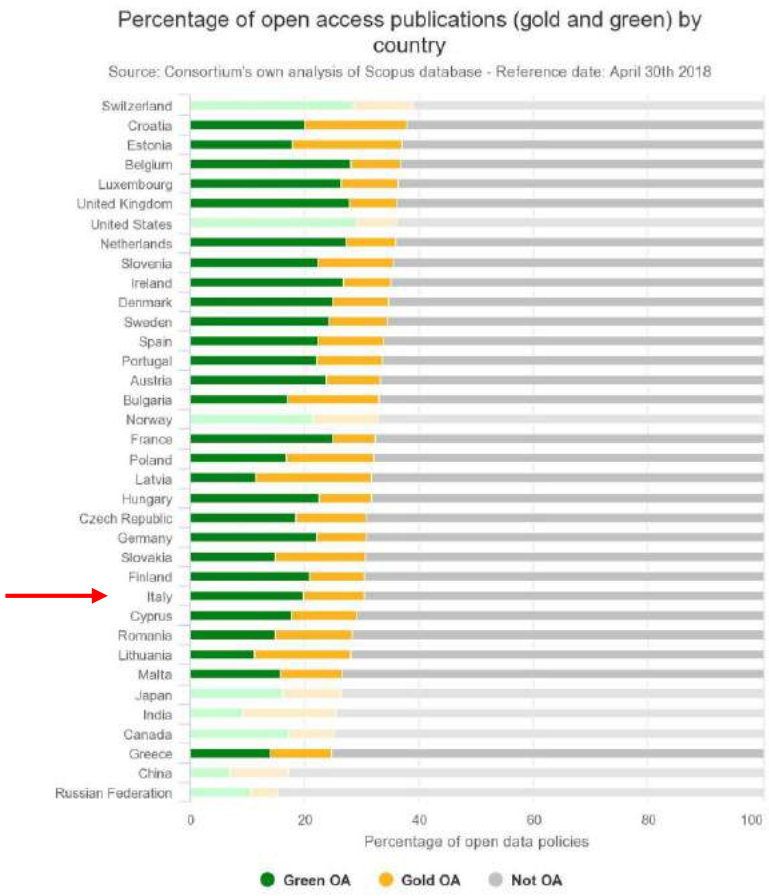
Le **politiche di accesso aperto** sono volte ad assicurare ai ricercatori e alla popolazione in generale **l'accesso gratuito** a **pubblicazioni scientifiche oggetto di valutazioni inter pares, dati di ricerca e altri risultati della ricerca** in maniera trasparente e non discriminatoria quanto prima possibile nel processo di diffusione, nonché a consentire l'utilizzo e il riutilizzo dei risultati della ricerca scientifica.

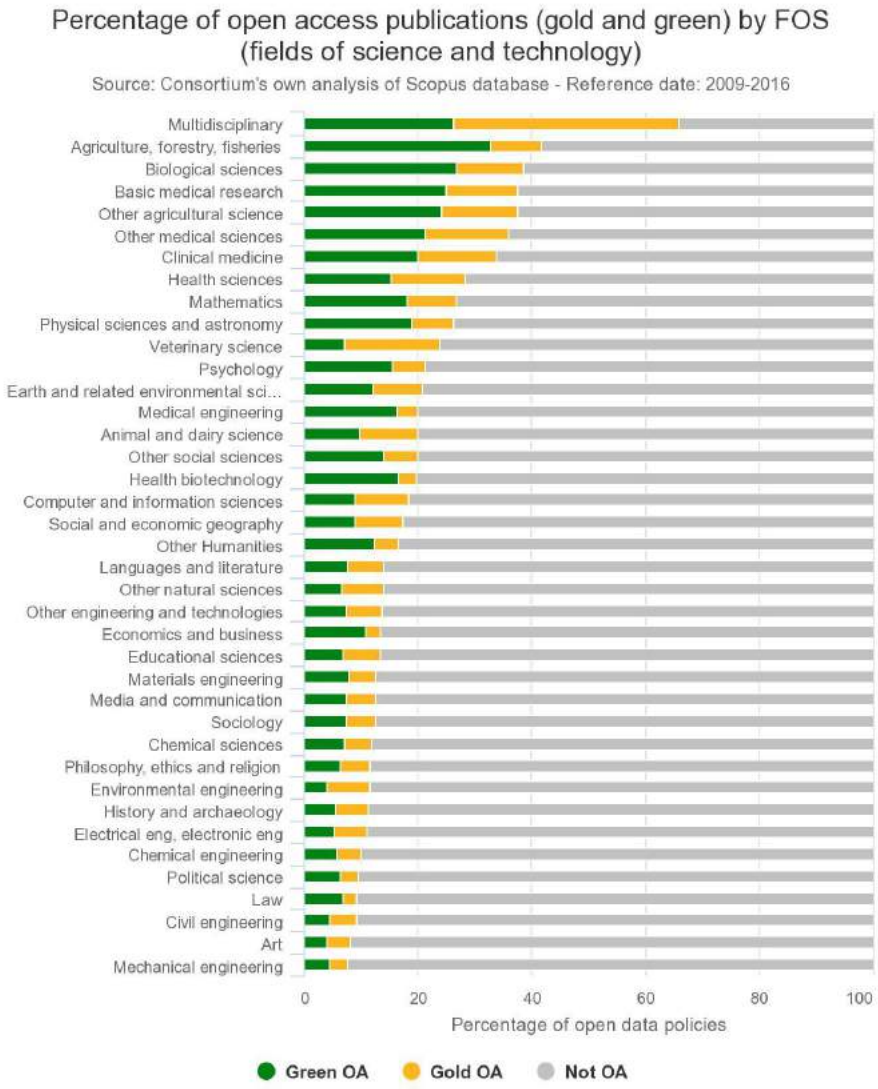
RACCOMANDAZIONE (UE) 2018/790 DELLA COMMISSIONE del 25 aprile 2018 sull'accesso all'informazione scientifica e sulla sua conservazione

Scenario


Percentage of open access publications (gold and green) by year on total
Source: Consortium's own analysis of Scopus database
Percent
100
75
50
25
0
2009
2010
2011
2012
2013
2014
2015
2016
Not OA
Gold OA
Green OA

Scenario





Più nel dettaglio:

+OA: Astronomia e astrofisica; fertilità, medicina tropicale e embriologia.

-OA: Farmacia, chimica inorganica e nucleare, ingegneria chimica.

Piwowar et al. (2018), The state of OA: a large-scale analysis of the prevalence and impact of Open Access articles. PeerJ 6:e4375; DOI 10.7717/peerj.4375

Open Access nel Grant Agreement

29.2 Open access to scientific publications

Each beneficiary must ensure open access (free of charge, online access for any user) to all peer-reviewed scientific publications relating to its results. […]

29.3 Open access to research data

Regarding the digital research data generated in the action ('data'), the beneficiaries must:

(a) deposit in a research data repository and take measures to make it possible for third parties to access, mine, exploit, reproduce and disseminate

(b) provide information — via the repository — about tools and instruments at the disposal of the beneficiaries and necessary for validating the results

Definizione di **scientific publication**

!

The dominant type of **scientific publication** is the **journal article**

Research data: data underlying publications and/or other data (such as curated but unpublished datasets or raw data)

Grant beneficiaries are also strongly encouraged to provide open access to other types of scientific publications including:

- monographs
- books
- conference proceedings
- grey literature (informally published written material not controlled by scientific publishers, e.g. reports).

Open Access manuale d'uso

1

Depositing publications in repositories

#machine-readable electronic copy #preservations #repository #post-print

Green Road
#self-archiving #embargo

Gold Road
#cost

2

3

Providing open access to publications.

(GOLD) immediately, if the publication itself is published 'open access' (i.e. if an electronic version is also available free of charge to the reader via the publisher) or (GREEN) within at most 6 months (12 months for publications in the social sciences and humanities).

SHERPA ROMEO

Not an obligation to publish - Not at odds with patenting - OA publications go the same peer review process

zenodo

Search

Upload Communities

Log in Sign up

Recent uploads

February 18, 2019 (v1.0.1) Software Open Access

View

QSOFit: General-purpose IDL code for quasar spectral fits

Shen, Yue

This is the IDL version of QSOFIT. You need to have IDLUTILS installed (http://www.sdss3.org/dr8/software/idlutils.php). If you wish to use the SFD dust maps for Galactic reddening correction, you need to download them separately. A python version (similar but not identical) is at Guo et al....

Uploaded on February 18, 2019

1 more version(s) exist for this record

February 18, 2019 (v2.0) Dataset Open Access

View

Supporting data and code for: Longitudinal Study on Shiga Toxin–producing Escherichia coli and Campylobacter jejuni on Finnish Dairy Farms and in Raw Milk

Jaakkonen

Supporting data and code for the article: "Longitudinal Study on Shiga Toxin–producing Escherichia coli and Campylobacter jejuni on Finnish Dairy Farms and in Raw Milk".

Uploaded on February 18, 2019

1 more version(s) exist for this record

February 18, 2019 (v1) Dataset Open Access

View

MAPNET Population Genomics Workshop Content: Whole genome sequencing of Bactericera cockerelli

Frampton, Rebekah; Dohmen-Vereijssen, Jessica; Drayton, Gabrielle; McCallum, John

Zenodo now supports usage statistics!

Read more about it, in our newest blog post.

Using GitHub?

Just Log in with your GitHub account and click here to start preserving your repositories.

Zenodo in a nutshell

- **Research. Shared.** — all research outputs from across all fields of research are welcome! Sciences and Humanities, really!
- **Citeable. Discoverable.** — uploads gets a Digital Object Identifier (DOI) to make them easily and uniquely citeable.
- **Communities** — create and curate your own community for a workshop, project, department, journal, into which you can accept or reject uploads. Your own complete digital repository!
- **Funding** — identify grants, integrated in reporting lines for research funded by the European Commission via OpenAIRE.

PubMed

PubMed comprises more than 29 million citations for biomedical literature from MEDLINE, life science journals, and online books. Citations may include links to full-text content from PubMed Central and publisher web sites.

Using PubMed

- PubMed Quick Start Guide
- Full Text Articles
- PubMed FAQs
- PubMed Tutorials
- New and Noteworthy

PubMed Tools

- PubMed Mobile
- Single Citation Matcher
- Batch Citation Matcher
- Clinical Queries
- Topic-Specific Queries

More Resources

- MeSH Database
- Journals in NCBI Databases
- Clinical Trials
- E-Utilities (API)
- LinkOut

Latest Literature

New articles from highly accessed journals

- Circulation (22)
- Cochrane Database Syst Rev (2)
- Drugs (1)
- JAMA (23)
- Lancet (1)
- N Engl J Med (6)
- Nat Genet (4)
- Nat Med (3)

Trending Articles

PubMed records with recent increases in activity

- Mechanism of Cross-talk between H2B Ubiquitination and H3 Methylation by Dot1L.
  Cell. 2019.
- Diabetes relief in mice by glucose-sensing insulin-secreting human α-cells.
  Nature. 2019.
- Sleep modulates haematopoiesis and protects against atherosclerosis.
  Nature. 2019.
- A new genomic blueprint of the human gut microbiota.
  Nature. 2019.

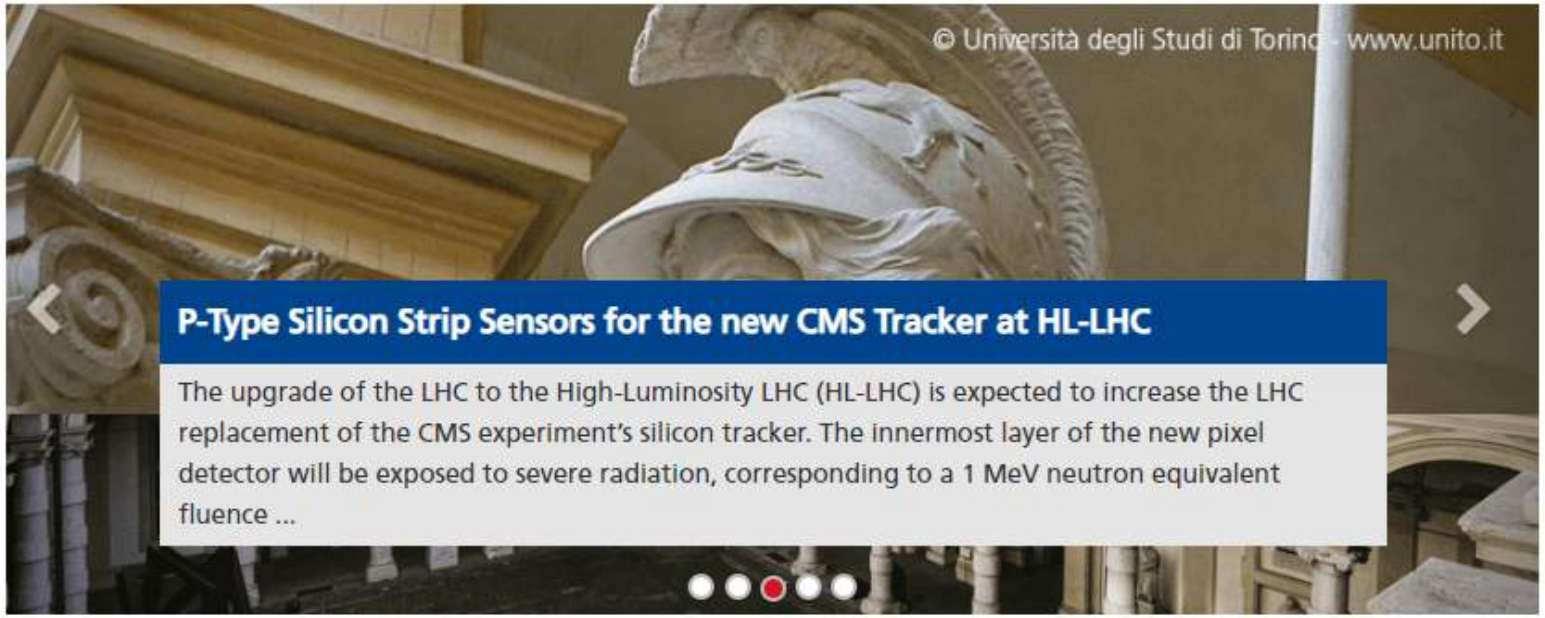
CINECA IRIS Institutional Research Information System

IRIS è il sistema di gestione integrata dei dati della ricerca (persone, progetti, pubblicazioni, attività) adottato dall'Università degli Studi di Torino.

AperTO è l'archivio istituzionale Open Access destinato a raccogliere, rendere visibile e conservare la produzione scientifica dell'Università degli Studi di Torino.

UNIVERSITÀ DEGLI STUDI DI TORINO

Prodotti recenti



P-Type Silicon Strip Sensors for the new CMS Tracker at HL-LHC

The upgrade of the LHC to the High-Luminosity LHC (HL-LHC) is expected to increase the LHC replacement of the CMS experiment's silicon tracker. The innermost layer of the new pixel detector will be exposed to severe radiation, corresponding to a 1 MeV neutron equivalent fluence ...

Open Access: istruzioni

Come depositare

- Come allegare il file Open Access
- Tutorial
- Domande frequenti

Politiche di copyright

- Per articoli, editori internazionali: SHERPA RoMEO
- Per articoli, editori italiani o non presenti in SHERPA RoMEO
- Per capitoli e libri, editori nazionali e internazionali
- Riviste Elsevier (embargo specifico)
- Dubbi sul copyright
- Versioni ed embargo già calcolato

Open Access, ovvero...

Disclaimer

Strumenti

Open Data

1 the **'underlying data'** (the data needed to validate the results presented in scientific publications), including the associated metadata (i.e. metadata describing the research data deposited), as soon as possible

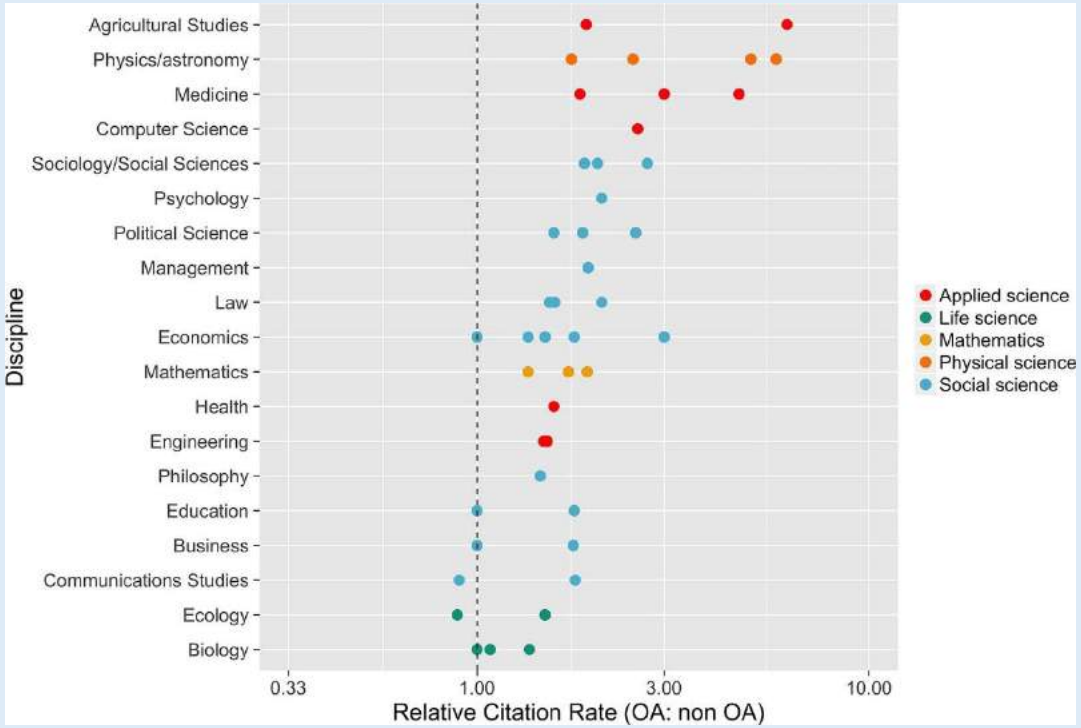
2 **any other data** (for instance curated data not directly attributable to a publication, or raw data), including the associated metadata, as specified and within the deadlines laid down in the DMP – that is, according to the individual judgement by each project/grantee

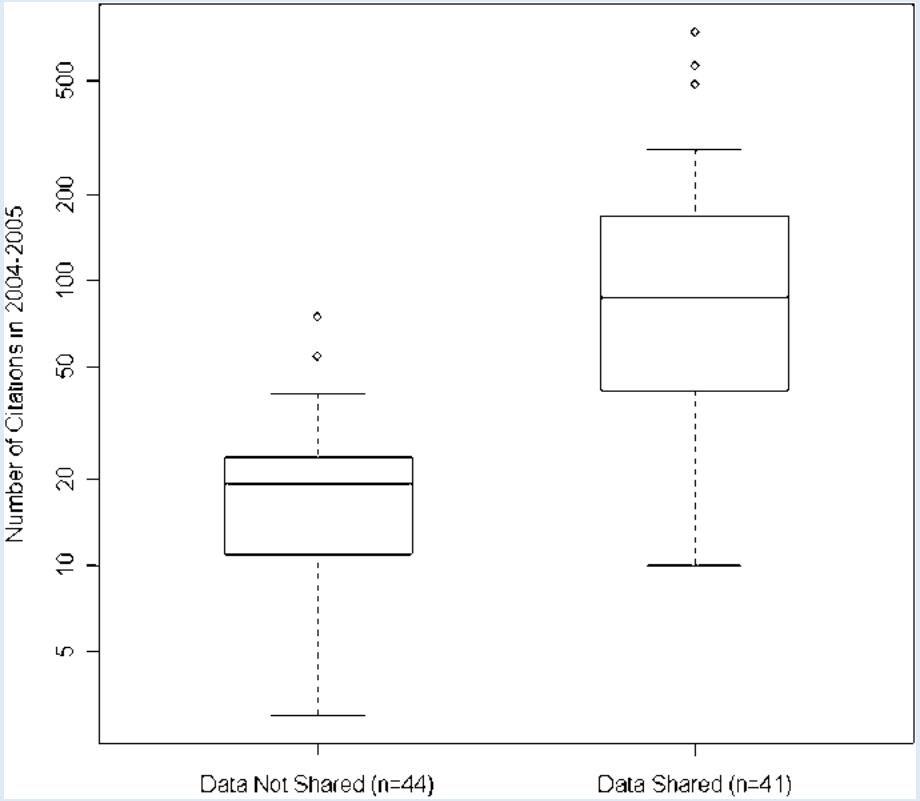
Alcuni miti da sfatare

- Il costo per OA è troppo alto:
  - Circa il 70% delle riviste OA non ha un costo di pubblicazione
  - Molte riviste OA hanno costi bassi
  - Molte riviste OA hanno esenzioni fiscali
  - Alcune istituzioni hanno membership con riviste OA
  - Alcune istituzioni hanno fondi per l'OA
  - Molti finanziatori coprono i costi per l'OA

Alcuni miti da sfatare

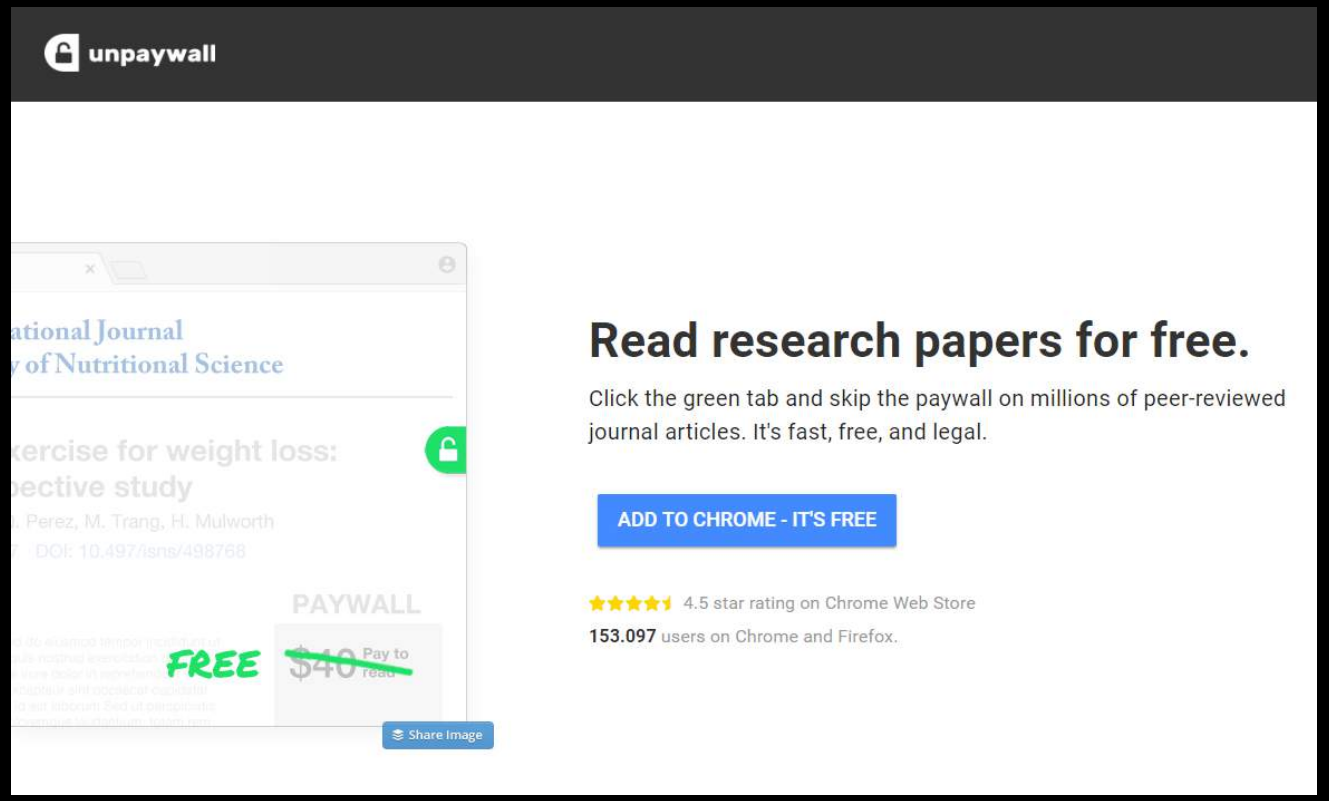
- Correlazione tra carriera e OA:





eLife 2016;5:e16800 DOI: 10.7554/eLife.16800
Piwowar HA, Vision TJ. (2013) Data reuse and the open data citation advantage. *PeerJ* 1:e175https://doi.org/10.7717/peerj.175

Dark Open Access: Come ottenere il pdf senza abbonamento



Open Data

Open Data: Manuale d'uso

STEP 1 **The project must deposit the research data preferably in a research data repository.**

STEP 2 **as far as possible as closed as necessary, projects must then take measures to enable third parties to access, mine, exploit, reproduce and disseminate (free of charge for any user) this research data.**

Data Management Plan D M6

- the handling of research data during & after the end of the project
- what data will be collected, processed and/or generated
- which methodology & standards will be applied
- whether data will be shared/made open access and
- how data will be curated & preserved (including after the end of the project).

OPT OUT

- during the application phase
- during the grant agreement preparation (GAP) phase and
- after the signature of the grant agreement.

FAIR principles of 'Findability', 'Accessibility', 'Interoperability' and 'Reusability',

RDM and research: the primary benefits

RDM helps preserve, protect and proliferate the data behind scientific (research) discoveries and claims –first and foremost it is a **QUALITY** issue…

- When research data is managed actively and responsibly, the evidence that underpins research can be made open for anyone to scrutinise, and attempt to replicate findings. This leads to a more robust scholarly record, and helps discourage and identify academic fraud

A secondary benefit is **PROTECTION:** the rights and legitimate interests of data subjects and IP owners are mindfully protected

Active and responsible data management reduces the chances of inadvertent data leaks or loss

Other Benefit

It also has other benefits…

- **EFFICIENCY**: Data collection can be funded once, and used many times for a variety of purposes
- **ACCESSIBILITY:** Interested third parties can (where appropriate) access and build upon publicly-funded research outputs with minimal barriers to access
- **SPEED:**The research process becomes faster
- **IMPACT and LONGEVITY**: Data linked to publications receive more citations, over longer periods
- **DURABILITY:** Simply put, fewer important datasets will be lost

Risks of not doing this, or getting this wrong

- **LEGAL** – sensitive data is protected by law (and contracts) and needs to be protected
- **FINANCIAL** – non-compliance with funder policies can lead to reduced access to income streams
- **SCIENTIFIC** – potential discoveries may be hidden away in drawers, on USB sticks or non-networked drives
- **OPPORTUNITY COST** – reduced visibility for research > lost opportunities for collaboration
- **QUALITY** – the scholarly record becomes less robust
- **REPUTATIONAL** – responsible data management is increasingly considered a core element of good scholarly practice in the 21stcentury

FAIR principles

Findable

The first step in (re)using data is to find them. Metadata and data should be easy to find for both humans and computers. Machine-readable metadata are essential for automatic discovery of datasets and services, so this is an essential component of the FAIRification process.

- F1. (Meta)data are assigned a globally unique and persistent identifier
- F2. Data are described with rich metadata
- F3. Metadata clearly and explicitly include the identifier of the data they describe
- F4. (Meta)data are registered or indexed in a searchable resource

Wilkinson, M. D. *et al.* The FAIR Guiding Principles for scientific data management and stewardship. *Sci. Data*3:160018 doi: 10.1038/sdata.2016.18 (2016)

FAIR principles

Findable

- F1. (Meta)data are assigned a globally unique and persistent identifier

Box 1. Anatomy of a persistent identifier

An **identifier** is a sequence of characters that identifies an entity. The term '**persistent identifier**' is usually used in the context of digital objects that are accessible over the Internet. Typically, such an identifier is not only persistent but also actionable[7]: it is a **Uniform Resource Identifier (URI)**[8], usually of type http/s, that you can paste in a web browser address bar and be taken to the identified source.

An example of an exemplary **URI** is below; it is comprised of ASCII characters and follow a pattern that starts with a fixed set of characters (URI pattern). That URI pattern is followed by a **Local ID**--an identifier which, by itself, is only guaranteed to be locally unique within the database or source. A local ID is sometimes referred to as an 'accession'.

URI http://purl.uniprot.org/uniprot/A0A022YWF9

URI pattern Local ID

Formally breaking down a URI into into these two components (URI pattern and local ID) makes it possible for meta resolvers to 'resolve' entities to their source. This practice also facilitates representation of a URI as a **compact URI (CURIE)**, an identifier comprised of **<Prefix>:<Local ID>** wherein **prefix** is deterministically convertible to a **URI pattern** and vice-versa. For instance, the above URI could be represented as uniprot:A0A022YWF9. This deterministic conversion makes it easy for meta resolvers as well, e.g., http://identifiers.org/uniprot:A0A022YWF9.

Wilkinson, M. D. *et al.* The FAIR Guiding Principles for scientific data management and stewardship. *Sci. Data*3:160018 doi: 10.1038/sdata.2016.18 (2016)

FAIR principles

Findable

- F2. Data are described with rich metadata

What does this mean?

In creating FAIR digital resources, metadata can (and should) be generous and extensive, including descriptive information about the context, quality and condition, or characteristics of the data. Rich metadata allow a computer to automatically accomplish routine and tedious sorting and prioritising tasks that currently demand a lot of attention from researchers. The rationale behind this principle is that someone should be able to find data based on the information provided by their metadata, even without the data's identifier. As such, compliance with F2 helps people to locate your data, and increase re-use and citations. Rich metadata implies that you should not presume that you know who will want to use your data, or for what purpose. So, as a rule of thumb, you should never say 'this metadata isn't useful'; be generous and provide it anyway!

Wilkinson, M. D. *et al.* The FAIR Guiding Principles for scientific data management and stewardship. *Sci. Data*3:160018 doi: 10.1038/sdata.2016.18 (2016)

FAIR principles

Findable

- F3. Metadata clearly and explicitly include the identifier of the data they describe

What does this mean?

This is a simple and obvious principle, but of critical importance to FAIR. The metadata and the dataset they describe are usually separate files. The association between a metadata file and the dataset should be made explicit by mentioning a dataset's globally unique and persistent identifier in the metadata. As stated in F1, many repositories will generate globally unique and persistent identifiers for deposited datasets that can be used for this purpose.

Wilkinson, M. D. *et al.* The FAIR Guiding Principles for scientific data management and stewardship. *Sci. Data*3:160018 doi: 10.1038/sdata.2016.18 (2016)

FAIR principles

Findable

- F4. (Meta)data are registered or indexed in a searchable resource

What does this mean?

Identifiers and rich metadata descriptions alone will not ensure 'findability' on the internet. Perfectly good data resources may go unused simply because no one knows they exist. If the availability of a digital resource such as a dataset, service or repository is not known, then nobody (and no machine) can discover it. There are many ways in which digital resources can be made discoverable, including indexing. For example, Google sends out spiders that 'read' web pages and automatically index them, so they then become findable in the Google search box. This is great for most ordinary searchers, but for scholarly research data, we need to be more explicit about indexing. Principles F1-F3 will provide the core elements for fine-grained indexing by some current repositories and future services.

Wilkinson, M. D. *et al.* The FAIR Guiding Principles for scientific data management and stewardship. *Sci. Data*3:160018 doi: 10.1038/sdata.2016.18 (2016)

FAIR principles

Accessible

Once the user finds the required data, she/he needs to know how can they be accessed, possibly including authentication and authorisation.

- A1. (Meta)data are retrievable by their identifier using a standardised communications protocol
  - A1.1 The protocol is open, free, and universally implementable
  - A1.2 The protocol allows for an authentication and authorisation procedure, where necessary
- A2. Metadata are accessible, even when the data are no longer available

Wilkinson, M. D. *et al.* The FAIR Guiding Principles for scientific data management and stewardship. *Sci. Data*3:160018 doi: 10.1038/sdata.2016.18 (2016)

FAIR principles

Accessible

- A1. (Meta)data are retrievable by their identifier using a standardised communications protocol

What does this mean?

Most users of the internet retrieve data by ‘clicking on a link’. This is a high-level interface to a low-level protocol called tcp, that the computer executes to load data in the user’s web browser. (Note that http(s) or ftp, which form the backbone of modern internet, are built on tcp, and make requesting and providing digital resources substantially easier than other communication protocols.) Principle A1 states that FAIR data retrieval should be mediated without specialised tools or communication methods. So, clearly define who can access the actual data, and specify how.

Wilkinson, M. D. *et al.* The FAIR Guiding Principles for scientific data management and stewardship. *Sci. Data*3:160018 doi: 10.1038/sdata.2016.18 (2016)

FAIR principles

Accessible

- A2: Metadata should be accessible even when the data is no longer available

What does this mean?

Datasets tend to degrade or disappear over time because there is a cost to maintaining an online presence for data resources. When this happens, links become invalid and users waste time hunting for data that might no longer be there. Storing the metadata generally is much easier and cheaper. Hence, principle A2 states that metadata should persist even when the data are no longer sustained. A2 is related to the registration and indexing issues described in F4.

Wilkinson, M. D. *et al.* The FAIR Guiding Principles for scientific data management and stewardship. *Sci. Data*3:160018 doi: 10.1038/sdata.2016.18 (2016)

FAIR principles

Interoperable

The data usually need to be integrated with other data. In addition, the data need to interoperate with applications or workflows for analysis, storage, and processing.

- 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

Wilkinson, M. D. *et al.* The FAIR Guiding Principles for scientific data management and stewardship. *Sci. Data*3:160018 doi: 10.1038/sdata.2016.18 (2016)

FAIR principles

Accessible

- I1. (Meta)data use a formal, accessible, shared, and broadly applicable language for knowledge representation.

What does this mean?

Humans should be able to exchange and interpret each other's data (so preferably do not use dead languages). But this also applies to computers, meaning that data that should be readable for machines without the need for specialised or ad hoc algorithms, translators, or mappings. Interoperability typically means that each computer system at least has knowledge of the other system's data exchange formats. For this to happen and to ensure automatic findability and interoperability of datasets, it is critical to use (1) commonly used controlled vocabularies, ontologies, thesauri (having resolvable globally unique and persistent identifiers, see F1) and (2) a good data model (a well-defined framework to describe and structure (meta)data).

Wilkinson, M. D. *et al.* The FAIR Guiding Principles for scientific data management and stewardship. *Sci. Data*3:160018 doi: 10.1038/sdata.2016.18 (2016)

FAIR principles

Accessible

- I2. (Meta)data use vocabularies that follow FAIR principles

What does this mean?

The controlled vocabulary used to describe datasets needs to be documented and resolvable using globally unique and persistent identifiers. This documentation needs to be easily findable and accessible by anyone who uses the dataset.

Wilkinson, M. D. *et al.* The FAIR Guiding Principles for scientific data management and stewardship. *Sci. Data*3:160018 doi: 10.1038/sdata.2016.18 (2016)

FAIR principles

Accessible

- I3. (Meta)data include qualified references to other (meta)data

What does this mean?

A qualified reference is a cross-reference that explains its intent. For example, *X is regulator of Y* is a much more qualified reference than *X is associated with Y*, or *X see also Y*. The goal therefore is to create as many meaningful links as possible between (meta)data resources to enrich the contextual knowledge about the data, balanced against the time/energy involved in making a good data model. To be more concrete, you should specify if one dataset builds on another data set, if additional datasets are needed to complete the data, or if complementary information is stored in a different dataset. In particular, the scientific links between the datasets need to be described. Furthermore, all datasets need to be properly cited (i.e., including their globally unique and persistent identifiers).

Wilkinson, M. D. *et al.* The FAIR Guiding Principles for scientific data management and stewardship. *Sci. Data*3:160018 doi: 10.1038/sdata.2016.18 (2016)

FAIR principles

Reusable

The ultimate goal of FAIR is to optimise the reuse of data. To achieve this, metadata and data should be well-described so that they can be replicated and/or combined in different settings.

- R1. Meta(data) are richly described with 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 detailed provenance
  - R1.3. (Meta)data meet domain-relevant community standards

Wilkinson, M. D. *et al.* The FAIR Guiding Principles for scientific data management and stewardship. *Sci. Data*3:160018 doi: 10.1038/sdata.2016.18 (2016)

FAIR principles

Accessible

- R1. Meta(data) are richly described with a plurality of accurate and relevant attributes

What does this mean?
It will be much easier to find and reuse data if there are many labels are attached to the data. Principle R1 is related to F2, but R1 focuses on the ability of a user (machine or human) to decide if the data is actually USEFUL in a particular context. To make this decision, the data publisher should provide not just metadata that allows discovery, but also metadata that richly describes the context under which the data was generated. This may include the experimental protocols, the manufacturer and brand of the machine or sensor that created the data, the species used, the drug regime, etc. Moreover, R1 states that the data publisher should not attempt to predict the data consumer's identity and needs. We chose the term 'plurality' to indicate that the metadata author should be as generous as possible in providing metadata, even including information that may seem irrelevant.

Some points to take into consideration (non-exhaustive list):

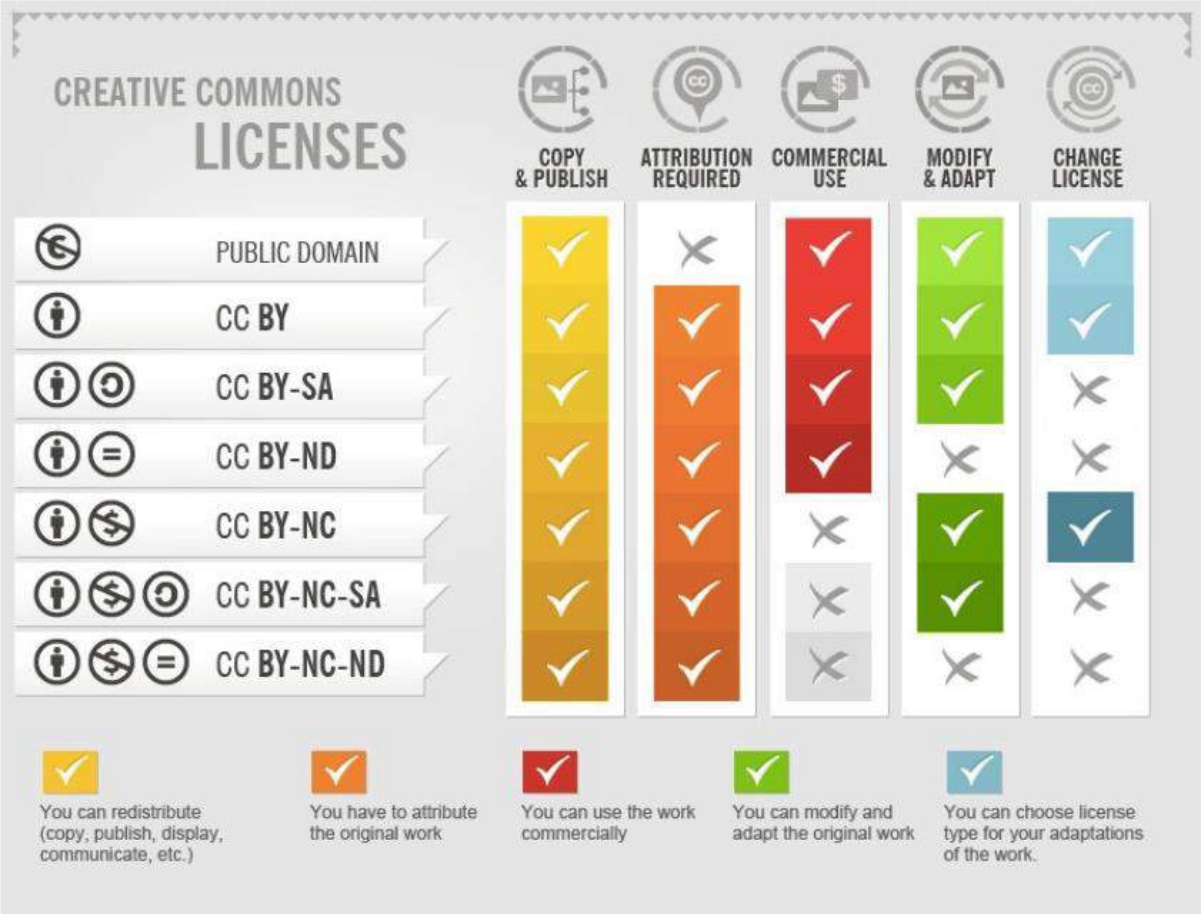
- Describe the scope of your data: for what purpose was it generated/collected?
- Mention any particularities or limitations about the data that other users should be aware of.
- Specify the date of generation/collection of the data, the lab conditions, who prepared the data, the parameter settings, the name and version of the software used.
- Is it raw or processed data?
- Ensure that all variable names are explained or self-explanatory (i.e., defined in the research field's controlled vocabulary).
- Clearly specify and document the version of the archived and/or reused data.

Wilkinson, M. D. *et al.* The FAIR Guiding Principles for scientific data management and stewardship. *Sci. Data*3:160018 doi: 10.1038/sdata.2016.18 (2016)

Dataset licensing

Horizon 2020 guidelines point to:

or

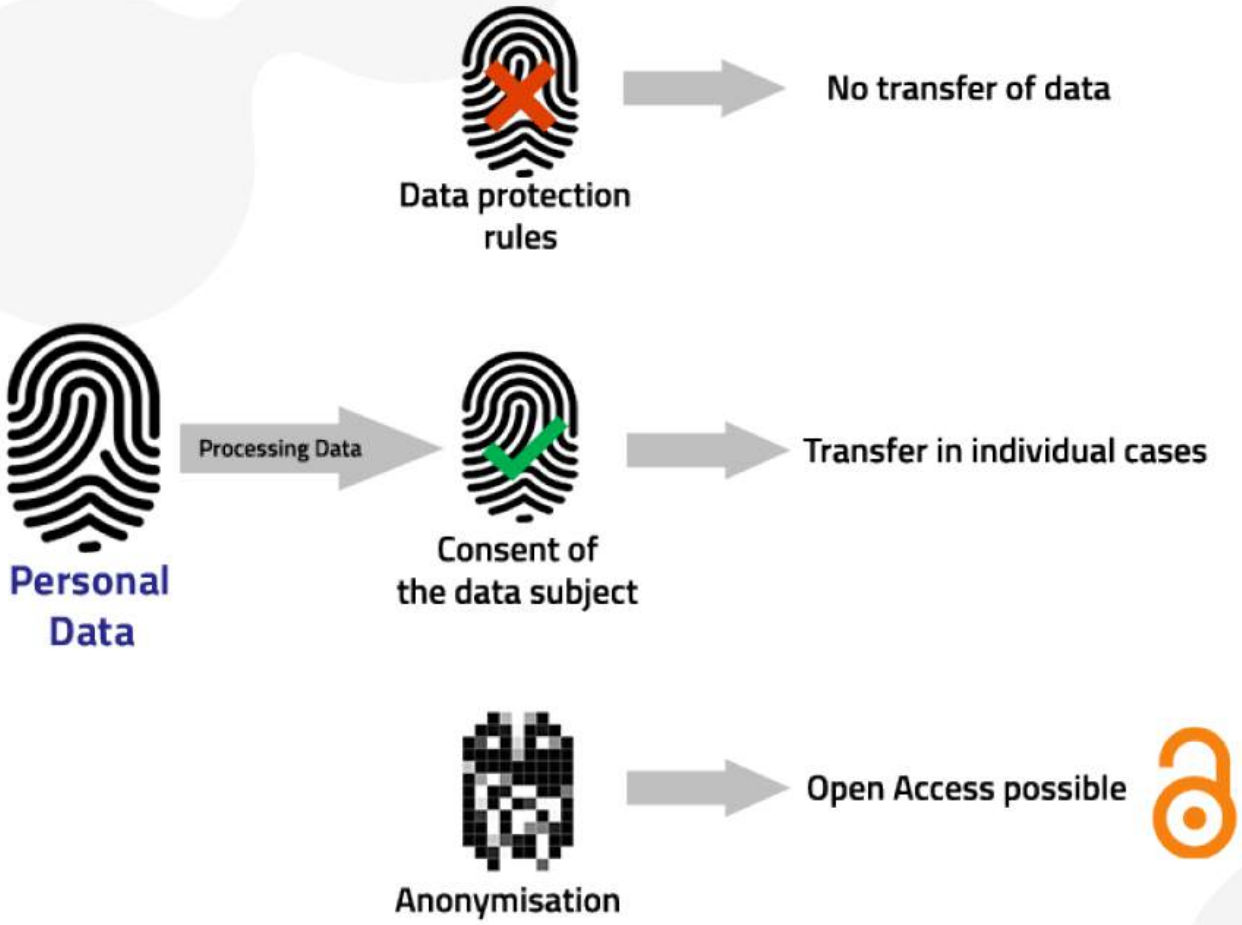


https://ufal.github.io/public-license-selector/

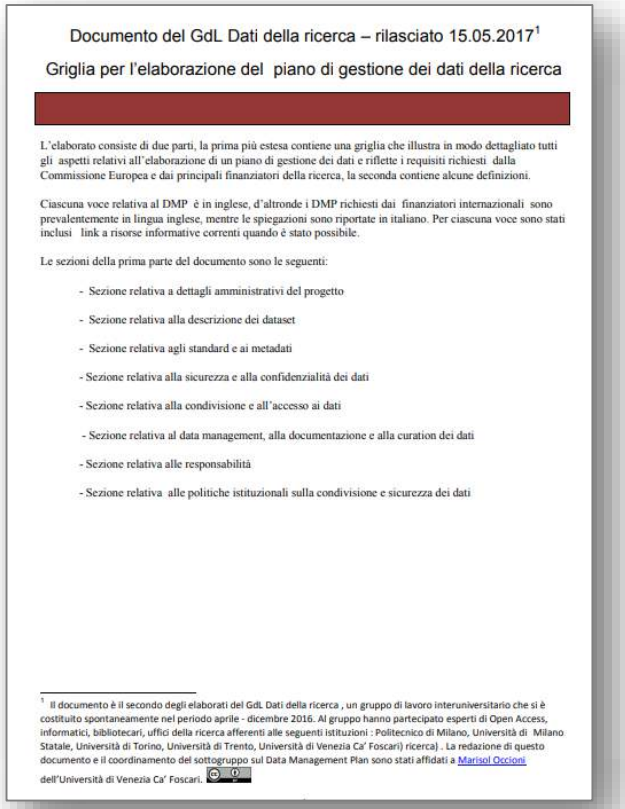
Personal data and the Open Research Data Pilot

"Personal data" means any information relating to a natural person who is either identified or who could be identifiable by that data

Anonymisation of personal research data is the effective solution to comply with the data protection legislation and the requirements of the **Open Research Data Pilot**.



Data Management Plan



Documento del GdL Dati della ricerca – rilasciato 15.05.2017[1]

Griglia per l'elaborazione del piano di gestione dei dati della ricerca

L'elaborato consiste di due parti, la prima più estesa contiene una griglia che illustra in modo dettagliato tutti gli aspetti relativi all'elaborazione di un piano di gestione dei dati e riflette i requisiti richiesti dalla Commissione Europea e dai principali finanziatori della ricerca, la seconda contiene alcune definizioni.

Ciascuna voce relativa al DMP è in inglese, d'altronde i DMP richiesti dai finanziatori internazionali sono prevalentemente in lingua inglese, mentre le spiegazioni sono riportate in italiano. Per ciascuna voce sono stati inclusi link a risorse informative correnti quando è stato possibile.

Le sezioni della prima parte del documento sono le seguenti:

- Sezione relativa a dettagli amministrativi del progetto
- Sezione relativa alla descrizione dei dataset
- Sezione relativa agli standard e ai metadati
- Sezione relativa alla sicurezza e alla confidenzialità dei dati
- Sezione relativa alla condivisione e all'accesso ai dati
- Sezione relativa al data management, alla documentazione e alla curation dei dati
- Sezione relativa alle responsabilità
- Sezione relativa alle politiche istituzionali sulla condivisione e sicurezza dei dati

[1] Il documento è il secondo degli elaborati del GdL Dati della ricerca , un gruppo di lavoro interuniversitario che si è costituito spontaneamente nel periodo aprile - dicembre 2016. Al gruppo hanno partecipato esperti di Open Access, informatici, bibliotecari, uffici della ricerca afferenti alle seguenti istituzioni : Politecnico di Milano, Università di Milano Statale, Università di Torino, Università di Trento, Università di Venezia Ca' Foscari) ricerca) . La redazione di questo documento e il coordinamento del sottogruppo sul Data Management Plan sono stati affidati a Marisol Occioni dell'Università di Venezia Ca' Foscari.

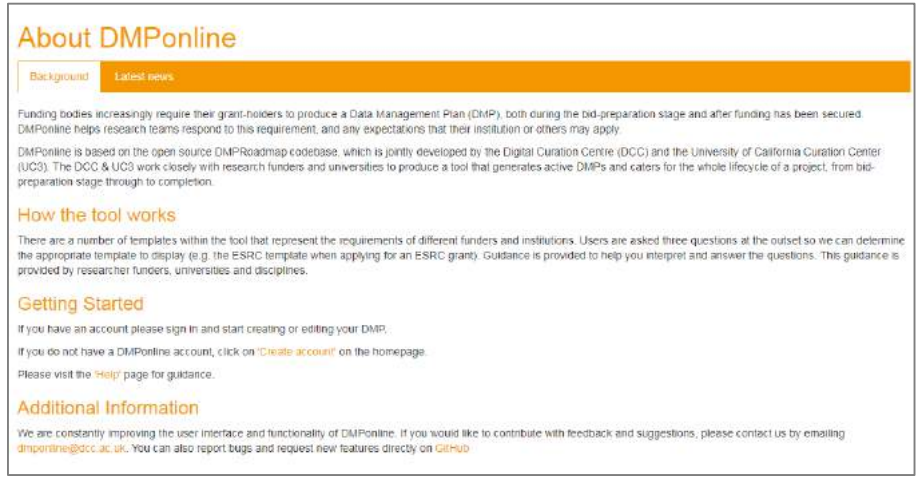
http://bit.ly/2N8TSXD

ALMA MATER STUDIORUM - UNIVERSITÀ DI BOLOGNA
AREA SISTEMI DIPARTIMENTALI E DOCUMENTALI (ASDD)
Centro Risorse per la Ricerca Multimediale (CRR-MM)

DATA MANAGEMENT PLAN
Open Research Data Pilot - Horizon2020

GUIDA ALLA REDAZIONE

http://bit.ly/2CTglTU



About DMPonline

Background | Latest news

Funding bodies increasingly require their grant-holders to produce a Data Management Plan (DMP), both during the bid-preparation stage and after funding has been secured. DMPonline helps research teams respond to this requirement, and any expectations that their institution or others may apply.

DMPonline is based on the open source DMPRoadmap codebase, which is jointly developed by the Digital Curation Centre (DCC) and the University of California Curation Center (UC3). The DCC & UC3 work closely with research funders and universities to produce a tool that generates active DMPs and caters for the whole lifecycle of a project, from bid-preparation stage through to completion.

How the tool works

There are a number of templates within the tool that represent the requirements of different funders and institutions. Users are asked three questions at the outset so we can determine the appropriate template to display (e.g. the ESRC template when applying for an ESRC grant). Guidance is provided to help you interpret and answer the questions. This guidance is provided by researcher funders, universities and disciplines.

Getting Started

If you have an account please sign in and start creating or editing your DMP.

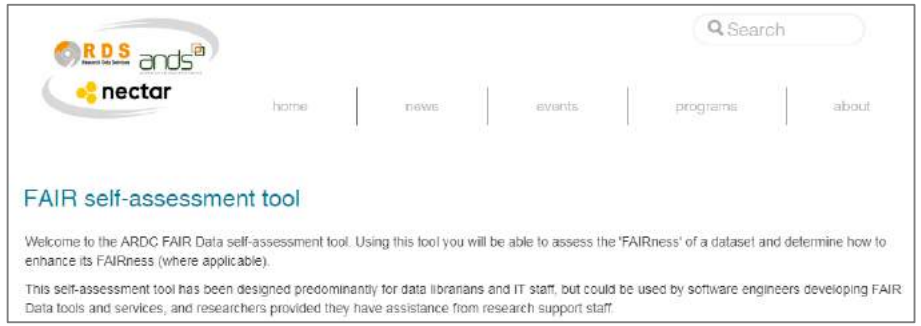
If you do not have a DMPonline account, click on 'Create account' on the homepage.

Please visit the 'Help' page for guidance.

Additional Information

We are constantly improving the user interface and functionality of DMPonline. If you would like to contribute with feedback and suggestions, please contact us by emailing dmponline@dcc.ac.uk. You can also report bugs and request new features directly on GitHub

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



RDS ands nectar

Search

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).

This self-assessment tool has been designed predominantly for data librarians and IT staff, but could be used by software engineers developing FAIR Data tools and services, and researchers provided they have assistance from research support staff.

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

Dear Prof. XYZ,

Our records show that, for the project in reference and of which you are coordinator the reported peer-reviewed publication indicated below still appear as non-available in open access:

Pubblication1

Pubblication2

I would like to remind you that, each beneficiary must ensure open access (free of charge, online access for any user) to all peer-reviewed scientific publications relating to its results generated in a Horizon 2020 action, in accordance with the conditions set out in Article 29.2 of Horizon 2020 Grant Agreement. If a beneficiary breaches this obligation, the grant may be reduced (see Article 43 of the Grant Agreement). Such a breach may also lead to any other measures described in Chapter 6.

I would therefore like to ask you to take immediate action to ensure that the beneficiaries concerned provide open access to the peer-reviewed articles mentioned above. Please reply to this letter within 30 calendar days by indicating whether the non-compliance has been remedied, or in case of continued non-compliance provide the reasons for non-compliance.

For more information about open access to peer-reviewed scientific publications (and in particular, the obligation to deposit publications in repositories and to provide open access to these publications), please visit the section on Open Access available on the Funding & Tenders Portal or check the Annotated Grant Agreement (art 29).

For more information about how to encode or update the data of your peer-reviewed publications in the continuous reporting, please check the H2020 online manual.

Public Engagement e Citizen Science

And there is also a large consensus that changes are needed throughout the R&I system

Certain key issues (or policy agendas) need to be taken into account:

ETHICS
Research integrity and ethical acceptability of the R&I outcomes

GENDER EQUALITY
Human resources, decision bodies and research dimension

GOVERNANCE
Structural changes to include all these issues in the R&I system

OPEN ACCESS
To results from publicly funded research, privacy issues and even more: open science

PUBLIC ENGAGEMENT
Towards a more open and inclusive R&I

SCIENCE EDUCATION
Provide competences for the responsible citizens society needs

Il PE è un elemento del RRI

La società odierna sta affrontanto alcune importanti sfide…

Health, demographic change, and wellbeing

Food, agriculture and forestry, and water

Secure, clean and efficient energy

Smart, green and integrated transport

Climate action, environment, and resources

Europe in a changing world: inclusive, innovative and reflective societies

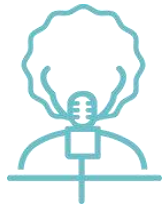
Secure societies: freedom and security of Europe and its citizens

All'interno del sistema R&I ci sono stati esempi di polemiche e insuccessi nell'adempiere alle aspettative della società:

- GMOs
- fracking
- food safety
- affordable medication

among others...

… in parte perchè non tutti gli attori del sistema erano stati ingaggiati:



POLICY MAKERS

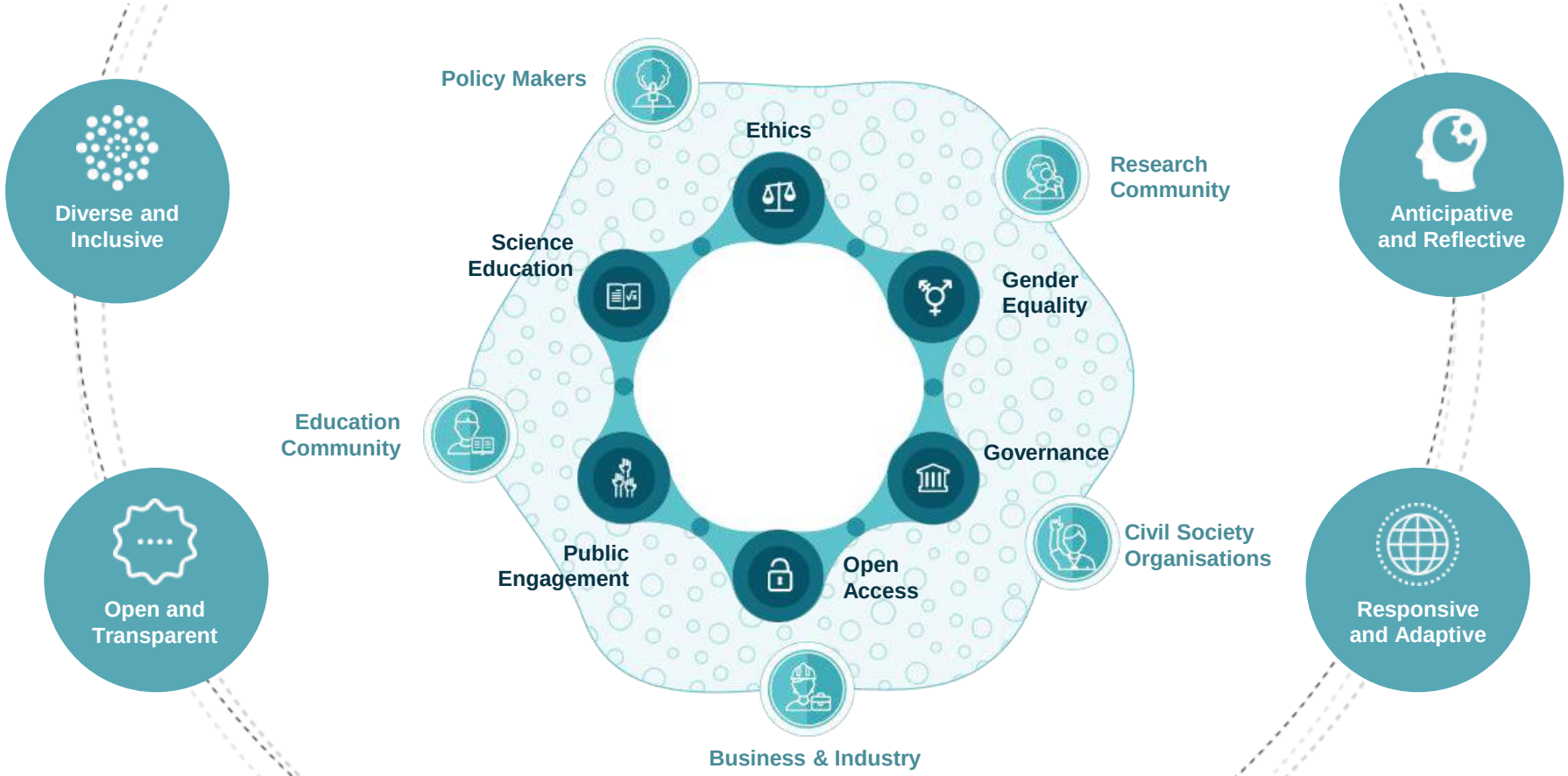
RESEARCH COMMUNITY

EDUCATION COMMUNITY

BUSINESS & INDUSTRY

CIVIL SOCIETY ORGANISATIONS

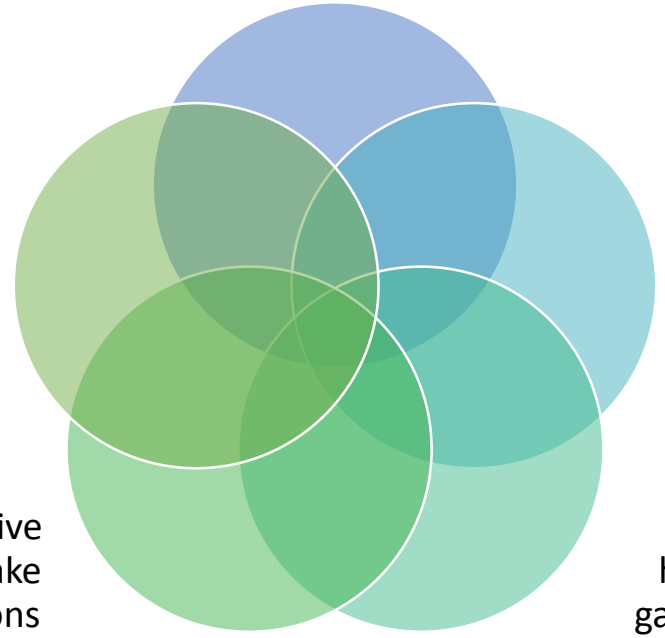
RRI ha lo scopo: di includere tutti gli attori, e considerare tutte le dimensioni degli aspetti e dei processi chiave.



Why PE?

gauging public opinion on a particular science project/issue or a new technology;

getting the public and experts to co-create knowledge or co-produce innovation.



assessing a new technological application;

having a representative sample of people make judgments or decisions that might inform policy making;

helping researchers gather data for a given project;

Who should be engaged?

Researchers, research institutions and public authorities have traditionally led PE activities. However, the **third sector**, or social sector, has been increasingly involved at different levels of R&I and policy making, giving access to their interests, viewpoints and experiential knowledge. The current trend is to also engage the **fourth sector**, an emerging sector composed of actors or groups of societal actors that cooperate through hybrid networking.

POLICY MAKERS

Public engagement can help bring decisions on R&I policies closer to society, making them more robust and legitimate.

RESEARCH COMMUNITY

Engaging citizens in research practices can lead to more effective R&I processes more suited to meet their needs and expectations.

EDUCATION COMMUNITY

Empowering young students and lifelong learners to engage in R&I and R&I decision making is key for RRI success.

BUSINESS AND INDUSTRY

Industry should engage stakeholders in the implementation of responsibility measures in their end-products and industrial processes.

CIVIL SOCIETY ORGANISATIONS

The engagement of CSOs in RRI processes is necessary to introduce the voice of society, make R&I more democratic and enhance public accountability.

When to conduct PE?

Before starting the R&I process	During the R&I process	Project execution: Co-developing R&I	After implementing the R&I process
Program definition: Setting the R&I agenda	Project definition: Defining the R&I process with permanent adjustments • Engagement activities should be designed to give citizens the opportunity to contribute their specific knowledge through deliberative processes through methods such as open innovation and structures such as living labs	Examples of engagement processes within this phase include community based research and citizen science projects where the involvement is not restricted to data collection.	Supporting participatory policy development • These practices and analyses are aimed at gauging the risks, benefits, and ethical, legal, environmental and socio-economic impacts of new technologies.

How to conduct PE 1/2

PE CATEGORY	DESCRIPTION	INFORMATION EXCHANGE	METHOD EXAMPLES*
PUBLIC COMMUNICATION	One-way communication to inform and educate citizens. No mechanisms for handling public feedback.	From sponsors to public	•Public hearings •Public meetings •Awareness raising activities
PUBLIC CONSULTATION	One-way communication to inform decision makers of public opinions on certain topics. No dialogue. Decision makers may or may not act upon the information.	Opinions sought by sponsors	•Citizens' advisory panels •Planning for Real •Focus groups
PUBLIC DELIBERATION	Two-way communication to facilitate group deliberation on policy issues. Outcomes may have an impact on decision making. Dialogue is facilitated.	Between sponsors and public representatives	•Consensus conferences •Citizen juries •Deliberative opinion polling

How to conduct PE 2/2

PE CATEGORY	DESCRIPTION	INFORMATION EXCHANGE	METHOD EXAMPLES*
PUBLIC PARTICIPATION	Two-way communication to assign part or full decision-making power to citizens. Dialogue is facilitated.	Between sponsors and public representatives	•Co-governance •Direct democracy mechanisms such as participatory budgeting, youth parliaments and citizen's assembly •Science Shops •Community-based participatory research •Citizen science •Citizen advisory panels •Open innovation
PUBLIC ACTIVISM	One-way communication to inform decision makers and create awareness in order to influence decision-making processes.	From citizens (initiators) to sponsors	•Demonstrations, protests, awareness raising activities •Public meetings

Citizen Science: Definizioni

- **Citizen Science** refers to the general public engagement in scientific research activities whencitizens actively contribute to science either with their intellectual effort or surrounding knowledge or with their tools and resources. *(White paper on Citizen Science)*
- **Citizen Science** is "scientific work undertaken by members of the general public, often in collaboration with or under the direction of professional scientists and scientific institutions." *(Oxford English Dictionary List of New Words, 13.09.2014)*
- **Citizen Science** […] covers a range of different levels of participation: from raising public knowledge about science, encouraging citizens to participate in the scientific process by observing, gathering and processing data, right up to setting scientific agenda and co-designing and implementing science-related policies. *(EC, Horizon 2020, Science with and for society Work Programme 2018-2020, p.30)*

Citizen Science: Definizioni

- **Citizen Science** is “the collection and analysis of data relating to the natural world by members of the general public, typically as part of a collaborative project with professional scientists.” *(Oxford English Dictionaries)*
- **Citizen science** describes the engagement of people in scientific processes who are not tied to institutions in that field of science. Participation can range from the short-term collection of data to the intensive use of leisure time in order to delve deeper into a research topic together with scientists and/or other volunteers. Although many volunteer scientists do have a university degree, this is not a prerequisite for participating in research projects. However, it is important that scientific standards are adhered to. This pertains especially to transparency with regard to the data collection methodology and the open discussion of the results. *(Green Paper CS Strategy 2020 for Germany, p. 13)*

Perché Citizen Science

1. **Citizen Science increases scientific literacy and critical faculties**, so the public can discern between fake news and scientific facts like climate change or evolution, or contribute to increased consciousness among citizens of social conditions that influence their life and well-being

2. **Citizen Science can democratise the research process**. By conceptualising Citizen Science as part of Open Science and therefore interlinked with Open Innovation and Open to the World (3Os), over the coming years, citizens will be playing an expanded role in scientific research and will contribute more actively to defining the research agenda, and can contribute to strengthen the social voices of the most vulnerable, stigmatized and often marginalized citizens in public policy, effectively helping to democratise science.

Perché Citizen Science

3. **Citizen Science generates new knowledge and enables new forms of research.** As a method of “crowdsourcing research” by using “idle brains” of the citizens Citizen Science offers new potential in areas where it would be impossible to get all the information/ data, for example by collecting data “for free” in an unconceivable amount and providing perspectives and experiences professional scientists otherwise would not have.

4. **Citizen Science can motivate young people to follow scientific careers.** When pupils get in touch with science at an early age they are more likely to continue being interested and willing to intervene in science when it comes to choosing their careers.

Perché Citizen Science

5. **Citizen Science can expand the skill set of researchers.** By engaging with citizen scientists (academic) scientists will learn a range of new skills especially in the area of science communication

I 10 Principi della Citizen Science

1. I progetti di Citizen Science coinvolgono attivamente i cittadini in attività scientifiche che generano nuova conoscenza o comprensione.
2. I progetti di Citizen Science producono un risultato scientifico originale.
3. Sia gli scienziati professionisti sia i cittadini coinvolti traggono vantaggio dal prendere parte a progetti di Citizen Science.
4. Le persone coinvolte in progetti di Citizen Science possono, se vogliono, prendere parte a più fasi del processo scientifico.
5. Le persone coinvolte in progetti di Citizen Science ricevono feedback.

I 10 Principi della Citizen Science

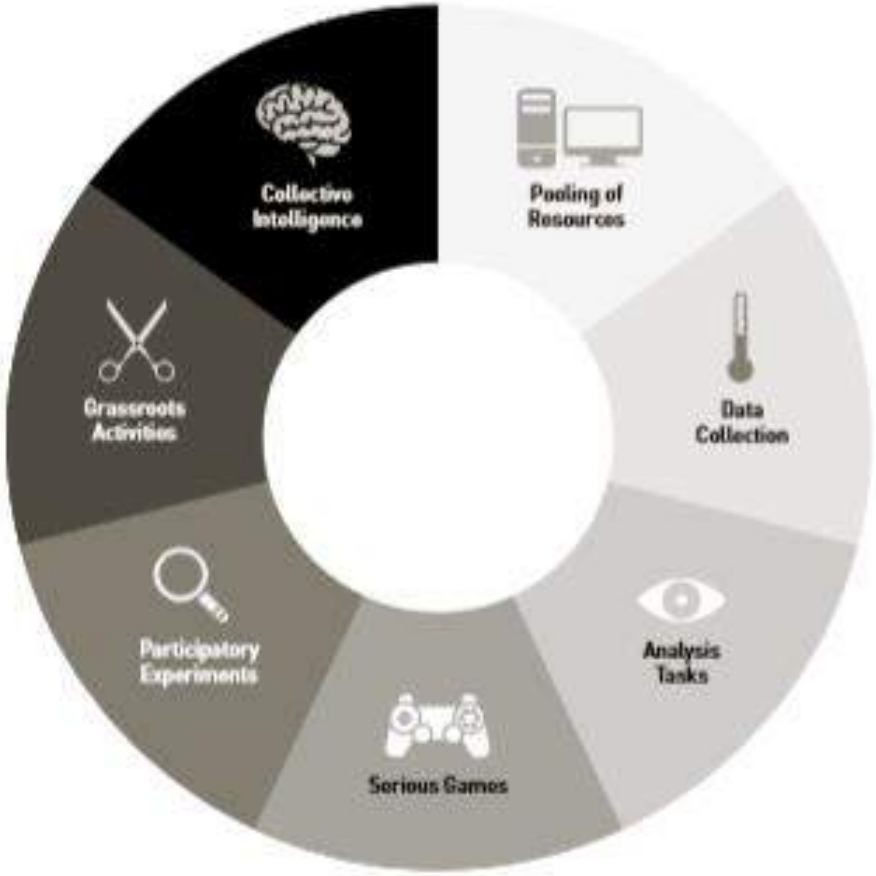
6. La Citizen Science è considerata una metodologia di ricerca come qualunque altra, con limiti e margini di errore che devono essere considerati e tenuti sotto controllo.
7. Dati e metadati provenienti da progetti di Citizen Science sono resi pubblicamente disponibili e, ove possibile, i risultati sono pubblicati in un formato di libero accesso (open access).
8. Il contributo delle persone coinvolte in progetti di Citizen Science viene riconosciuto ufficialmente nei risultati dei progetti e nelle pubblicazioni.
9. I programmi di Citizen Science vengono valutati per il loro risultato scientifico, per la qualità dei dati, l'esperienza dei partecipanti e l'ampiezza dell'impatto sociale e sulle politiche di settore.
10. I responsabili di progetti di Citizen Science prendono in considerazione aspetti legali ed etici relativi a copyright, proprietà intellettuale, accordi sulla condivisione dei dati, confidenzialità, attribuzione e impatto ambientale di ogni attività

Citizen Science: perché è importante

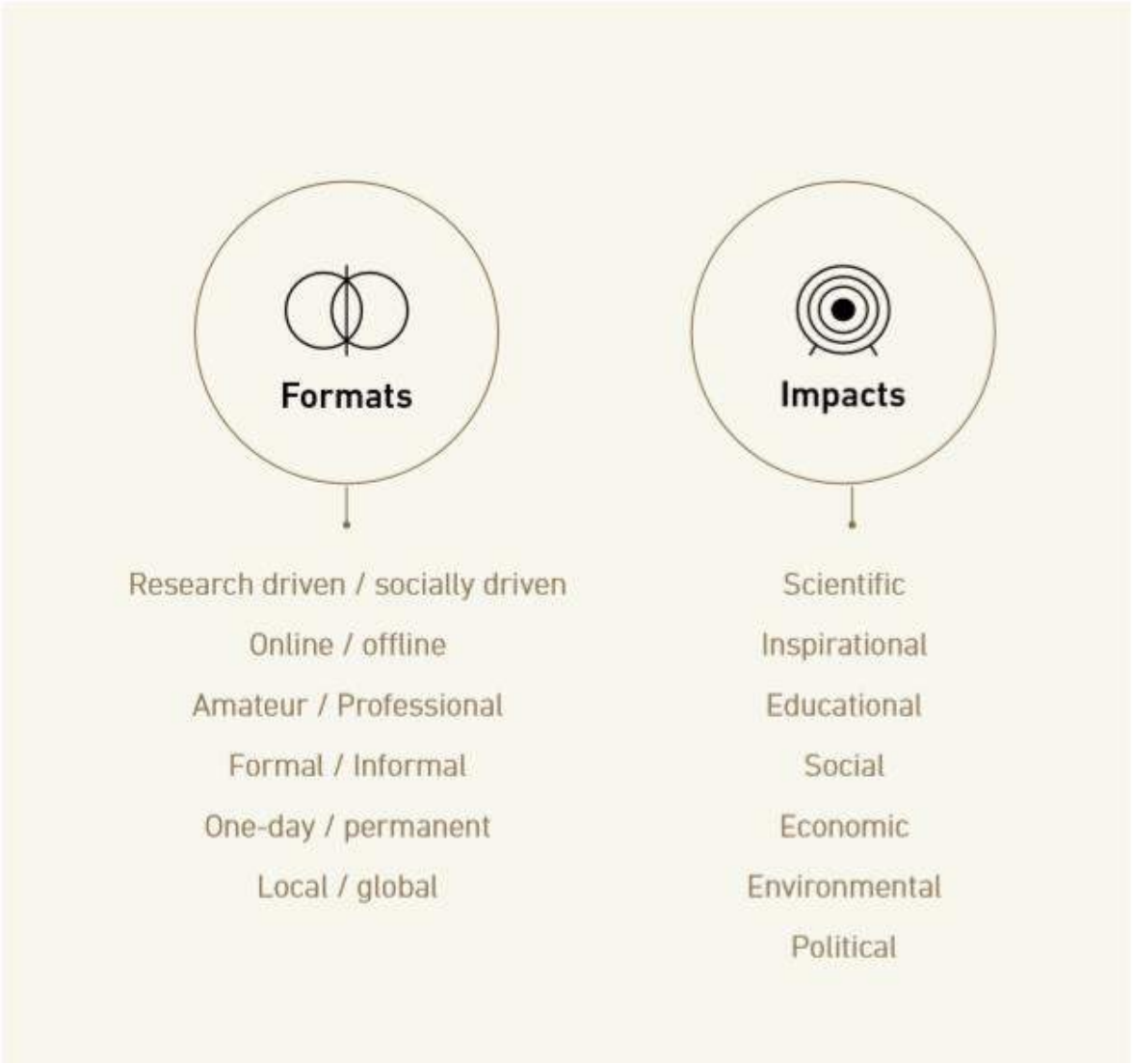
"Citizen Science can contribute to the Commission's goal of Responsible Research and Innovation, as it reinforces public engagement and can redirect research agendas toward issues of concerns to citizens."
"This kind of Citizen Science is increasingly on the agenda and it is planned that future work programmes of Horizon 2020 will continue to support relevant initiatives at EU level."

[EC, Strategy on 3 O's: Open Innovation/Open Science/Open to the World – a vision for Europe]

MODELS OF CITIZEN ENGAGEMENT IN SCIENCE



VALUES	ATTRIBUTES		
Open (culture)	• Trusted • Transparent • Global	• Engaging • Self-learning • Accessible	• Reusable • Participatory • Collaborative
Social (by all/for all)	• Co-created • Amateur • Scattered	• Collective • Democratic active • Public assessment	• Creative • Inclusive
Digital (infrastructure)	• Powerful • Ubiquitous • Pervasive • Massive	• Immediate • Traceable interactions • Networks	• Devices • Empowerment • Effective
Research (innovative)	• Unexplored • Inspiration for innovations • Transdisciplinary	• Innovative • Educational • Common • Responsible	• Sustainable • Skilled • Experimental


Formats
Research driven / socially driven
Online / offline
Amateur / Professional
Formal / Informal
One-day / permanent
Local / global
Impacts
Scientific
Inspirational
Educational
Social
Economic
Environmental
Political

Open Science e Prospettive europee

Open Access in Horizon Europe

Article 10

Open access and open data

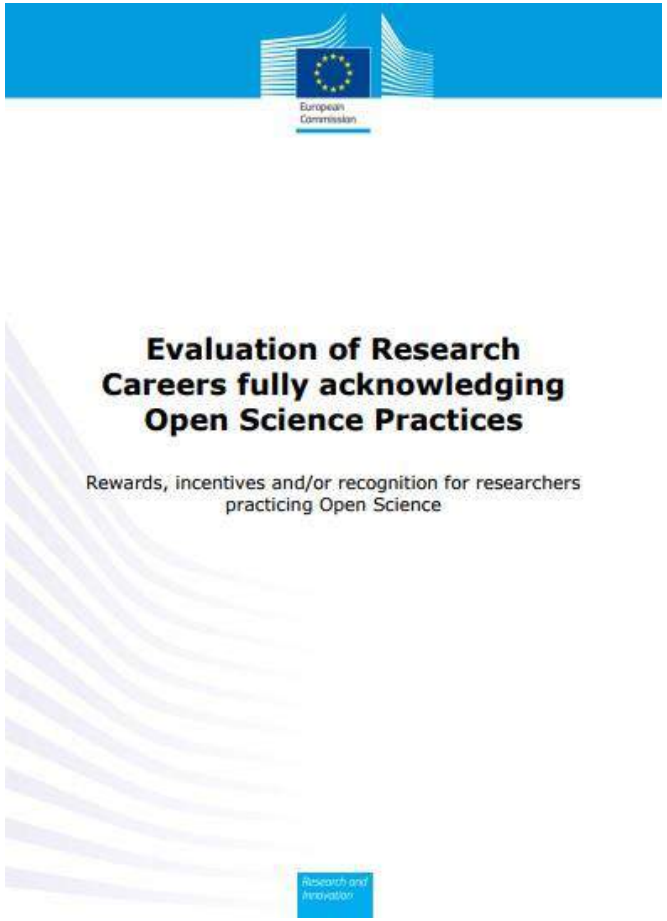
1. Open access to scientific publications resulting from research funded under the Programme shall be ensured in accordance with Article 35(3). Open access to research data shall be ensured in line with the principle 'as open as possible, as closed as necessary'. Open access to other research outputs shall be encouraged.

2. Responsible management of research data shall be ensured in line with the principles ‘Findability’, ‘Accessibility’, ‘Interoperability’ and ‘Reusability’ (FAIR).

3. Open science practices beyond open access to research outputs and responsible management of research data shall be promoted.

Evaluation of Research Careers fo EC

Open Science Career Assessment Matrix (OS-CAM)	
Open Science activities	*Possible evaluation criteria*
RESEARCH OUTPUT	
Research activity	Pushing forward the boundaries of open science as a research topic
Publications	Publishing in open access journals Self-archiving in open access repositories
Datasets and research results	Using the FAIR data principles Adopting quality standards in open data management and open datasets Making use of open data from other researchers
Open source	Using open source software and other open tools Developing new software and tools that are open to other users
Funding	Securing funding for open science activities
RESEARCH PROCESS	
Stakeholder engagement / citizen science	Actively engaging society and research users in the research process Sharing provisional research results with stakeholders through open platforms (e.g. Arxiv, Figshare) Involving stakeholders in peer review processes
Collaboration and Interdisciplinarity	Widening participation in research through open collaborative projects Engaging in team science through diverse cross-disciplinary teams
Research integrity	Being aware of the ethical and legal issues relating to data sharing, confidentiality, attribution and environmental impact of open science activities Fully recognizing the contribution of others in research projects, including collaborators, co-authors, citizens, open data providers
Risk management	Taking account of the risks involved in open science
SERVICE AND LEADERSHIP	
Leadership	Developing a vision and strategy on how to integrate OS practices in the normal practice of doing research Driving policy and practice in open science

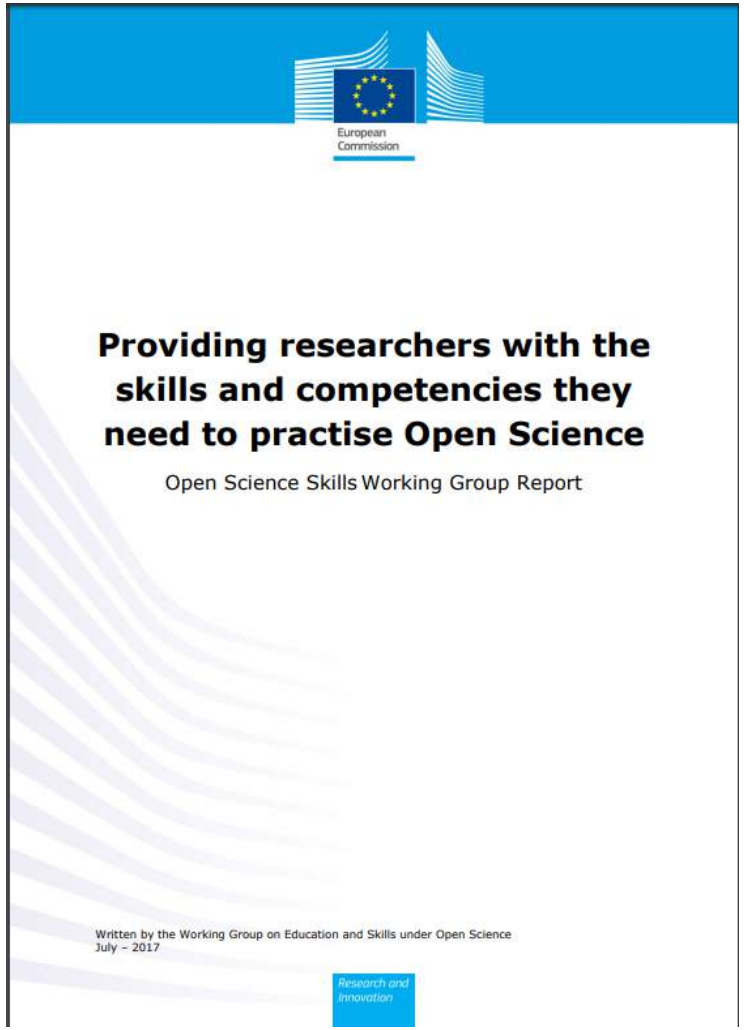


https://ec.europa.eu/research/openscience/pdf/os_rewards_wgreport_final.pdf

Evaluation of Research Careers fo EC

The central message from this report is that in order to change to full automatic engagement of researchers in Open Science, a radical change of culture and mind-set in the research community and stakeholders is required. To effect this change will require a comprehensive, multi-faceted approach, which will include:

- Updated, embedded, iterative and ongoing training and professional development in Open Science (including training of a new specialised cohort of data stewards, information professionals and data scientists). This should involve a blended approach of core skills provision with active, independent, problem-based learning.
- Reinforcement through the availability of an adequate technical and support infrastructure.
- Improved rewards and recognition for researchers doing Open Science by alternate metrics.90
- Implementing a system of clear benefits for compliance and clear disadvantages for noncompliance of Open Science practices.
- Ongoing advocacy and leadership of Open Science at all levels.
- Policy alignment, strategic implementation and provision of funding for Open Science.
- Renewed focus on societal engagement in Open Science and the impact agenda.
- Monitoring and reinforcement of funder and institutional mandates, which should be amended to include mandated accredited Open Science skills training.


European Commission

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

Open Science Skills Working Group Report

Written by the Working Group on Education and Skills under Open Science
July – 2017

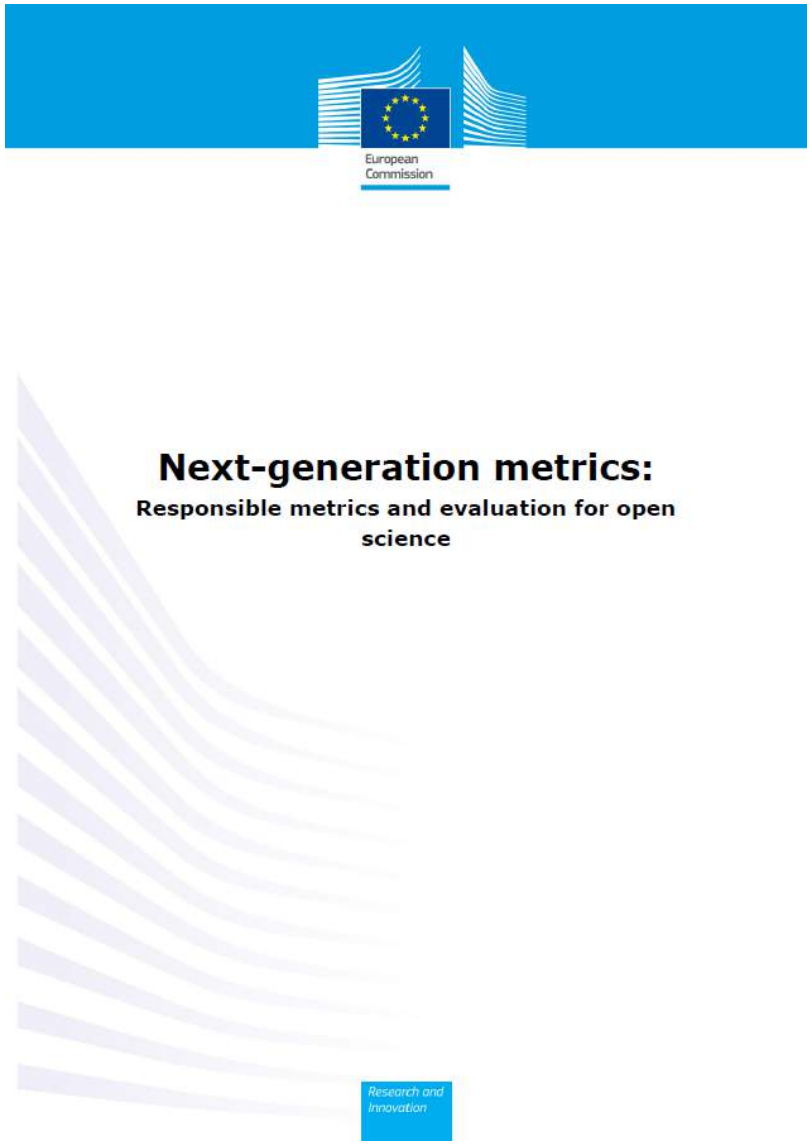
Research and Innovation

https://ec.europa.eu/research/openscience/pdf/os_rewards_wgreport_final.pdf

Nuove metriche

Metrics can play two roles in support of open science:

- Monitoring the development of the scientific system towards openness at all levels;
- Measuring performance in order to reward improved ways of working at group and individual level.



Nuove metriche

These goals require the development of new indicators, as well as prompting the use of existing metrics in a more responsible fashion.

There have been a number of high profile recent efforts to address these issues, including:

- *The San Francisco Declaration on Research Assessment (DORA)*, which called in 2012 for research to be assessed on its own merits and for ending the use of journal impact factors in funding, hiring and promotion decisions. By January 2017, DORA has over 800 organisational and 12,500 individual signatories;
- *The Leiden Manifesto*, which was published in 2015 by a group of leading scientometricians, and which sets out ten principles for the use of quantitative indicators in research evaluation (Hicks et al., 2015);
- *Science in Transition*, a movement established in 2013 by researchers in the Netherlands, with the aim of tackling systemic problems in research and university culture, which "has become a self-referential system where quality is measured mostly in bibliometric parameters and where societal relevance is undervalued" (Dijstelbloem et al., 2014);
- *The Metric Tide (2015):* the report of an independent review of the role of metrics in research assessment and management in the UK system, which set out a framework and targeted recommendations for responsible metrics (Wilsdon et al., 2015).

These initiatives have informed the European Commission's Expert Group on Altmetrics, which was set up in 2016.2

PlanS

"After 1 January 2020 scientific publications on the results from research funded by public grants provided by national and European research councils and funding bodies, must be published in compliant Open Access Journals or on compliant Open Access Platforms."

PlanS

- No riviste ibride
- Tetto alle APC
- APC pagate sempre da istituzioni
- Autori mantengono copyright, licenze cc by

IN ADDITION:

- Authors retain copyright of their publication with no restrictions. All publications must be published under an open license, preferably the Creative Commons Attribution Licence CC BY. In all cases, the license applied should fulfil the requirements defined by the Berlin Declaration;
- The Funders will ensure jointly the establishment of robust criteria and requirements for the services that compliant high quality Open Access journals and Open Access platforms must provide;
- In case such high quality Open Access journals or platforms do not yet exist, the Funders will, in a coordinated way, provide incentives to establish and support them when appropriate; support will also be provided for Open Access infrastructures where necessary;
- Where applicable, Open Access publication fees are covered by the Funders or universities, not by individual researchers; it is acknowledged that all scientists should be able to publish their work Open Access even if their institutions have limited means;
- When Open Access publication fees are applied, their funding is standardised and capped (across Europe);
- The Funders will ask universities, research organisations, and libraries to align their policies and strategies, notably to ensure transparency;
- The above principles shall apply to all types of scholarly publications, but it is understood that the timeline to achieve Open Access for monographs and books may be longer than 1 January 2020;
- The importance of open archives and repositories for hosting research outputs is acknowledged because of their long-term archiving function and their potential for editorial innovation;
- The 'hybrid' model of publishing is not compliant with the above principles;
- The Funders will monitor compliance and sanction non-compliance.

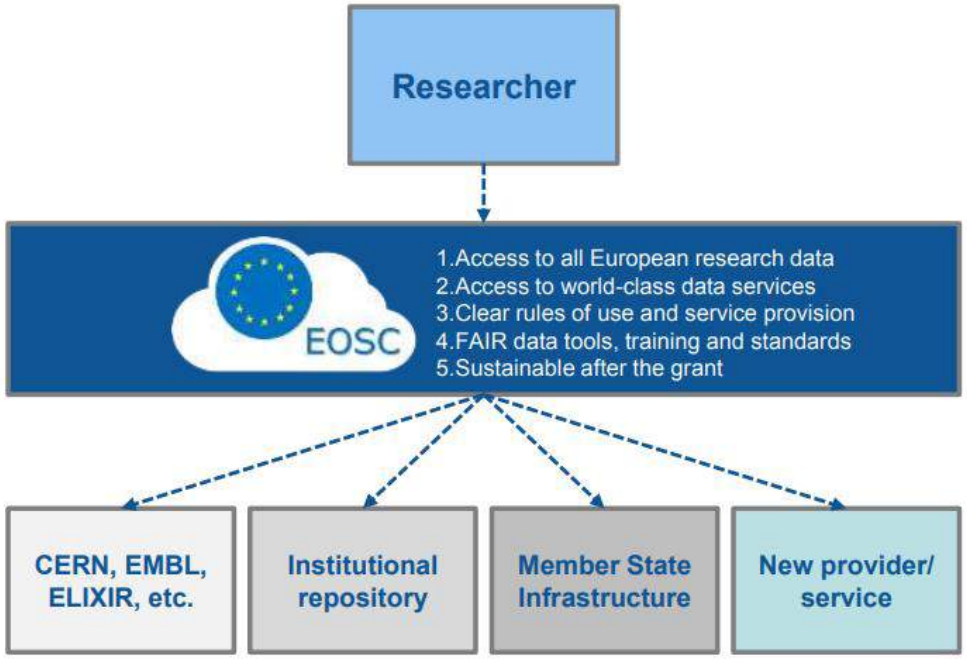
EOSC – European Open Science Cloud

The EOSC will allow for universal access to data and a new level playing field for EU researchers

- By 2020, all European researchers need to be able depositing, accessing and analyzing European scientific data through the EOSC. EOSC and FAIR research data are closely related and the EC is working out phases for implementing EOSC and action plans to make data FAIR.
  - to develop research infrastructures for Open Science and a common European framework to improve data storage, access, analysis, re-use and governance of research data;
  - to mainstream and further promote open access to research data (and metadata), as well as data management practices aiming at making these data Findable, Accessible, Interoperable and Re-usable (FAIR).

EOSC – European Open Science Cloud

The EOSC will allow for universal access to data and a new level playing field for EU researchers



- Easy access through a universal access point for ALL European researchers
- Cross-disciplinary access to data unleashes potential of interdisciplinary research
- Services and data are interoperable (FAIR data)
- Data funded with public money is in principle open (as open as possible, as closed as necessary)
- EOSC will help increase recognition of data intensive research and data science

The Vienna Declaration

The Vienna Declaration on the European Open Science Cloud

Vienna, 23 November 2018

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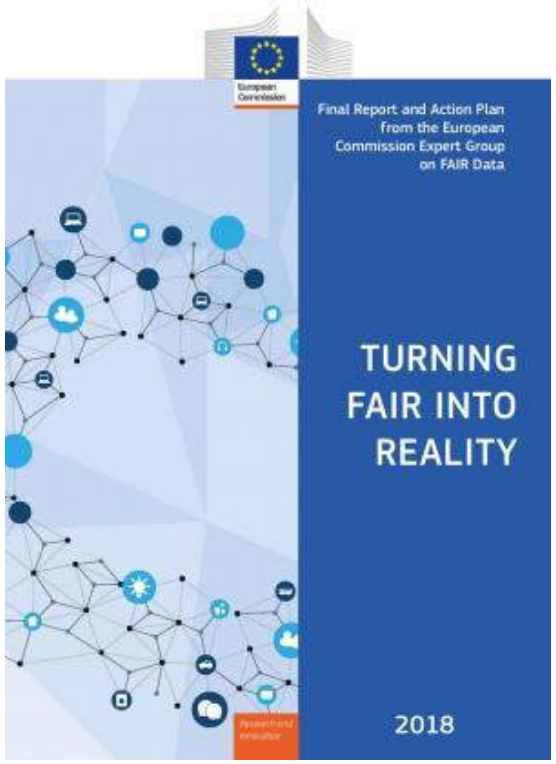
We, Ministers, delegates and other participants attending the launch event of the European Open Science Cloud (EOSC):

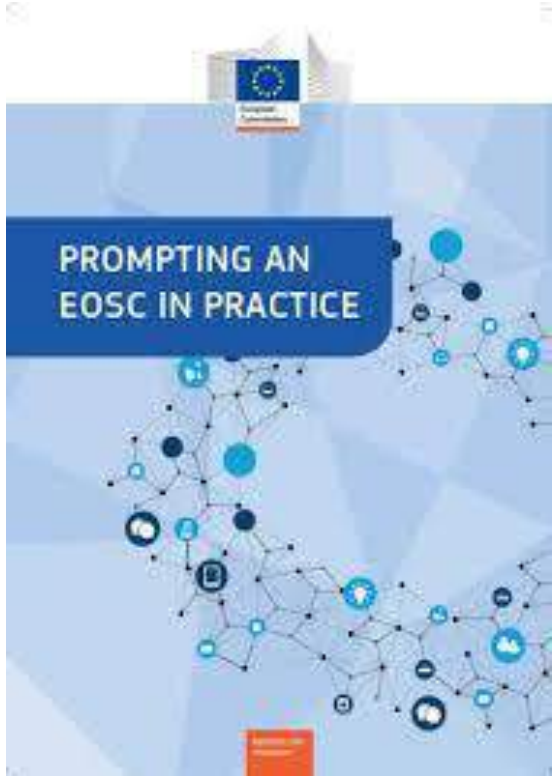
1. **Recall** the challenges of data driven research in pursuing excellent science as stated in the "EOSC Declaration" signed in Brussels on 10 July 2017.

2. **Reaffirm** the potential of the European Open Science Cloud to transform the research landscape in Europe. Confirm that the vision of the European Open Science Cloud is that of a research data commons, inclusive of all disciplines and Member States, sustainable in the long-term.

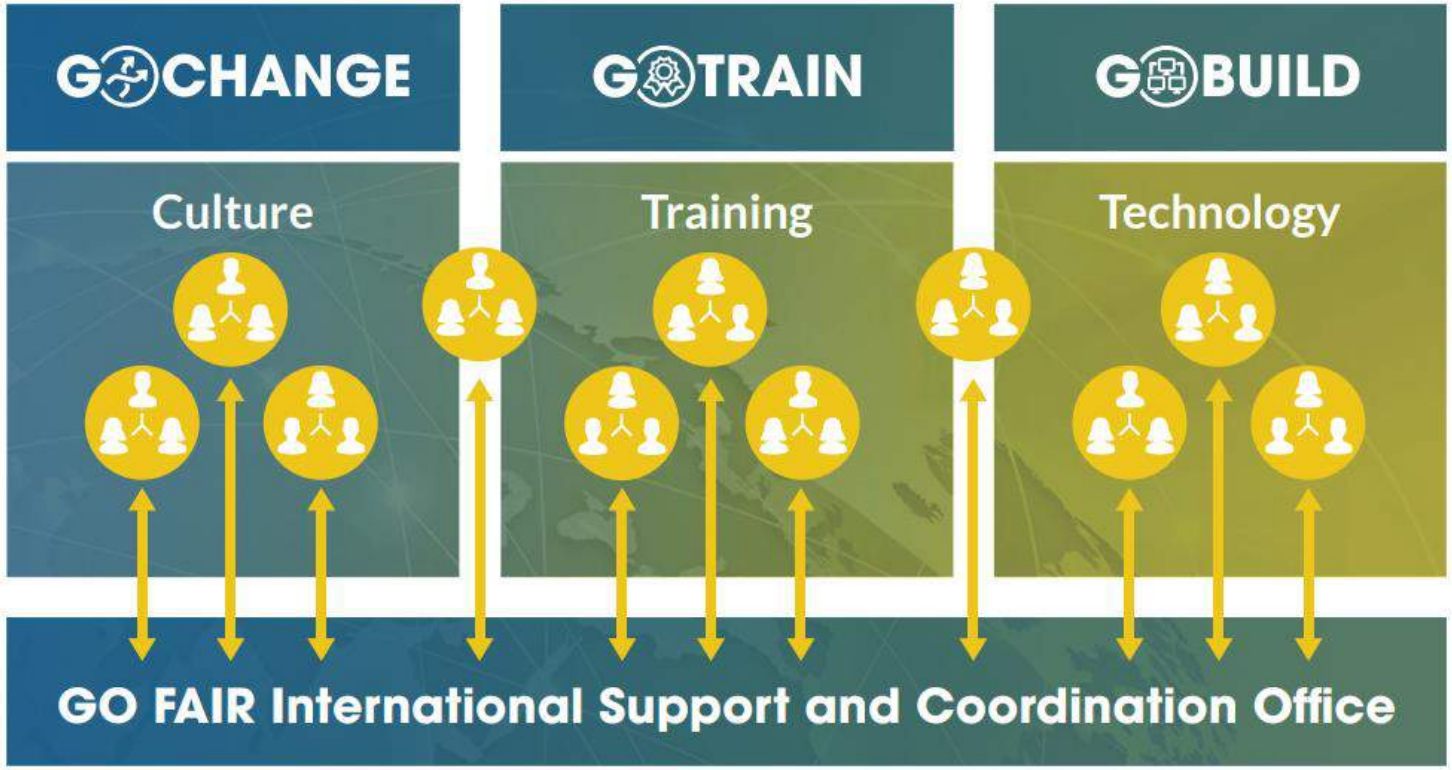
3. **Recognise** that the implementation of the European Open Science Cloud is a process, not a project, by its nature iterative and based on constant learning and mutual alignment. Highlight the need for continuous dialogue to build trust and

2 importanti pubblicazioni





GO FAIR Initiative



The Go FAIR initiative follows a bottom-up open implementation strategy for the technical governance and funding needed to establish the first phase of the EOSC as part of a broader global Internet of FAIR data and services. The activities of the GO FAIR initiative focus on FAIR data and services, technology, training and certification.