



150 ANS D'ENGAGEMENT
POUR LA PHYSIQUE

Open access (« Accès Libre ») to scientific literature is a method of disseminating research articles in digital form,

- free of charge for any reader
- in compliance with copyright of authors
- with « reasonable » cost for tax-payer.

The open access movement started in the 1990s facilitated by the rise of the internet

*Sharing of scientific knowledge is a
cornerstone
of the science method*

and

*essential for the advancement of
science*

Objective

- PhD students are tomorrow's scientists
→ show the virtue of open science
- Provide you you the neccessary information
and arguments
→ no open science doctrine
- Encourage you to « open your science » tomorrow

Summary

- Scientific publishing : history, process,
costs, economic models
- Open Science: why, how, who and risks ?
- Link with research assessment
- Open Science @ EU, France, UGA

Scientific Publishing

1798: Philosophical Magazine by Taylor & Francis *commercial*

> 1820: Learned societies founded physics journals

***“To give a new impulse to physics, to stimulate training,
to excite the spirit of research, and to initiate discoveries”*** (Jean Perrin)

1869: Nature by NPG *commercial* (**still not open!**)

1873 SFP founded by Curie, Perrin, Langevin

1920 Creation of EDP Sciences by SFP/SMF/SCF ...

1986: Europhysics Letters (EPL) by EPLA = 18 European physical societies

1992: European Physical Journal (EPJ) by 25 European physical societies

1998: New Journal of Physics by IOPP and DPG **open access**

2016 Creation of SciPost (diamond) by JS Caux

1991 creation of ArXiv - physics (Green) by Paul Ginsparg

2001 creation of HAL (Green) by Franck Laloë



2008 (1969) creation of Inspire-HEP (CERN, Fermilab, DESY, ...)

2011 creation of SciHub (no licence) by Aleksandra Elbakyan

2013 BioRxiv Green Biological Sciences by Cold Spring Harbor Laboratory

2019 MeRxiv : (Green) Health Sciences by CSHL

What do scientists want?

- ... access **right now and right here** to **all** publications: “*Findable, Accessible, Interoperable, Reusable*” (FAIR) ... and sustainable.
- ...archiving our pre-/post-print for **immediate dissemination**.
- ... **quality check** before “real” publication (= peer review)
- ...a professional, efficient and **transparent** publication process
- ...a recognized, officially **indexed** journal (= DOI).
- ...a direct involvement in the editorial policy (**peers**).
- ...**not pay** publishing costs on running costs or research grants 
- ...protect **sensitive research** (nuclear, medical, industrial ...)
- ...« **prestige** » (= publication in a journal with high rejection rate).
expensive but often rewarded by research organizations 

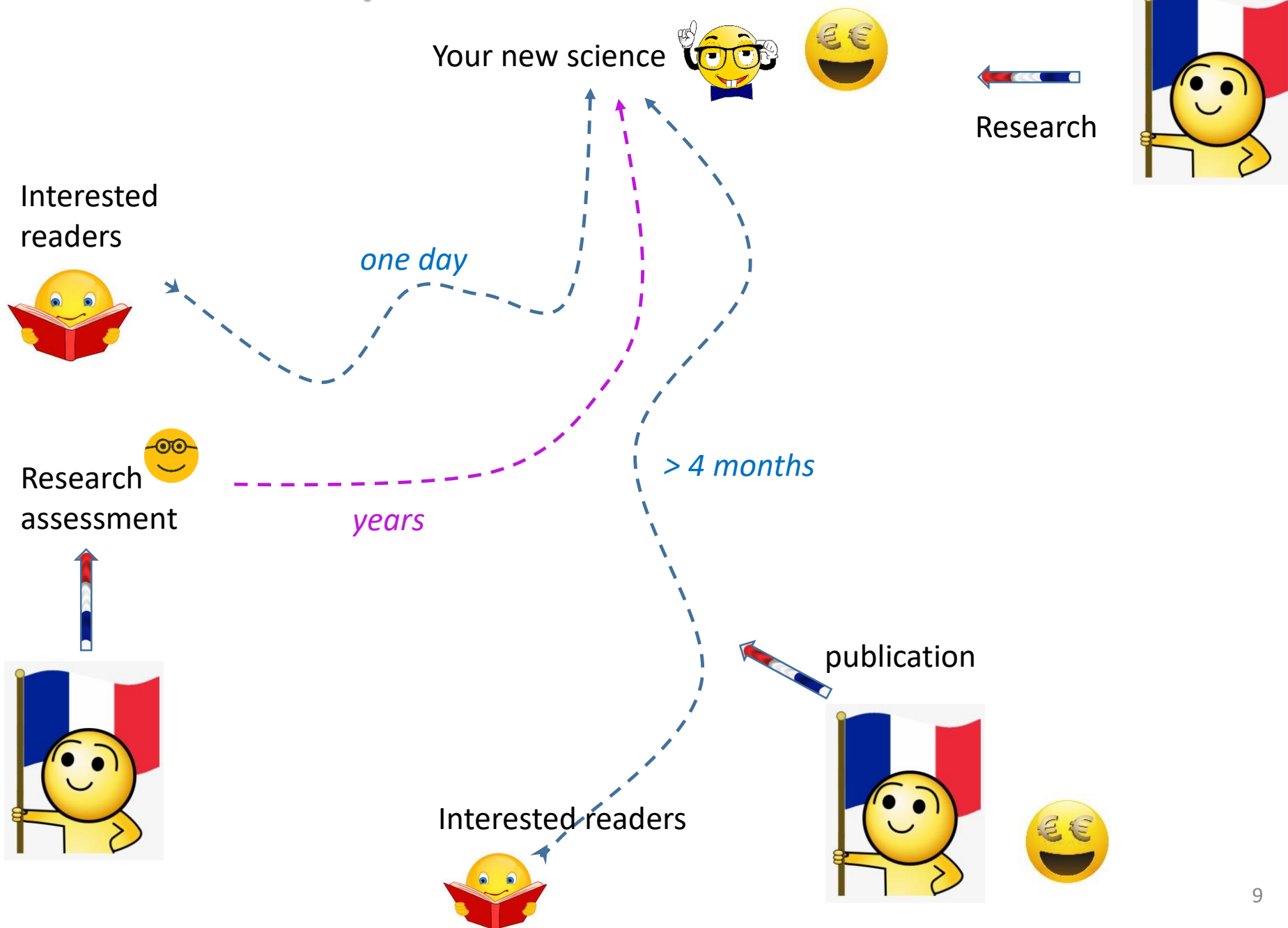
Why is current subscription model obsolete?

- 💣 Miserable paywalls, even to own work
 - + no access for taxpayer/entrepreneur/evaluator
- 💣 10-15% annual rise of publications, annual costs by >4 %
- 💣 No transparency in costs and large profit margins
- 💣 Transfer of copyright from author to journal
- 💣 Obligation for libraries to subscribe to « Big Deals »
(e.g. Freedom Collection Elsevier)

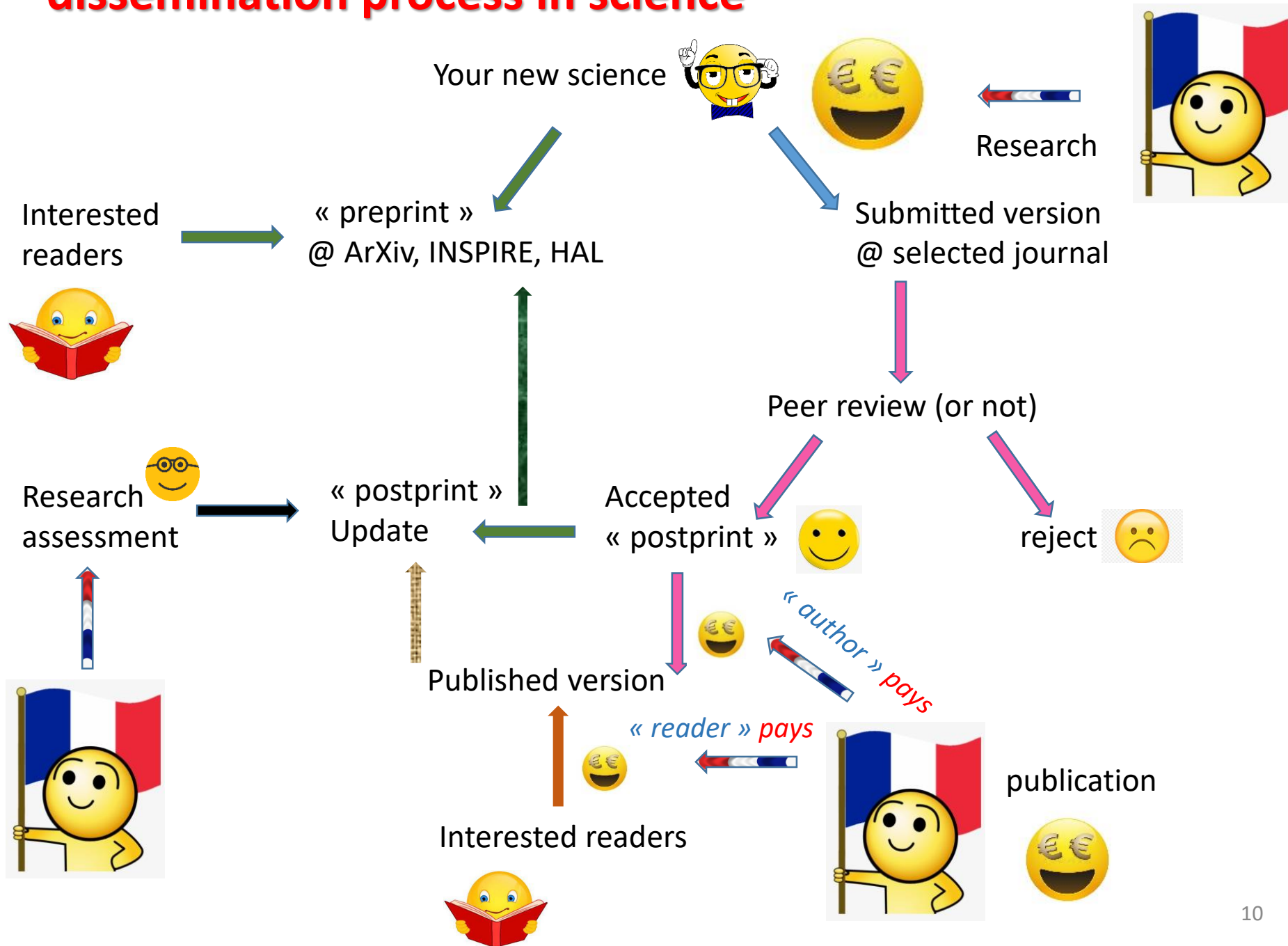
Other major problem that sneaked in:

- 💣 Strong link between research assessment and impact factor of journal
- 💣 « prestige » is expensive and unfair for many authors.

dissemination process in science



dissemination process in science



Traditional Model (« reader-pays »)

Green Open Access (“self-archiving”)

Gold Open Access (« author-pays »)

Diamond Open Access (« nobody pays »)

+ Subscribe2Open (Maths), Read & Publish (DEAL),..... **biblio-diversity encouraged**

Traditional Model (« reader-pays »)

- Libraries pay subscription – free publication for authors, access for associated readers, pay-wall for all others
- In France mainly negotiated by Couperin (Universities + CNRS+ CEA , ..)
- National licences exist (EDPS, Elsevier)

Green Open Access (“self-archiving”)

Gold Open Access (« author-pays »)

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+ *Subscribe 2 Open* (Maths), *Read & Publish* (DEAL),..... **biblio-diversity encouraged**

Traditional Model (« reader-pays »)

Green Open Access (“self-archiving”) – deposit on institutional repository (HAL) or recognized archive (ArXiv, INSPIRE). Postprint embargo < 6 months.

- Costs covered by donations (10-30€) and research organizations – free submission and access.
- No peer-review, must coexist with a real economic model
- Overlay journals (Epi-revues) exist with peer-review (*Episciences.org @ CCSD – Lyon*)

Gold Open Access (« author-pays »)

Diamond Open Access (« nobody pays »)

+ *Subscribe 2 Open* (Maths), *Read & Publish* (DEAL),..... **biblio-diversity encouraged**

Traditional Model (« reader-pays »)

Green Open Access (“self-archiving”)

Gold Open Access (« author-pays »)

- « Author-Processing Charges » (APC) paid by authors **or** institution (« institutional Gold » : SCOAP3 @ CERN). Free access for all readers
- Many hybrid journals exist, many predatory journals exist

Diamond Open Access (« nobody pays »)

+ *Subscribe2Open* (Maths), *Read & Publish* (DEAL),..... **biblio-diversity encouraged**

Traditional Model (« reader-pays »)

Green Open Access (“self-archiving”)

Gold Open Access (« author-pays »)

Diamond Open Access (« nobody pays »)

- Free to submit, free access to read
- Open Peer-review, own server
- @UGA : Mersenne Grenoble
- Somebody does pay, you know !

Cost of Scientific Publishing

Cost of Scientific Publishing

- i. Science-publishing industry generated **\$9.4 Billion** in revenue in 2011 for **1.8 million** English-language articles → **price= \$5,000 /paper**
- ii. Profit margins at 20 % → **cost = \$ 4,000/paper**
- iii. 1.9 publications/ year/physicist (France) **cost = 8000 €**
- iv. Price of prestige: OA transition would lead to **35.000 /Nature paper**
- v. Elsevier-Reed (RELX) turn-over 2021 = **11 Billion \$**
Research Budget 2019 in France = **11 Billion €**
- vi. Cost **1 €/download**. APS: **0.75 €/download**
France: national Elsevier licence 35 M€/yr, 19.000 papers,
18 million downloads → **1800 €/paper, 1.9 €/download**

Open Science

Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities (2003)

- *Open Access*: Publicly funded research should be freely and easily accessible for everyone
- *One clic*: Internet provides a means to do this
- *Commitment*: Funding agencies, publishers and scientific organisations endorse the road towards open access

2018



BARCELONA DECLARATION ON OPEN RESEARCH INFORMATION

2024, signed by MESR, UGA, ...

Transparent high-quality decision making requires open research information

Commitments

The signatories of the Barcelona Declaration on Open Research Information make the following commitments:

- 1 We will make openness the default for the research information we use and produce;
- 2 We will work with services and systems that support and enable open research information;
- 3 We will support the sustainability of infrastructures for open research information;
- 4 We will support collective action to accelerate the transition to openness of research information.

Why open publications?

Too many unread or
even unknown
articles
“*sleeping beauties*”

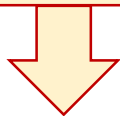


- ✓ 12 % of publications in Medicine
- ✓ 27 % of publications in Natural Sciences
- ✓ 32 % of publications in Social Sciences
- ✓ 82 % of publications in Human Sciences

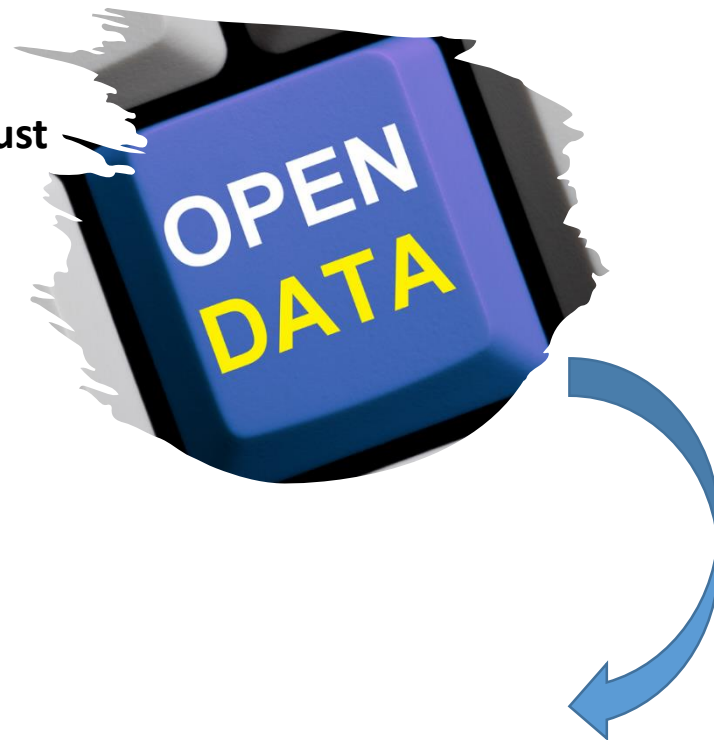
Open publications

- « rendre à César ce qui est à César »
- Easy access for all, including evaluators
- increase age of citations: → « FAIR »
- Increase citation-diversity
- Boost applications & innovation
- Enhance institutional visibility

Why open Data?

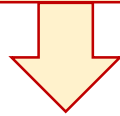


- Access to raw data collected by researchers, not just interpretations (publications) or treatments.
- Possibility for others to reuse (FAIR principle).
- Not necessary or impossible to repeat experiment
- complicate misconduct
- Useful for yourself as well!

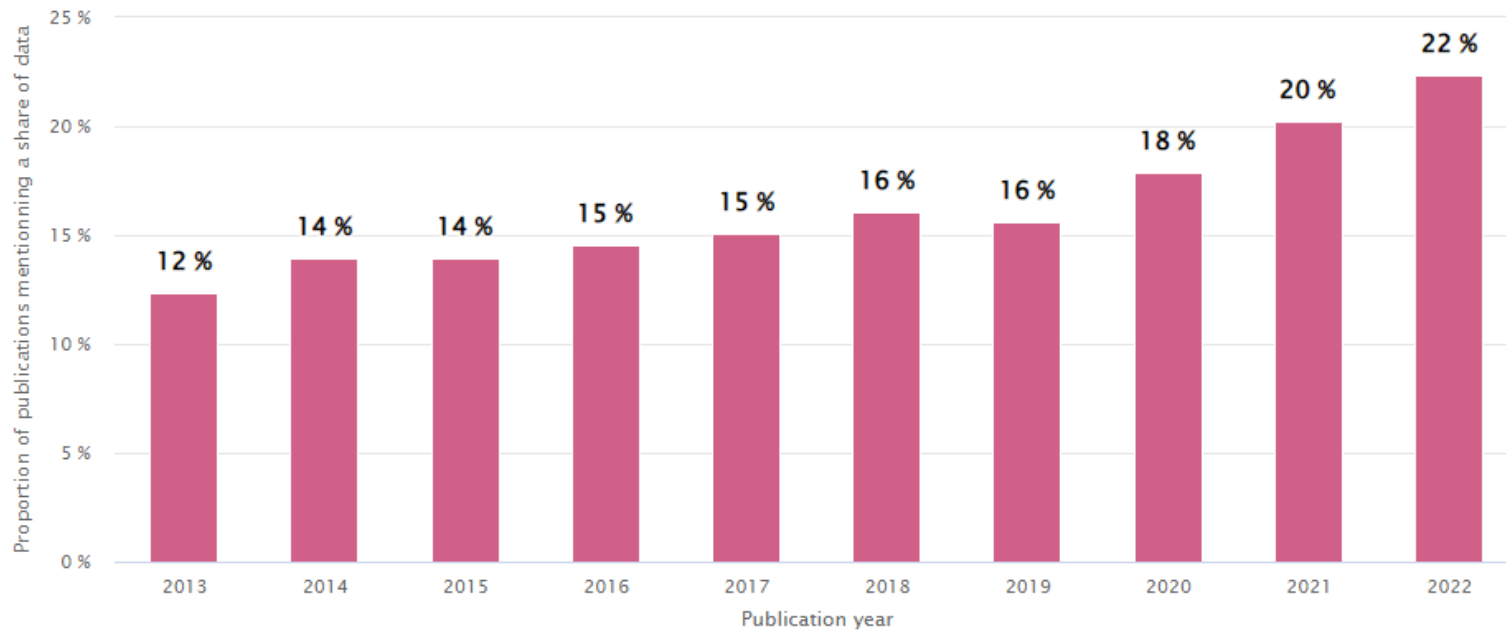


December 2019 - April 2020 : only 13% of the articles on Covid-19 had opened their data (<https://link.springer.com/article/10.1007/>).

Why open Data?



Proportion of publications in France that mention the sharing of their data by publication year



French Open Science Monitor

Open Science: la vie en rose?



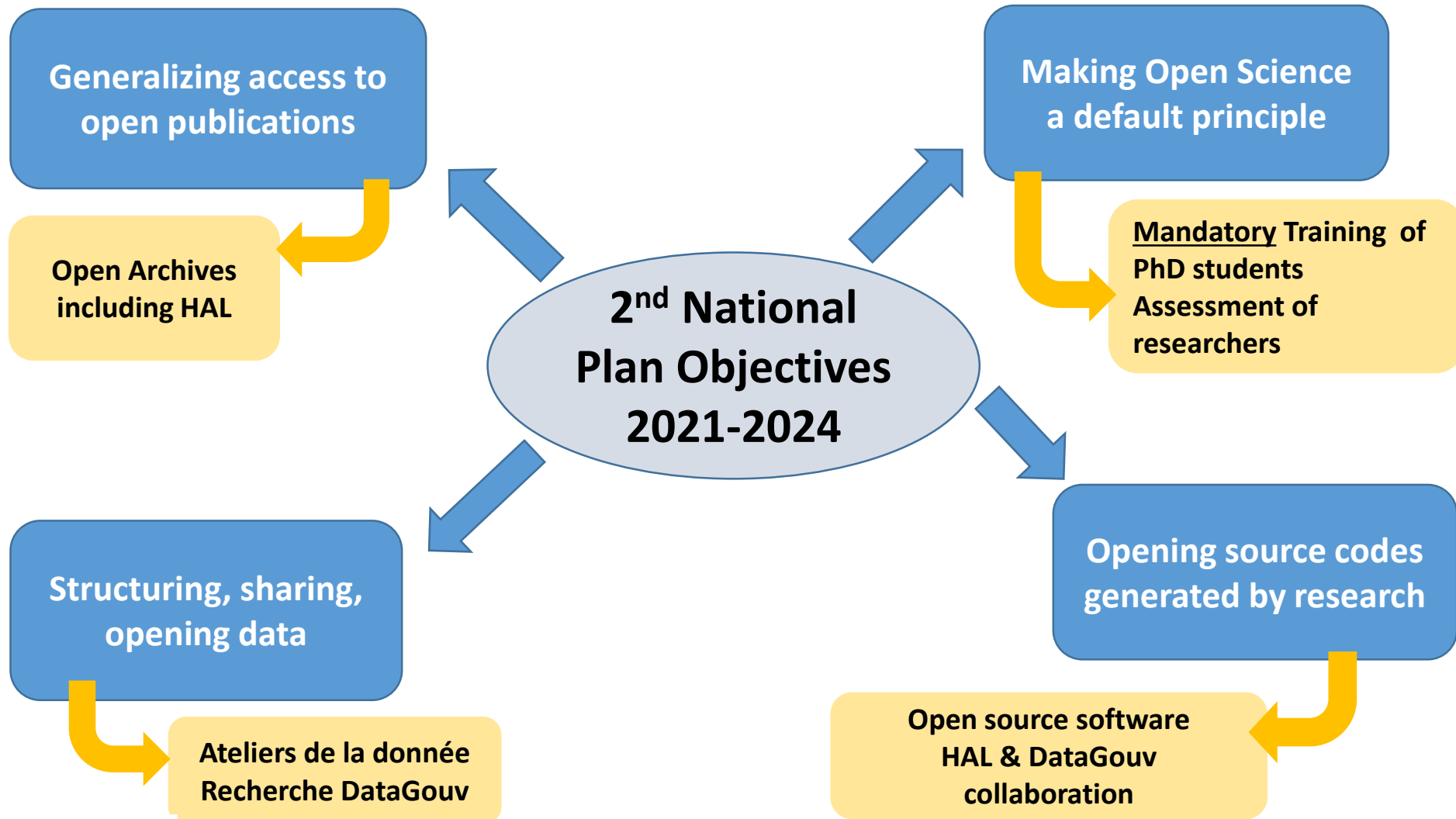
- To what degree is your science both a « Common Good » and your Intellectual Property?
- Can we control the use of open science? Do licences CC-BY protect us?
- Artificial Intelligence & Open Science: delicious cocktail for abuse ?
GAFAM, ChatGPT, terrorism, unfriendly countries,...
- Not too fast please, I am still working on it!
- To make my (meta) data open takes time and effort
- Rise of predatory « eternal, fully open yet short-lived » journals, and « data hacking »
- Sharing of knowledge has always been cornerstone of science
→ Open Science policy is top-down doctrine rather than explanation of virtues.

Open Science in France



- **2018-2021** : 1st French National Plan about Open Science.
- **8 novembre 2019** : CNRS Ethics Committee (COMETS) on Open Science.
- **21 novembre 2021** : Recommendations for Open Science (General Conference of the United Nations for Education, Science and Culture UNESCO).
- **2021-2024** : 2nd French National Plan about Open Science.

Open Science in France



New requirements for research funding



As of 2021, all scholarly publications on the results from research funded by public or private grants provided by national, regional and international research councils and funding bodies, must be published in [Open Access Journals](#), on [Open Access Platforms](#), or made immediately available through Open Access Repositories without embargo

Rights Retention Strategy: Creative Commons Licence CC BY(-XX) on postprint with publication in journal of your choice



All publications produced by projects funded must be deposited in the national open archive HAL under the CC-BY open license.

Elaboration of a Data Management Plan (DMP) for projects funded from 2019 onwards to be provided within 6 months after the scientific start of the project.

The ANR does not impose the opening of data but recommends to adopt the principle ***“AS OPEN AS POSSIBLE, AS CLOSED AS NECESSARY”***.

Open Publications in France

A legal framework: the law for a Digital Republic

Article 30 of the Law (overrules *any* foreign editorial policy)

Authorize deposit of the postprint for publication with
minimum embargo

Postprint = author file accepted for publication
≠ the editor pdf

Maximum delay of **6 months** for Sciences Technology Medicine
Maximum delay of **12 months** for Social and Human Sciences



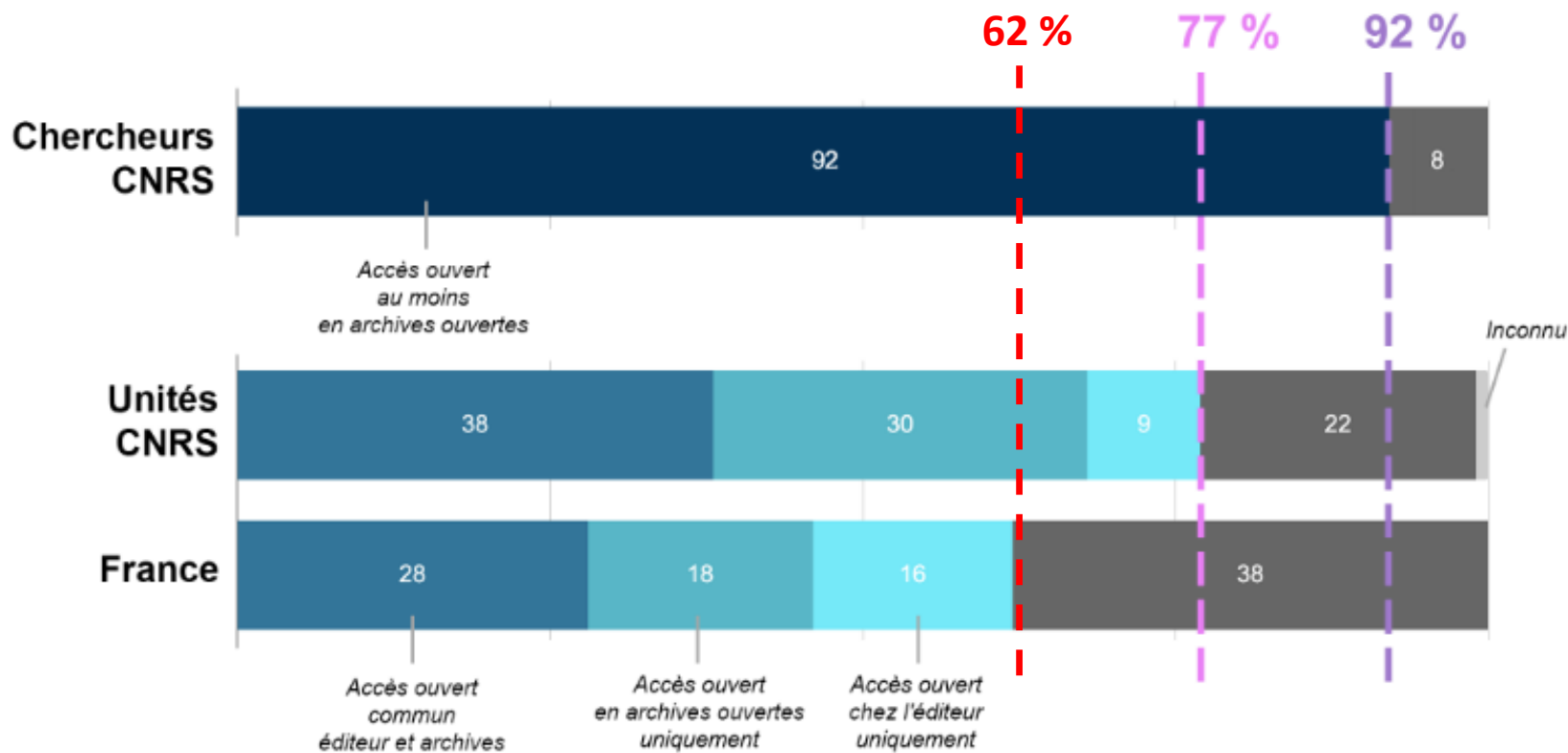
Open Publications in France

	Open Access	Closed Access
Physics & Astronomy	81,4 %	18,6 %
Mathematics	85,1 %	14,9 %
Earth Sciences, Ecology, Energy & Applied Biology	75,7 %	24,3 %
Chemistry	48,8 %	51,2 %

Open Publications in France

Le CNRS, moteur des publications ouvertes en France

Comparaison du taux d'ouverture en 2021 des publications de l'année 2020 au CNRS et en France



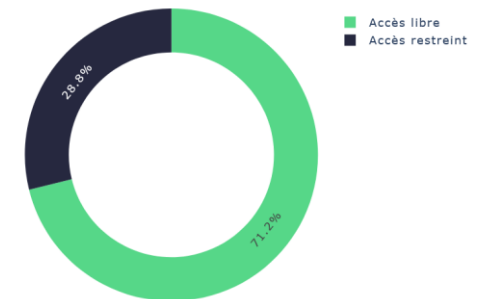
NRS (CCSD, DAPP, DDOR, INIST) et MESR – Le recensement ne comprend pas les SHS pour les unités CNRS.

Open Science Monitor: 46 % (2019) → 65 % (2023)

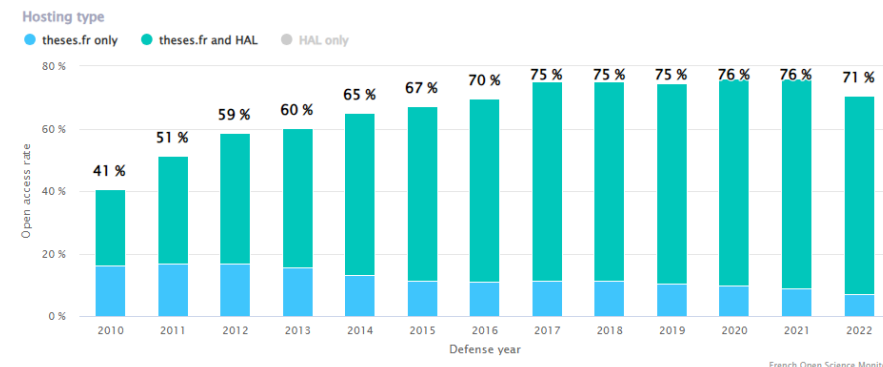
- **PSL University**
70 % (2018) → 80 % (2022)
- **University Paris-Saclay:**
51 % (2018) → 79 % (2023)
- **Sorbonne University : 78 % (2022)**
- **Grenoble Alpes University :**
53 % (2019) → 72% (2023)
- **University Côte-d'Azur : 68,2% (2022)**
- **University of Lorraine : 66% (2021)**
- **University of Strasbourg : 66% (2021)**

PhD theses in France : 71,2%

COMPARATIF : POURCENTAGE DE THÈSES FRANÇAISES EN ACCÈS LIBRE (OBSERVÉ LE 17 OCTOBRE 2022)



Opening rate of doctoral theses in France by year of defence (observed in 2023)



French Open Science Monitor

Open Science @ UGA

Charte Science Ouverte Université Grenoble Alpes

[Accès ici](#)

Votée en Cac le 8 décembre 2022



L'UGA recommande la rédaction de plans de gestion des données (PGD) pour tout travail de recherche. L'établissement l'exige pour tous les projets qu'il finance. Il le recommande également pour les projets de thèse des doctorants.

**Open your
data & theses**



L'UGA recommande pour la gestion des données de recherche l'application des principes [FAIR](#) (Findable, Accessible, Interoperable, Reusable). À ce titre, les données doivent utiliser des formats ouverts et interopérables.

Be FAIR



L'UGA recommande que tous les ingénieurs, chercheurs et enseignants-chercheurs ainsi que l'ensemble des personnels travaillant dans ses unités de recherche associées déposent leurs productions scientifiques en texte intégral (articles, posters, conférences, chapitres d'ouvrage, etc.) dans l'archive nationale HAL ou dans l'archive reconnue par la communauté disciplinaire. Ce dépôt se fait dans le respect de la Loi pour une République Numérique et conformément aux exigences des financeurs, en utilisant la bonne affiliation officielle qui fait référence à l'« Université Grenoble Alpes » et, le cas échéant, aux autres tutelles.

**Post your work
on
ArXives and
HAL**

Charte Science Ouverte Université Grenoble Alpes

[Accès ici](#)

Votée en Cac le 8 décembre 2022



L'UGA, en cohérence avec la politique des financeurs de la recherche français et européens, recommande aux auteurs de ne pas publier en accès libre avec Article Processing Charges (APC) dans des revues hybrides (associant abonnements et « article processing charges »).

Le double paiement n'est pas considéré comme éligible par les financeurs comme l'ANR et l'Europe

Elle recommande également de prêter attention aux APC excessifs, la gamme reconnue comme légitime pour couvrir les frais de production étant de 800 à 2000€.

**Beware
of APC**



L'université s'engage à assurer la formation des chercheuses et chercheurs aux sciences ouvertes.

**Train your
scientists**



Objectifs : En cohérence avec l'engagement de l'UGA pour la science ouverte et le libre accès aux publications, et pour promouvoir une évaluation plus équitable et cohérente, dans le sens des recommandations nationales et européennes sur la science ouverte, l'UGA souhaite faire évoluer ses méthodes et critères d'évaluation des résultats de la recherche, en accord avec la déclaration de San Francisco sur l'évaluation de la recherche (DORA), signée par l'UGA,

Respect DORA

- THANK YOU



**Société Française
de Physique**

**150 ANS D'ENGAGEMENT
POUR LA PHYSIQUE**

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Private licence : **EITHER** cannot use **OR** cannot modify **OR** cannot share **OR** cannot copy
(→ ChatGPT)

- **CC BY:** distribute, share, remix, adapt, use (even commercially), credit
(→ recommended for ArXiv/HAL)
- **CC BY-SA:** as CC-BY, but « partager dans les mêmes conditions » (→ Wikipedia)
- **CC BY-ND:** idem « pas de modifications »
- **CC BY-NC** : remix, adapt, use non-commercially, credit

- **CC0** : No Rights Reserved (not always adapted to legal jurisdiction)



Bit of Good Advice

- Do not flirt with IF! Choose your journal with respect to audience, message, and budget;
- write your paper (in a machine readable version Latex, pdf...) in good English. Have it read by native speaker (or ChatGPT...).
- **controversial** papers make science move forward, **wrong** papers are part of science, **fraud** kills science, **plagiarism** is not science
- avoid self-citations, give credit to competitors.
- Concentrate on **scientific excellence**:
prestige \neq quality ; # citations \neq scientific value

- respect **ALL** affiliations in the **CORRECT** way (often negotiated by local and national authorities)
- check for journal copyright policy on Sherpa-Romeo and CC BY compatibility
- deposit your full-text article on HAL/ArXiv.org either upon submission or upon acceptance. Update if applicable.
- peer-review is part of the scientist's job!
- networks like ResearchGate or Academia are excellent for promotion, it is not legal to upload full-text articles for commercial purposes

EPL

Publication Information

Title	European Physical Society Letters (EPL) (English)
ISSNs	Print: 0295-5075 Electronic: 1286-4854
URL	http://www.eps.org/?page=publi_epl
Publishers	IOP Publishing [Co-Publisher] European Physical Society [Co-Publisher] Società Italiana di Fisica [Co-Publisher] EDP Sciences [Co-Publisher] EPL Association [Primary Co-Publisher]

Assigned by SFP

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Nature

Publication Information

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6 Months

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Published source must be acknowledged and DOI cited

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If a Research Article

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Authors

Author's Homepage

Funder Designated Location

Institutional Repository

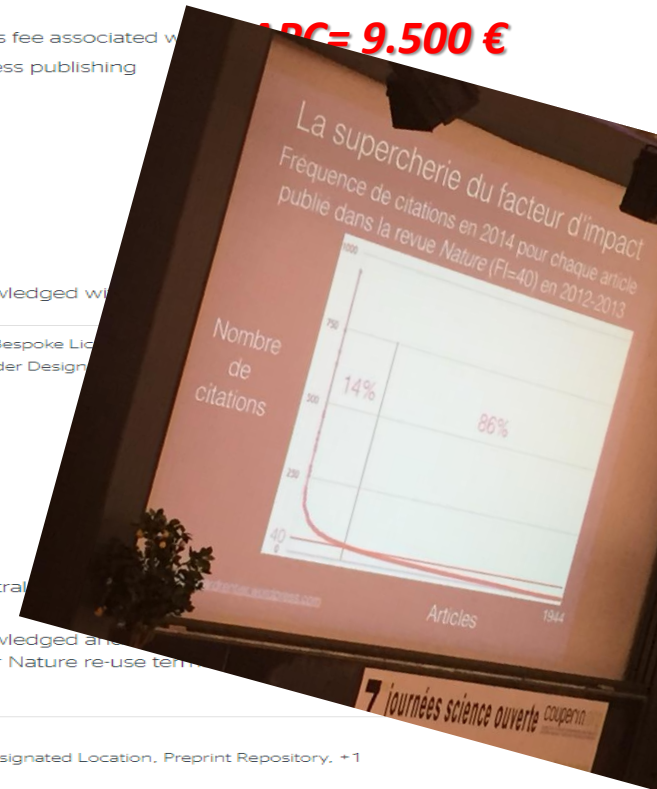
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Upon publication, source must be acknowledged and DOI cited

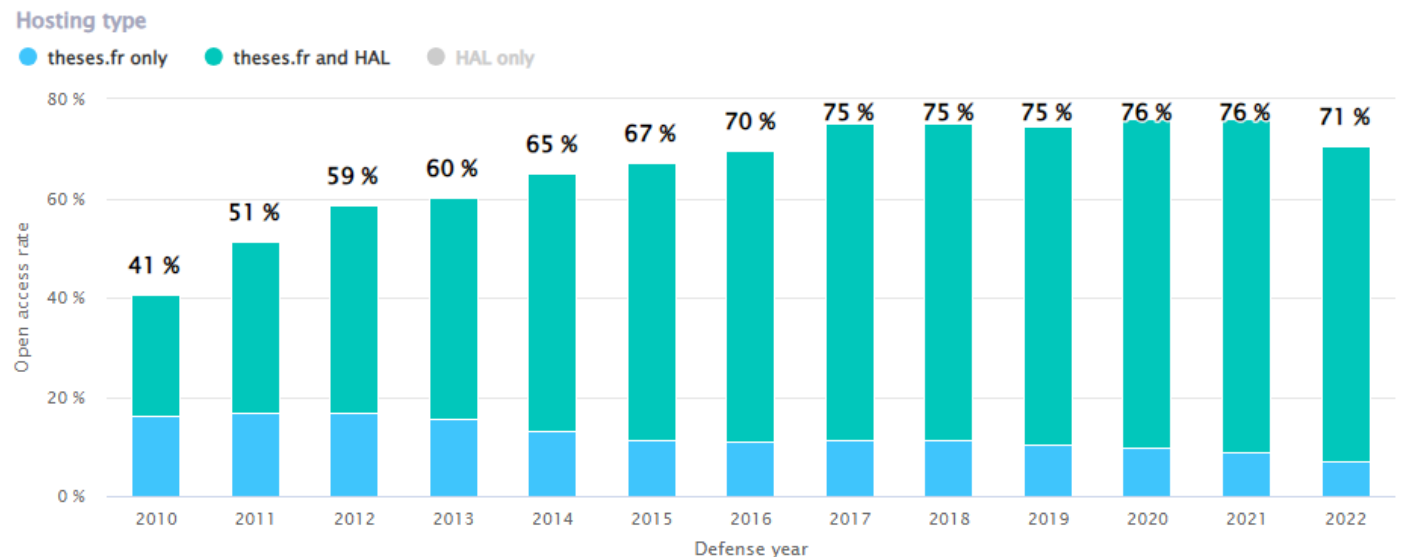
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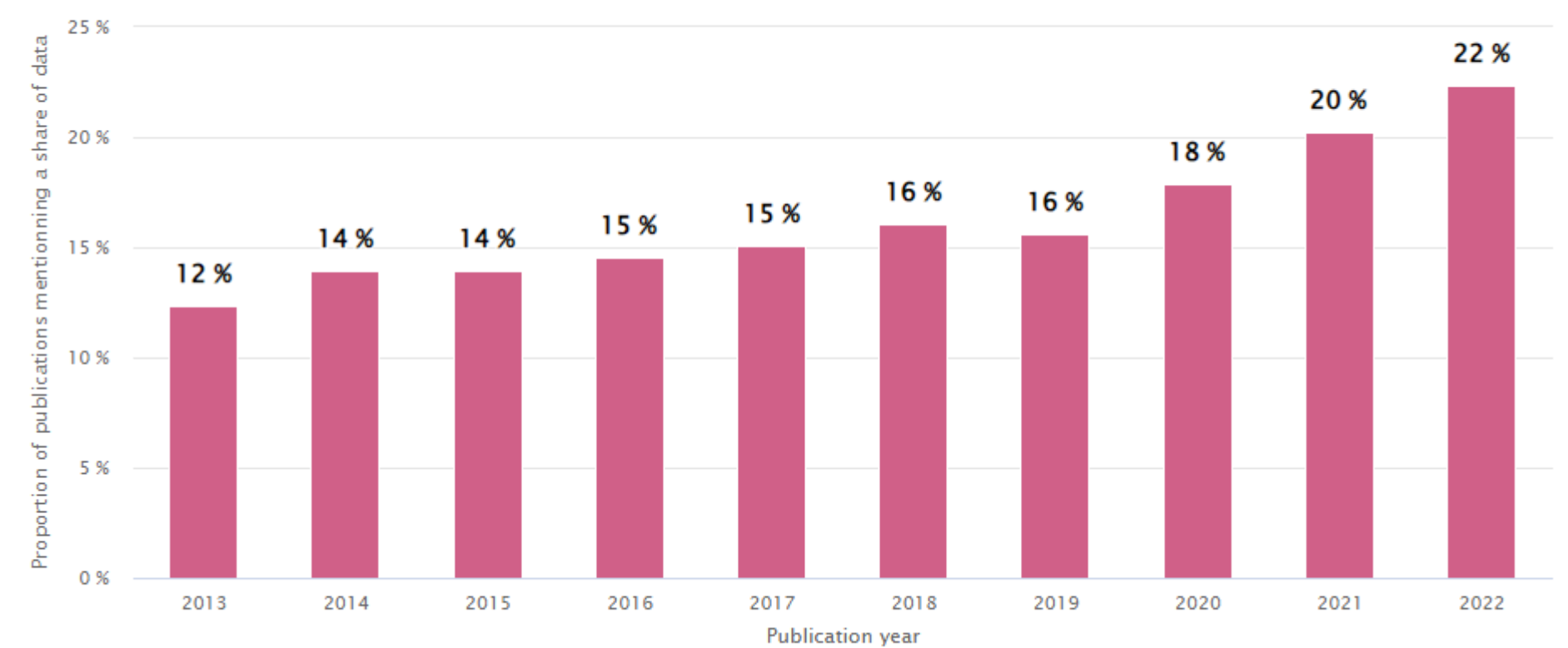


For theses defended from September 2016 onwards, the doctor cannot oppose the dissemination of his/her thesis within the whole academic community. On the other hand, the doctor can temporarily oppose the dissemination of his/her thesis in free access on the internet by subjecting it to an embargo: a thesis under embargo is available for consultation in restricted access within the French academic community during the whole period of the embargo, before becoming available for consultation in free access on the internet. Only confidential theses are not available to anyone.

Opening rate of doctoral theses in France by year of defence (observed in 2023)



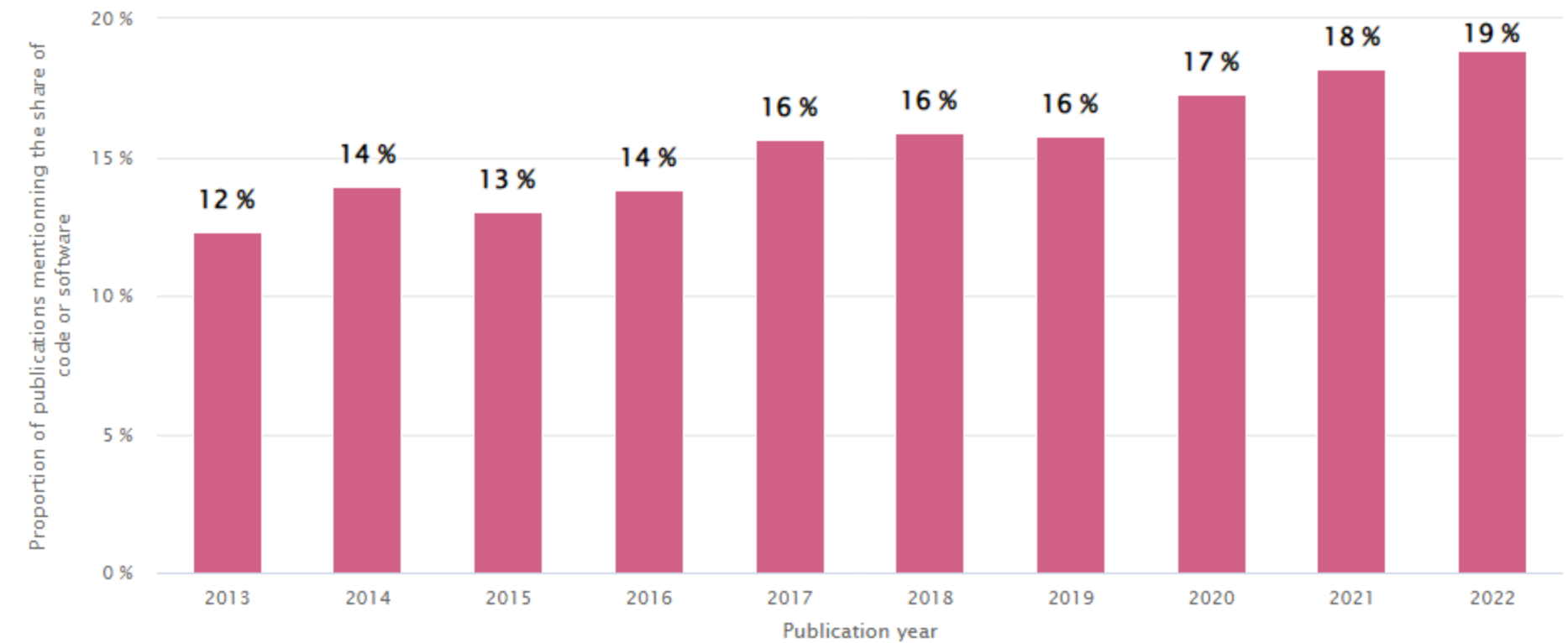
Proportion of publications in France that mention the sharing of their data by publication year



French Open Science Monitor

Comment

Proportion of publications in France that mention the sharing of their code or software by publication year



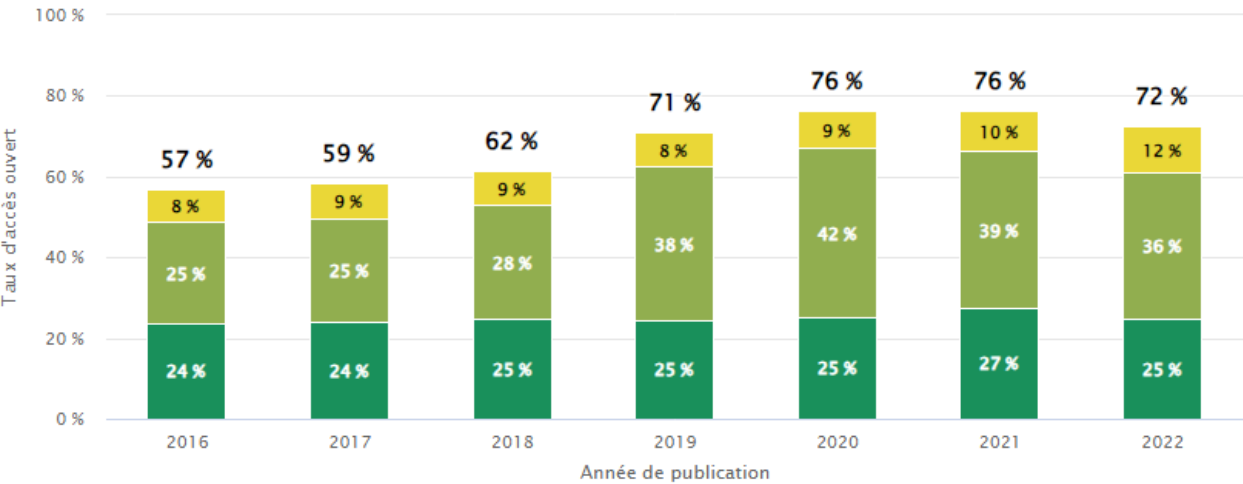
French Open Science Monitor

Comment

Université Grenoble Alpes (UGA) : Répartition des publications scientifiques de l'université Grenoble Alpes, avec un DOI Crossref, en accès ouvert par voie d'ouverture et par année de publication (observé en 2023)

Voie d'ouverture

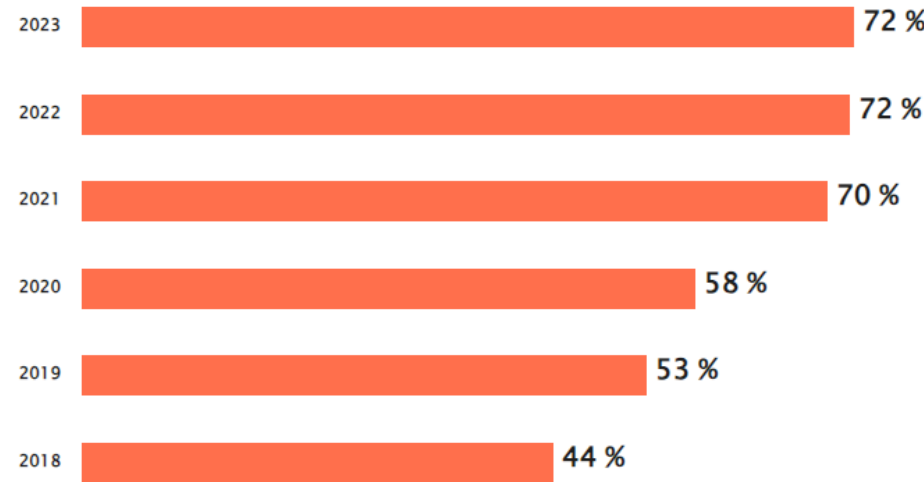
● Archive ouverte ● Éditeur & archive ouverte ● Éditeur



Baromètre français de la Science Ouverte – CC-BY MESR

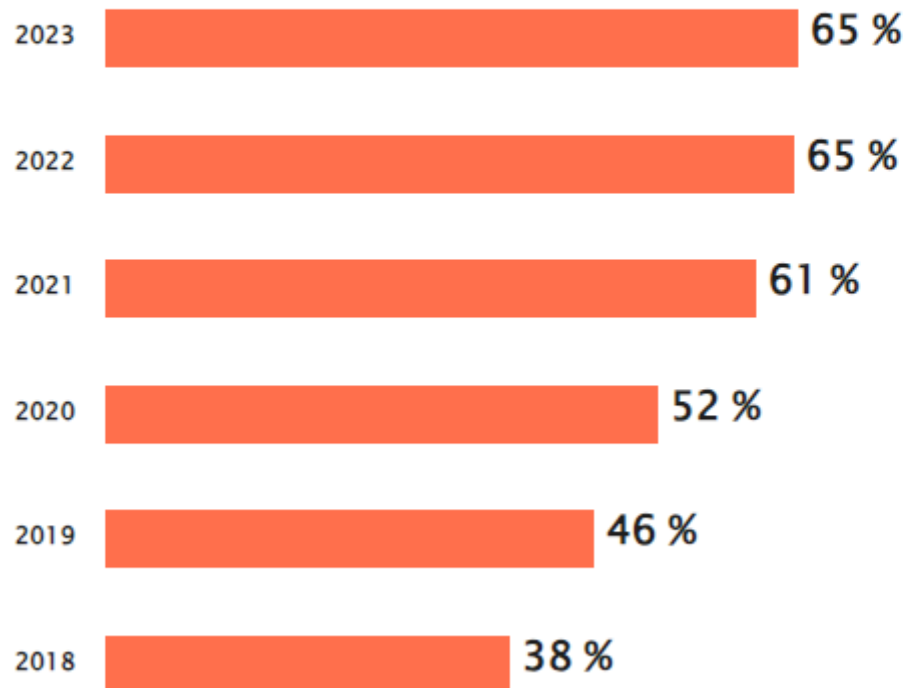
Commentaire

Université Grenoble Alpes (UGA) : Taux d'accès ouvert des publications scientifiques de l'université Grenoble Alpes, avec un DOI Crossref, parues durant l'année précédente par année d'observation



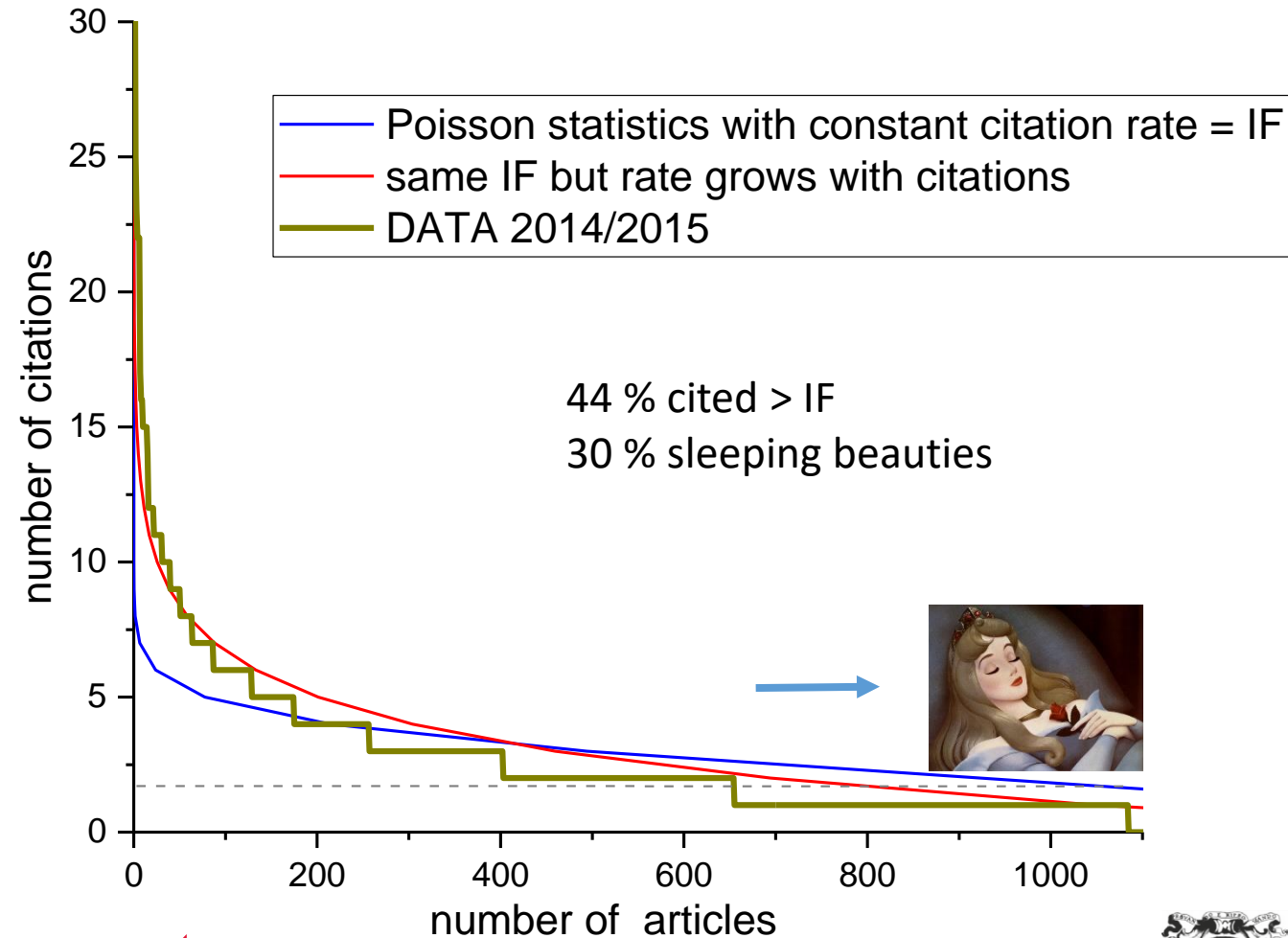
Open Publications in France

Open access rate of scientific publications in France, with a Crossref DOI, published during the previous year by observation year



French Open Science Monitor

Full statistics of citations



The commitments of French research institutions (CNRS...)


➤ Qualitative rather than quantitative assessment

- ✓ All types of publications can contribute : data that underly the publication, source code, pre-publications, data documents...
- ✓ Identify and assess personal contribution
- ✓ Research results will be observed and valued rather than the journals in which they were published (be DORA compatible).

➤ New Rules for assessment

- ✓ The exhaustive list of productions is not requested (“select 5 publications of your choice”).
- ✓ Only publications accessible in HAL or possibly in another open archive will be assessed (full-text in HAL is now strongly recommended).
- ✓ Assess entire activity of the researcher (responsability, animation, teaching, ..)

Acteurs locaux et initiatives soutenues par l'UGA

 > Science ouverte Grenoble Alpes > Acteurs locaux et initiatives soutenues par l'UGA

Acteurs locaux

Le Portail HAL Université Grenoble Alpes

La Cellule data Grenoble Alpes

Centre Mersenne pour l'édition scientifique ouverte

Numdam (NUMérisation de Documents Anciens Mathématiques)

UGA Éditions

La Plateforme Universitaire de Données Grenoble Alpes (PUD-GA)

Elan

Initiatives soutenues par l'UGA

ArXiv

Directory of Open Access Journals (DOAJ)

OpenEdition

Commission science ouverte

La commission science ouverte UGA a été constituée au printemps 2021 sous l'égide de la présidente du Conseil académique Caroline Bertonèche.

Elle permet de coordonner les différents acteurs impliqués dans la science ouverte – pôles et organismes de recherche, collège doctoral, éditions scientifiques – en assurant échanges et informations.

Les travaux de la commission concernent notamment les publications en accès ouvert, la gestion des données de la recherche et des codes et logiciels, ainsi que la formation.

Link with assessment

(2013)

There is a pressing need **to improve the ways** in which the output of **scientific research is evaluated** by funding agencies, academic institutions, and other parties. The San Francisco Declaration on Research Assessment (DORA) is a worldwide initiative covering all scholarly disciplines.

A number of themes run through its recommendations:

- **the need to eliminate the use of journal-based metrics, such as Journal Impact Factors, in funding, appointment, and promotion considerations;**
- **the need to assess research on its own merits rather than on the basis of the journal in which the research is published;** and
- the need to capitalize on the opportunities provided by online publication (such as relaxing unnecessary limits on the number of words, figures, and references in articles, and **exploring new indicators of significance and impact**).

Disruptiveness index ?

signed by SFP, CNRS, CEA, Académie des Sciences, many Universities (UGA), HCÉRES,

Link with assessment

Assessment evaluates scientific activity = publications +

Evaluator should have **easy and unlimited access** to all publications, including reactions, comments, theses

Evaluation should be transparent to all citizens

Scientific Assessment endorses Open Science

Scientific quality \neq number of citations \neq Impact factor of journals

« Prestigious » journals are **NOT** open, impose embargos
OR have expensive APC (and thus privilege “rich” scientists)