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Open Science Month 2022

Open Science in Horizon Europe

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13/10/2022

Summary :

1. Introduction to open science
2. Horizon Europe Program
3. Evaluation of open science in Horizon Europe grant proposals
4. Criteria and requirements for open science practices in Horizon Europe calls for proposals

- Open Access
- FAIR Data and metadata
- Data management plan (DMP)
- Trusted data repository
- Citizen science

What is Open Science?

"Open Science refers to the unhindered dissemination of results, methods and products by recent digital progress to develop open access to publications and – as much as possible – **data**, source code and research methods. It is a means for publicly funded research projects to retain control over the results they produce"

Second French Plan for Open Science (2021-2024)

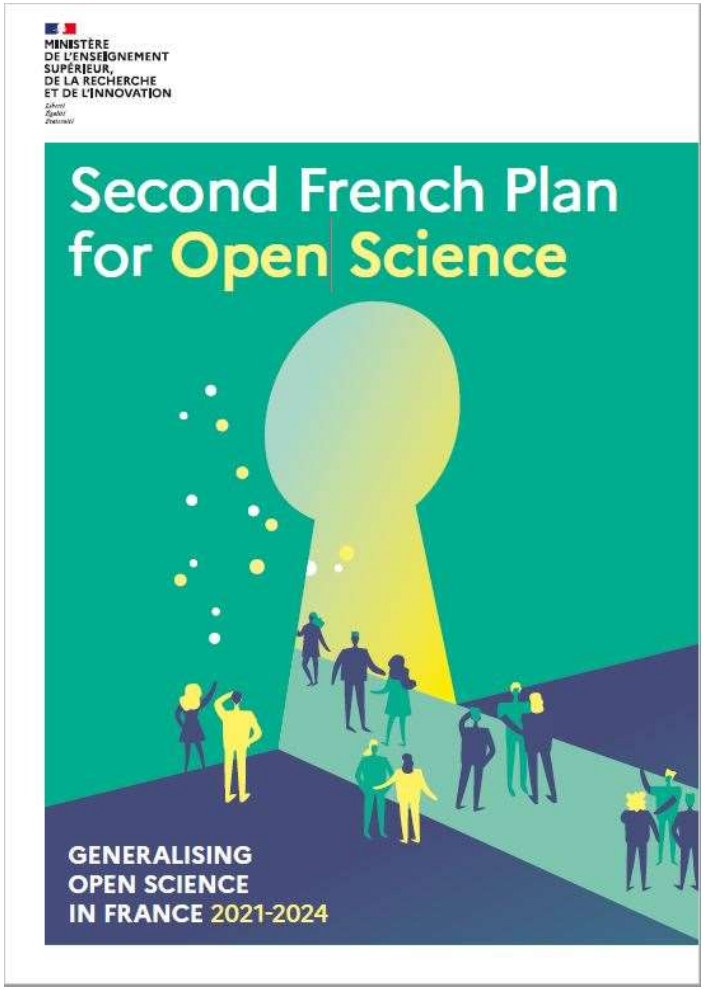

Image : https://www.ouvrirlascience.fr/deuxieme-plan-national-pour-la-science-ouverte/

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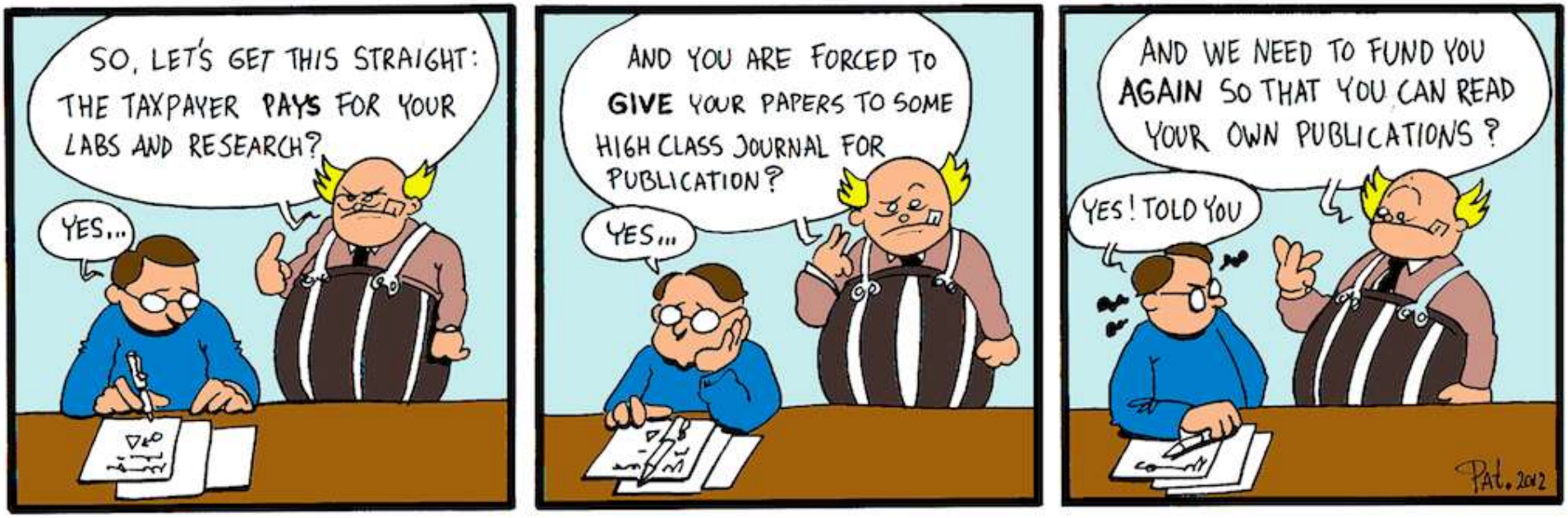
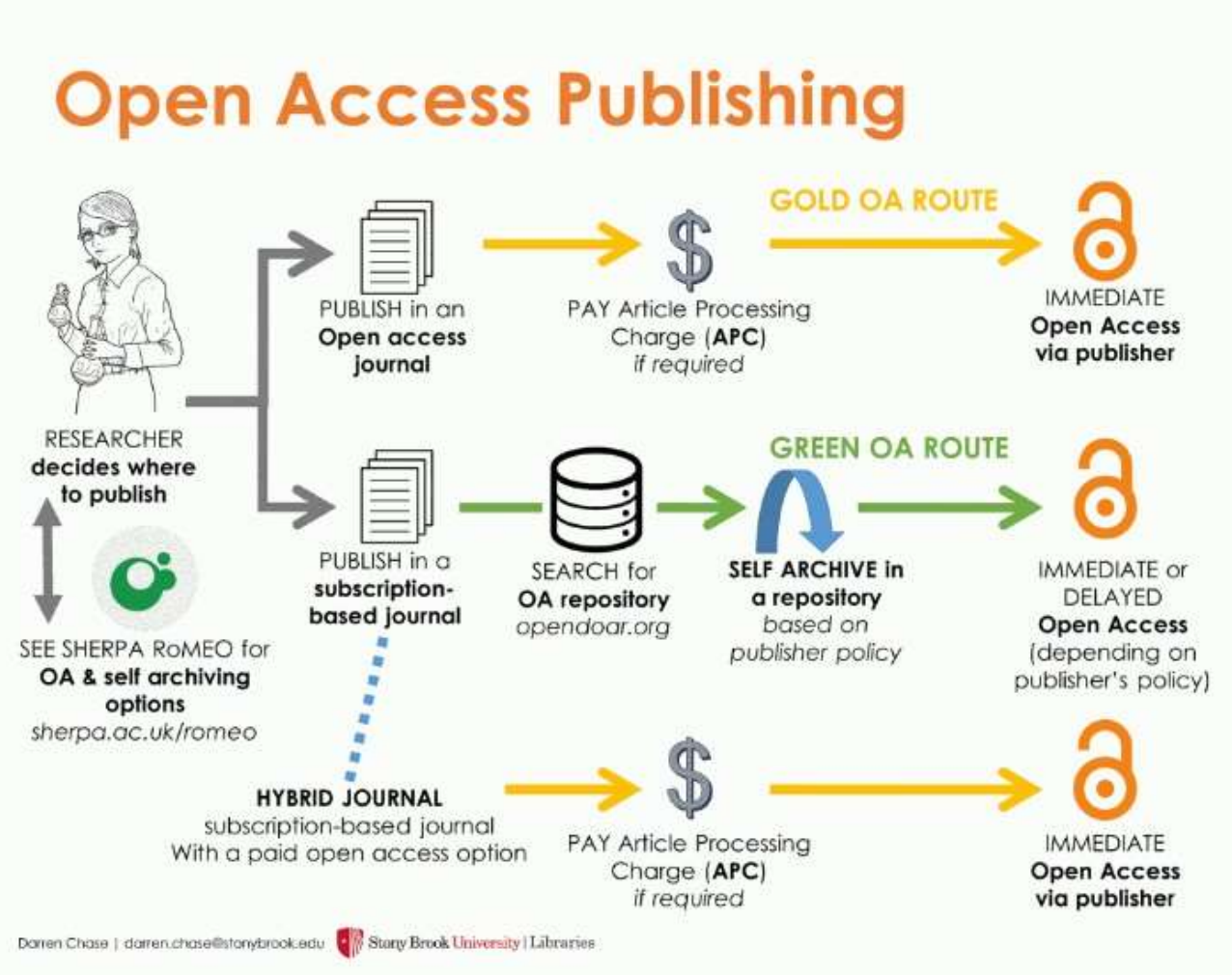
Why we nedd Open Access?



Immediate open access to publications, without embargo

Découvrir des revues en libre accès sur DOAJ (Directory of Open Access Journals) : https://doaj.org/

Savoir si une revue est compatible avec les exigences des financeurs : https://journalcheckertool.org/



LA SCIENCE OUVERTE À L'UNIVERSITÉ PARIS-SACLAY

1 Libre accès

Faire du libre accès la règle pour l'ensemble des publications scientifiques de l'Université

Valoriser Diffuser Favoriser

2 Données FAIR

Promouvoir la FAIRisation et l'ouverture des données de la recherche produites au sein de l'Université Paris-Saclay

Facile à trouver
Accessible
Interopérable
Réutilisable

3 EOSC

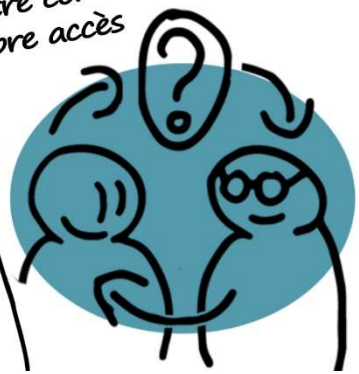
EOSC Association

Contribuer à l'European Open Science Cloud

4 Développer les compétences

Maîtriser les compétences techniques nécessaires au partage des résultats et méthodes de la recherche

Être conscient des enjeux du libre accès



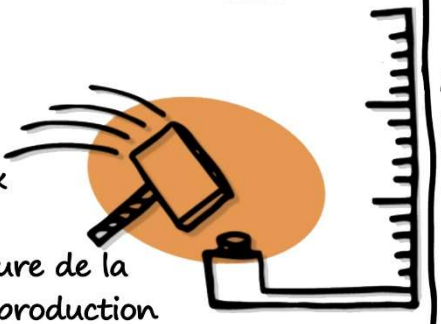
5 Récompenser et encourager

Mieux intégrer les pratiques de science ouverte dans l'évaluation des chercheurs

Remise de prix...

6 De nouveaux indicateurs

Encourager l'usage de nouveaux indicateurs pour mieux prendre en compte l'ouverture de la science dans l'analyse de la production scientifique de l'Université

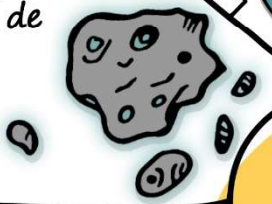


7 INTÉGRITÉ

Participer à la promotion de l'intégrité scientifique à travers la science ouverte

8 La science participative

Encourager la science participative dans des projets de recherche de l'Université



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2. Horizon Europe (2021-2027) : European research and innovation funding programme

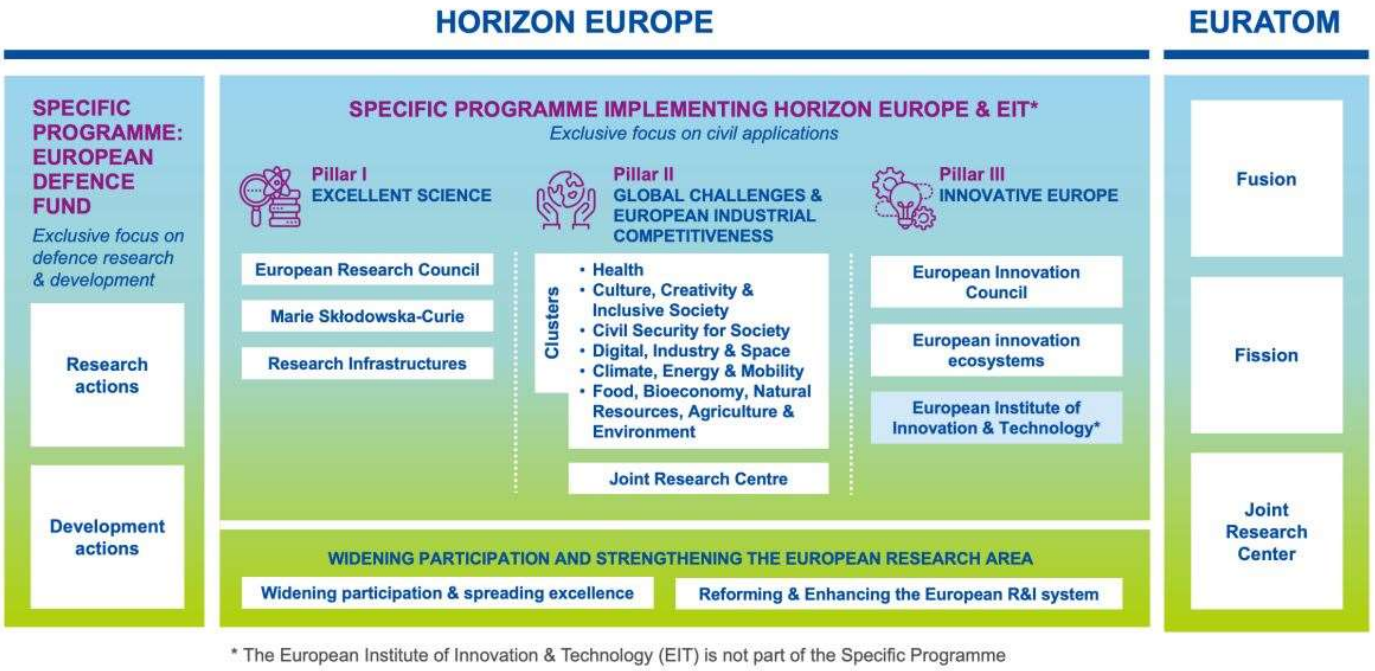
Budget : 100 billion euros to strengthen innovation and research in Europe

Image : https://scienceouverte.unistra.fr/actualites/actualite/news/atelier-horizon-europe-eosc/

Details per pillar

About Horizon Europe

Horizon Europe supports research and innovation through Work Programmes, which set out funding opportunities for research and innovation activities.



* The European Institute of Innovation & Technology (EIT) is not part of the Specific Programme

https://research-and-innovation.ec.europa.eu/system/files/2022-06/ec_rtd_he-investing-to-shape-our-future_0.pdf

European Commission

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Pillar I

EXCELLENT SCIENCE:

reinforcing and extending the **excellence of the Union's science base**

European Research Council	Marie Skłodowska-Curie Actions	Research Infrastructures
Frontier research by the best researchers and their teams	Equipping researchers with new knowledge and skills through mobility and training	Integrated and inter-connected world-class research infrastructures
€16 billion	**€6.6 billion**	**€2.4 billion**

https://research-and-innovation.ec.europa.eu/system/files/2022-06/ec_rtd_he-investing-to-shape-our-future_0.pdf

European Commission

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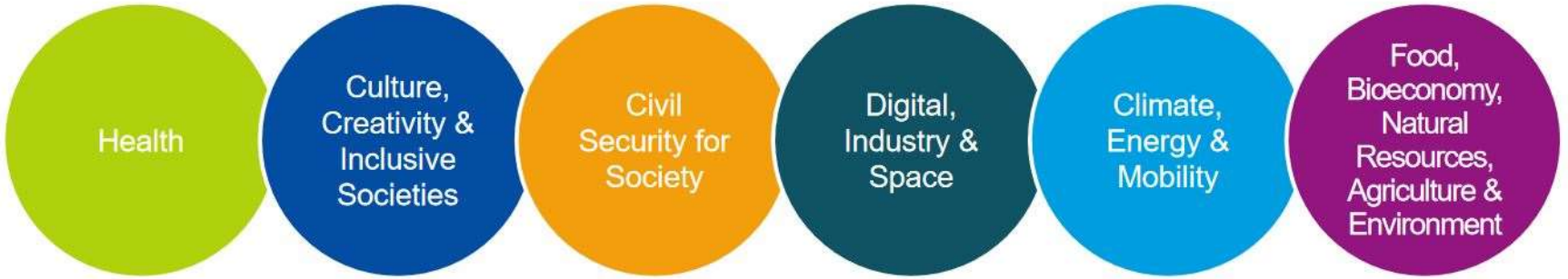
Pillar II - Clusters

GLOBAL CHALLENGES & EUROPEAN INDUSTRIAL COMPETITIVENESS:

boosting **key technologies** and solutions underpinning **EU policies & Sustainable Development Goals** (6 clusters and JRC – non-nuclear direct actions)



€53.5 billion

European Commission

https://research-and-innovation.ec.europa.eu/system/files/2022-06/ec_rtd_he-investing-to-shape-our-future_0.pdf

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Pillar III

INNOVATIVE EUROPE:

stimulating **market-creating breakthroughs** and **ecosystems** conducive to innovation

European Innovation Council

Support to innovations with breakthrough and market creating potential

European innovation ecosystems

Connecting with regional and national innovation actors

European Institute of Innovation and Technology (EIT)

Bringing key actors (research, education and business) together around a common goal for nurturing innovation

The budget: **€10.6 billion**, incl. up to **€527 million** for ecosystems (including NGEU – Recovery Fund parts dedicated to EIC).

circa **€3 billion**

European Commission

https://research-and-innovation.ec.europa.eu/system/files/2022-06/ec_rtd_he-investing-to-shape-our-future_0.pdf

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Part

Widening Participation & Strengthening the European Research Area (ERA):

Widening Participation and Spreading Excellence

- Teaming, Twinning, ERA Chairs,
- European Cooperation in Science and Technology (COST)
- Boosting National Contact Points' (NCPs) activities, pre-proposal checks and advice
- Brain circulation
- Excellence initiatives:
- Possibility for entities from widening countries to join already selected collaborative R&I actions
- Recognition of participation
- Matchmaking services

€2.96 billion

Reforming and enhancing the EU R&I system

- Strengthening the evidence base for R&I policy
- Foresight
- Support for policy makers to the ERA development
- Support to national R&I policy reform, including Policy Support Facility
- Attractive researcher careers and links with higher education
- Open science, citizen science and science communication
- Gender equality
- Ethics and integrity
- Support to international cooperation
- Scientific input to other policies
- Support to the Programme implementation
- Support for National Contact Points
- Support to dissemination & exploitation

€0.44 billion

European Commission

https://research-and-innovation.ec.europa.eu/system/files/2022-06/ec_rtd_he-investing-to-shape-our-future_0.pdf

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General context of open science in Horizon Europe

- « Horizon Europe Programme Guide », 58p, version 2.0, April, 2022. (OS: “Open science in Horizon Europe”, pp.38-54.)

- « EU Grants. AGA – **Annotated Model Grant Agreement.** EU Funding Programmes 2021-2027 », 185p, version PRE-DRAFT (HE) incl. update for **ALL PROGRAMMES**, 30 November 2021. (OS: “Annex 5 HE Communication, Dissemination, Open Science and Visibility”, pp.151-161.)

- « HORIZON EUROPE. PROPOSAL EVALUATION. Standard Briefing ». Version 3.0. 18.03.2022

How to evaluate open science in a Horizon Europe call for proposals?

Open Science is a requirement of scientific methodology in the assessment of "Excellence", "Impact", and "Quality of Implementation" of a call for proposals

Evaluation (award) criteria

Three evaluation criteria

'**Excellence**', '**Impact**' and '**Quality and efficiency of the implementation**'.

(Only one evaluation criterion for ERC - Excellence)

- Evaluation criteria are **adapted** to each **type of action**, as specified in the WP
- Each criterion includes the '**aspects to be taken into account**'. The same aspect is not included in different criteria, so it is not assessed twice.
- **Open Science** practices are assessed as part of the scientific methodology in the excellence criterion.

European Commission

Source image : « HORIZON EUROPE. PROPOSAL EVALUATION. Standard Briefing ». Version 3.0. 18.03.2022, p.15.

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Evaluating the excellence criterion (2/2)

Following questions are adapted to RIA and IA type of actions (ToA). Similar questions will be asked for other ToAs, in line with the instructions in the specific applications forms.

Assess the scientific methodology:

- Is the scientific methodology (i.e. the concepts, models and assumptions that underpin the work) clear and sound?
- Is it clear how expertise and methods from different disciplines will be brought together and integrated in pursuit of the objectives? if applicants justify that an inter-disciplinary approach is unnecessary, is it credible?
- Has the gender dimension in research and innovation content been properly taken into account?
- Are open science practices implemented as an integral part of the proposed methodology?
- Is the research data management properly addressed?
- For topics indicating the need for the integration of social sciences and humanities, is the role of these disciplines properly addressed?

Source image : « HORIZON EUROPE. PROPOSAL EVALUATION. Standard Briefing ». Version 3.0. 18.03.2022.

Evaluating the Quality of implementation (2/2)

Following questions are adapted to RIA and IA type of actions (ToA). Similar questions will be asked for other ToAs, in line with the instructions in the specific applications forms.

Assess the quality of participants and the consortium as a whole:

(Note that important information on role of individual participants and previous experience is included in part A of proposal)

- Does the consortium match the project's objectives, and bring together the necessary disciplinary and inter-disciplinary knowledge.
- Does the consortium include expertise in open science practices, and gender aspects of R&I, as appropriate?
- For topics flagged as SSH relevant, does the consortium include expertise in social sciences and humanities?
- Do the partners have access to critical infrastructure needed to carry out the project activities?
- Are the participants complementing one another (and cover the value chain, where appropriate)
- In what way does each of them contribute to the project? Does each of them have a valid role, and adequate resources in the project to fulfil that role (so they have sufficient operational capacity)?
- Is there industrial/commercial involvement in the project to ensure exploitation of the results?

Participants' previous publications, in particular journal articles, are expected to be open access and existing datasets FAIR and 'as open as possible, as closed as necessary'. Evaluate positively if this is sufficiently addressed.

European Commission

Source image : « HORIZON EUROPE. PROPOSAL EVALUATION. Standard Briefing ». Version 3.0. 18.03.2022..

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Evaluating the impact criterion (2/2)

Following questions are adapted to RIA and IA type of actions (ToA). Similar questions will be asked for other ToAs, in line with the instructions in the specific applications forms.

Assess the measures to maximise impact – Dissemination, exploitation and communication :

- Are the proposed dissemination, exploitation and communication measures suitable for the project and of good quality? All measures should be proportionate to the scale of the project, and should contain concrete actions to be implemented both during and after the end of the project.
- Are the target groups (e.g. scientific community, end users, financial actors, public at large) for these measures identified?
- Is the strategy for the management of intellectual property properly outlined and suitable to support exploitation of results?
  - If exploitation is expected primarily in non-associated third countries, is it properly justified how that exploitation is still in the Union's interest?

European Commission

Source image : « HORIZON EUROPE. PROPOSAL EVALUATION. Standard Briefing ». Version 3.0. 18.03.2022, p32.

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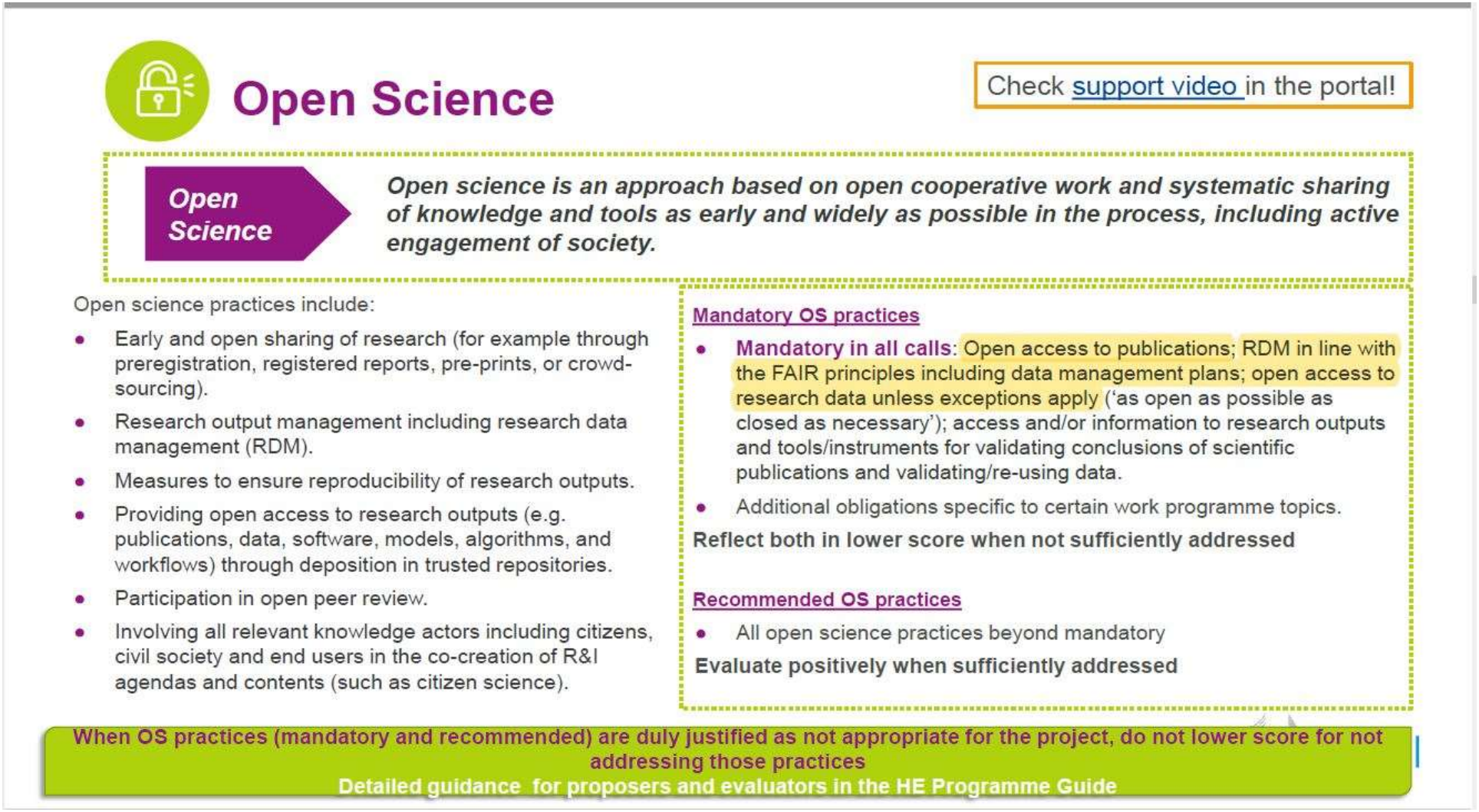
3. Open Science Criteria in Horizon Europe



Source image : « HORIZON EUROPE. PROPOSAL EVALUATION. Standard Briefing ». Version 3.0. 18.03.2022, p32.

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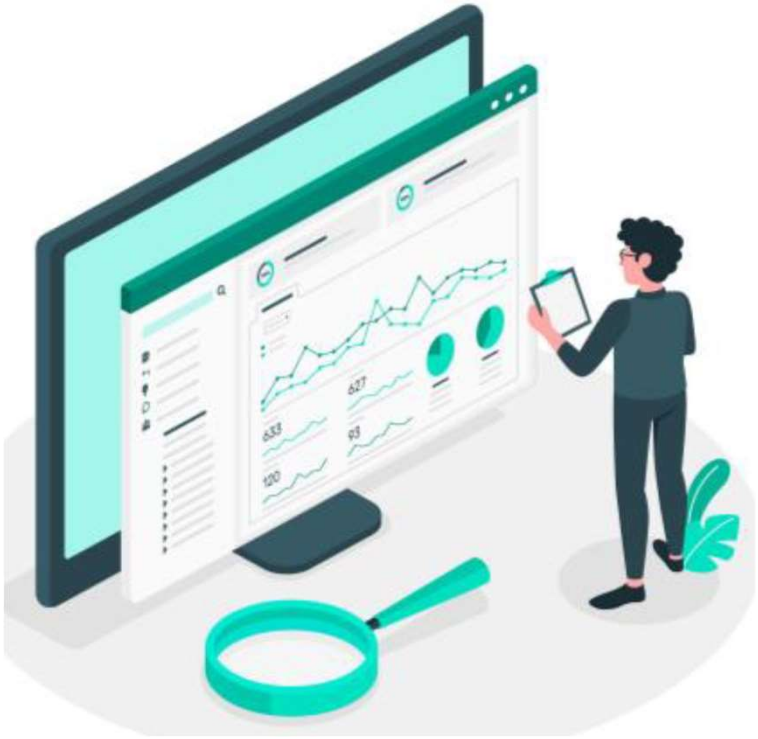
Criteria for publication

- Beneficiaries must ensure that at the latest at the time of publication, open access is provided via a trusted repository to the published version or the final peer-reviewed manuscript accepted for publication under the latest available version of the Creative Commons Attribution International Public Licence (CC BY) or a licence with equivalent rights.

- Beneficiaries are required to retain sufficient intellectual property rights (IPR) to comply with their open access obligations. Authors may need to interact with prospective publishers, in particular when they publish in venues that are not open access.

- **Publication fees are only eligible when publishing in full open access publishing venues (venues in which the entire scholarly content is openly accessible to all) and not hybrid venues.**

Source : « EU Grants. AGA – **Annotated Model Grant Agreement**. EU Funding Programmes 2021-2027 », 185p, version PRE-DRAFT (HE) incl. update for **ALL PROGRAMMES**, 30 November 2021. (OS: "Annex 5 HE Communication, Dissemination, Open Science and Visibility", pp.151-161.)



Open data: an issue of open science

https://fr.freepik.com/photos-vecteurs-libre/affaires

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Why a good data management is important?

- Preservation
- Replicability
- Innovation
- Collaboration
- Valuation

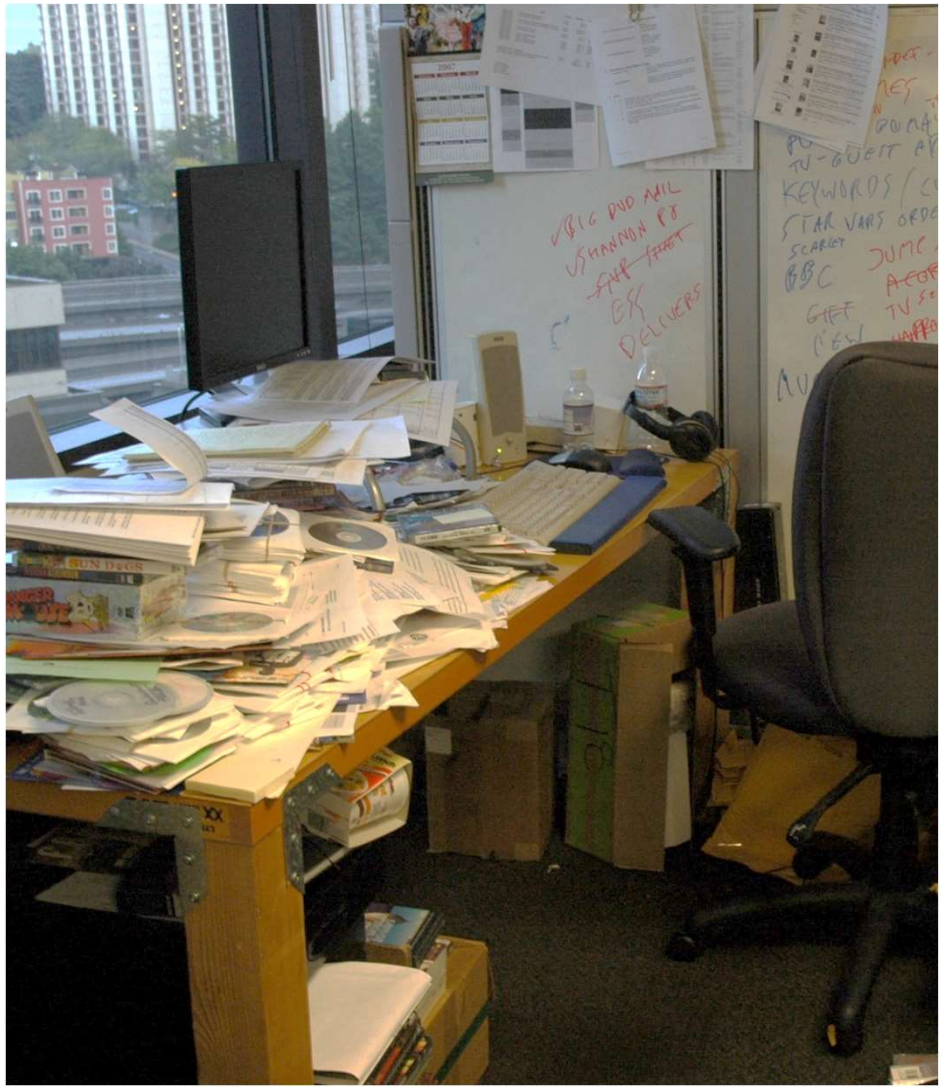


Image from the Aalto University's webinar series on "Research data management".

« “Research data” are defined as factual records (numerical scores, textual records, images and sounds) used as primary sources for scientific research, and that are commonly accepted in the scientific community as necessary to validate research findings. »

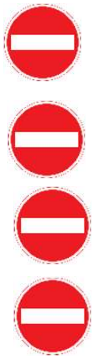
OECD *Principles and Guidelines for Access to Research Data from Public Funding,* Organisation for Economic Co-operation and Development, 2007, p.14, https://doi.org/10.1787/9789264034020-en-fr

Classification of research data :

* According to nature or form :
- Texte
- Digital
- Multimedia
- …

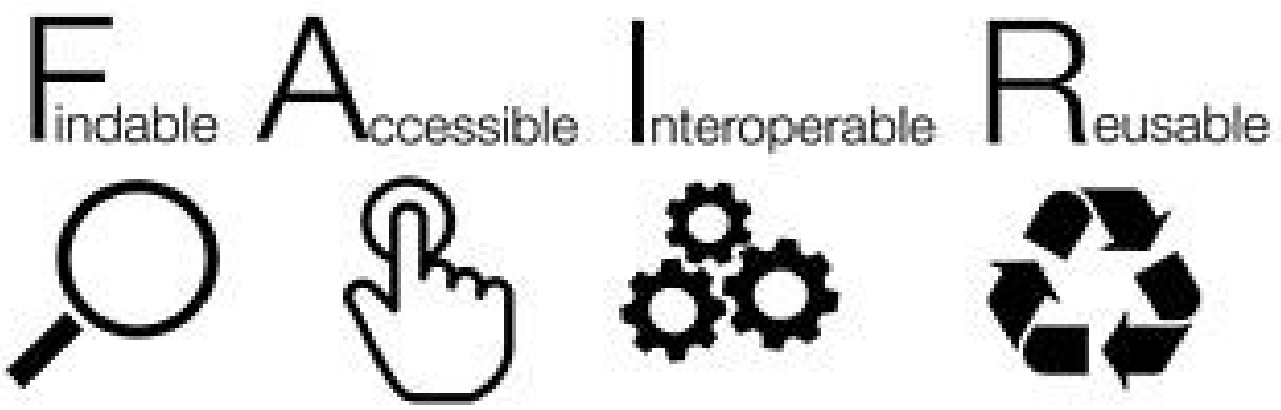
* According to level of elaboration :
- Primary data
- Processed data
- Analyzed data

'As open as possible, as closed as necessary'



- Non-anonymized personal data
- Data that we do not own
- Data resulting in a patent application
- Data whose dissemination poses security issues

FAIR Data and metadata



Criteria for data and metadata

- The metadata associated with the publications must be open access with a CCO license (Creative Common Public Domain Dedication) or equivalent, in order to ensure their reuse.
- Metadata of deposited publications must be open under a Creative Common Public Domain Dedication (CC0) or equivalent, in line with the FAIR principles (in particular machine-actionable) and provide information at least about the following:
- publication (author(s), title, date of publication, publication venue);
- Horizon Europe or Euratom funding;
- grant project name, acronym and number;
- licensing terms;
- persistent identifiers for the publication, the authors involved in the action and, if possible, for their organisations and the grant.

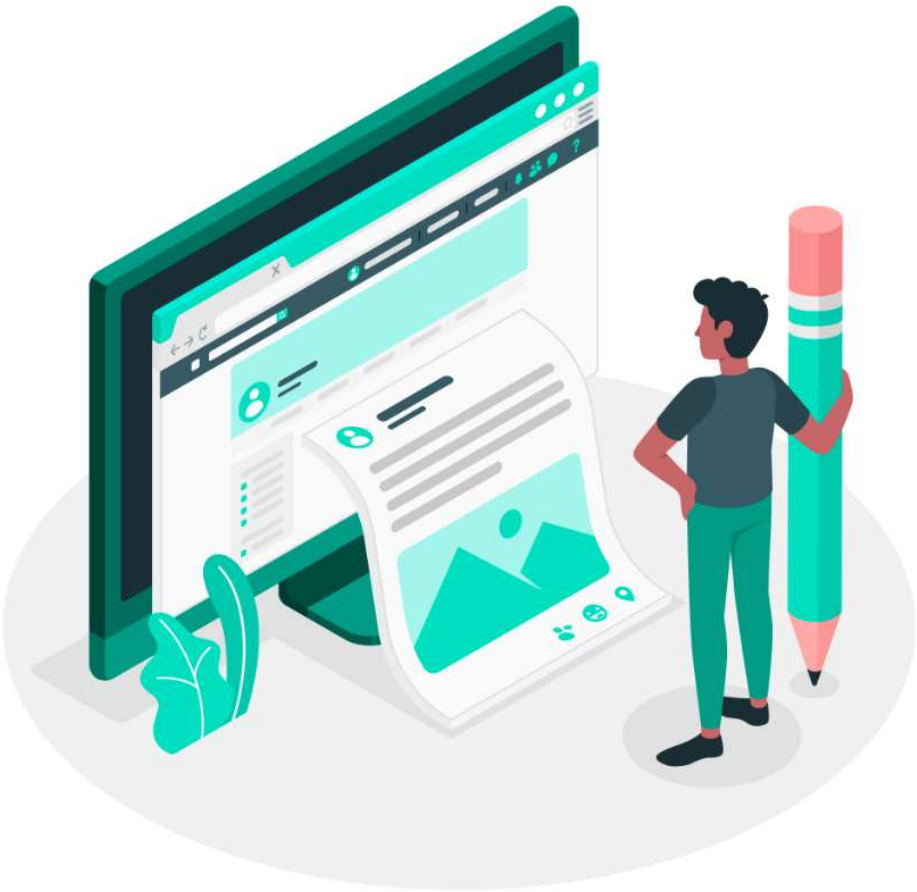
Source : « EU Grants. AGA – **Annotated Model Grant Agreement**. EU Funding Programmes 2021-2027 », 185p, version PRE-DRAFT (HE) incl. update for **ALL PROGRAMMES**, 30 November 2021. (OS: "Annex 5 HE Communication, Dissemination, Open Science and Visibility", pp.151-161.)

Recommandations :

It is important to provide persistent identifiers (PIDs) for the dataset.

- DOI (Digital object identifier) or identifier Handle
- ORCID or ResearcherID
- If possible, ROR ID for granting organizations
- Metadata is machine-readable and standardized (e.g. Dublin Core, Data Cite, etc.). Preferably, common non-proprietary formats can be used respecting the standards of each scientific community.

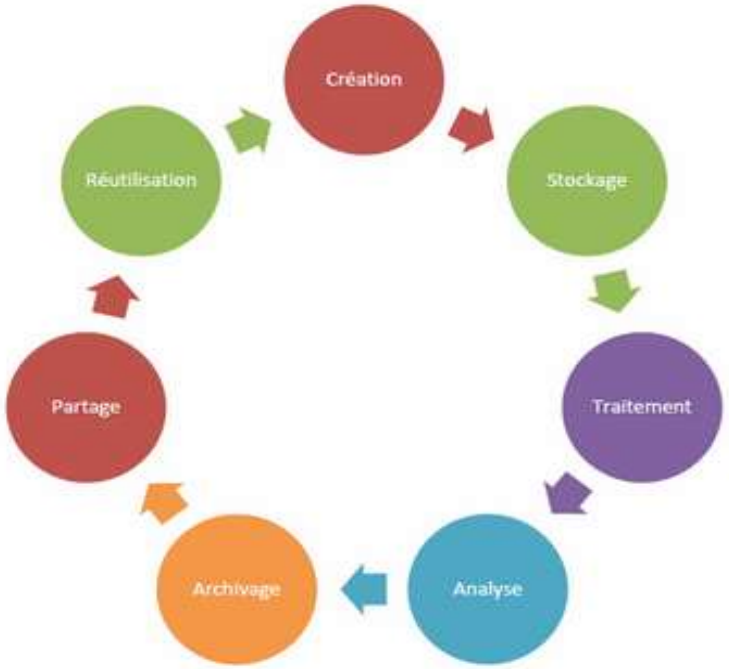
Data Management Plan (DMP)



https://fr.freepik.com/photos-vecteurs-libre/medias-sociaux

What is DMP?

- a written document that describes the data life cycle
- A planning document
- An ‘evolving’ and living document



https://data.ird.fr/gerer/

One objective: to reassure funders!

Content of Horizon Europe DMP

→ Data summary
→ FAIR Data
→ Other research outputs
→ Allocation of resources
→ Data security
→ Ethical aspects
→ Other issues

Criteria for DMP

- Establish a data management plan (“DMP”) (and update it regularly)
- Take into account that the data must be reusable in the data management plans (DMP)
- Beneficiaries are encouraged to manage their data in accordance with the FAIR principles.
- Respecting the principle “as open as possible, as closed as necessary”

Source : « Horizon Europe Programme Guide », 58p, version 2, April 2022. (OS: “Open science in Horizon Europe”, pp.38-54.)

Recommandation : DMP Writing tools

- Viewing DMPs :
  - DMP Templates (dmptool.org)
  - https://dmponline.dcc.ac.uk/public_plans
  - Modèles de DMP (opidor.fr)

Trusted data repository

Source image: https://fr.freepik.com/vecteurs-libre/gros-centre-donnees-rack-salle-serveurs-processus-ingenierie-travail-equipe-technologie-informatique-stockage-nuage_4103163.htm

Criteria for trusted repositories

Beneficiaries must ensure that research data is deposited in certified repositories or archives. Certification standards to be met include:

- Certified repositories (e.g. CoreTrustSeal, nestor Seal DIN31644, ISO16363)
- disciplinary and domain repositories commonly used and endorsed by the research communities. Such repositories should be recognised internationally
- facilitate mid- and long-term preservation of the deposited material

Recommandation : Deposit your data in a trusted repository

- Generalist/Disciplinary?

Find a repository: re3data, FAIRsharing

- re3data (Registry of Research Data Repository)
- FAIRSharing.org : https://fairsharing.org/ (find metadata stand)

- Licenses attribution
  - Creative Commons, Etalab, ODbL
  - Choose a licence

- Assign a PID = Persistent identifiers
  - DOI for data and dataset/ORCID ID for author

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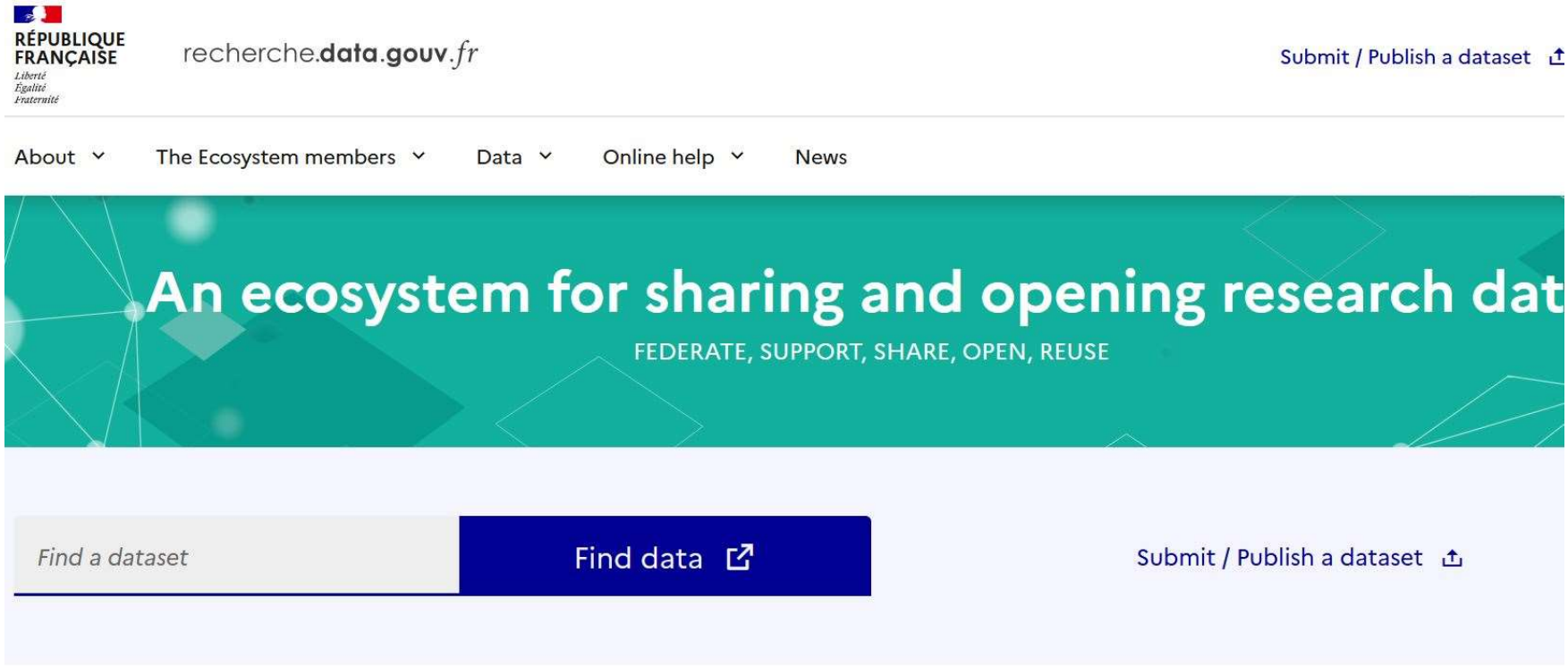
Recherche.Data.gouv.fr : French national repository for open research data



https://recherche.data.gouv.fr/fr

Citizen science

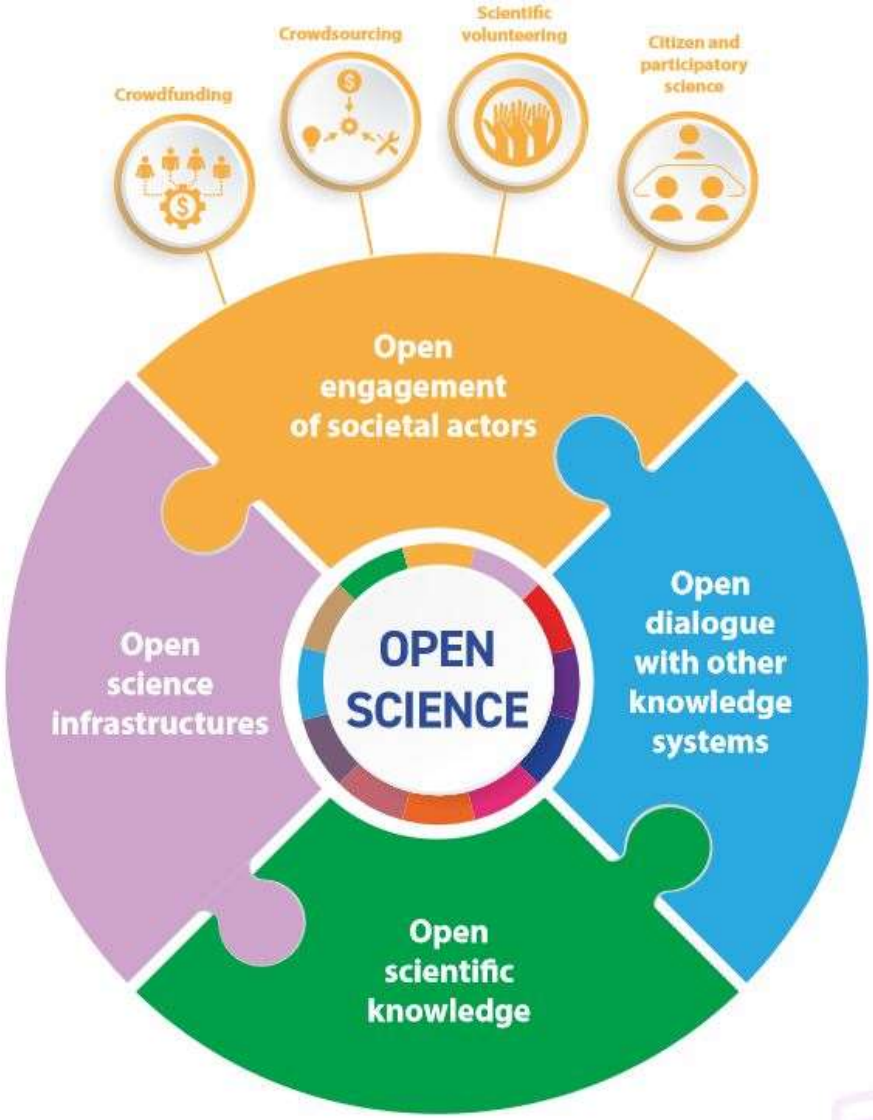


Image : « UNESCO Recommendation on Open Science », 2021

Example of a citizen science project at Université Paris-Saclay

Image : https://www.vigienature.fr/fr/vigie-manip/birdlab

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Engagement des citoyens, de la société civile et des utilisateurs finaux dans un *proposal*

"Citizen and civil society engagement is a programme principle and operational objective that refers to the opening up of R&I processes to society to develop better, more innovative and more relevant outcomes, and to increase societal trust in the processes and outcomes of R&I."

Co-design activities: " workshops, focus groups, deep discussion on the implications, the benefits and the challenges related to R&I courses of action or technology development".

Co-creation activities: "citizen science or user-led innovation, involve citizens or end-users directly in the development of new knowledge or innovations, through a range of different levels of participation ".

Co-assessment activities: " assisting in the monitoring and evaluation of the progress of a project."

« Horizon Europe Programme Guide », version 2, April 2022. (OS: "Open science in Horizon Europe", p.51.)

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Sources

- « Horizon Europe Programme Guide », 58p, version 2, April 2022. (OS: “Open science in Horizon Europe”, pp.38-54.)
- « UNESCO Recommendation on Open Science », 2021.
- « Horizon Europe Program 2021-2027 », https://research-and-innovation.ec.europa.eu/system/files/2022-06/ec_rtd_he-investing-to-shape-our-future_0.pdf
- « EU Grants. AGA – **Annotated Model Grant Agreement**. EU Funding Programmes 2021-2027 », 185p, version PRE-DRAFT (HE) incl. update for **ALL PROGRAMMES**, 30 November 2021. (OS: “Annex 5 HE Communication, Dissemination, Open Science and Visibility”, pp.151-161.)
- « HORIZON EUROPE. PROPOSAL EVALUATION. Standard Briefing ». Version 3.0. 18.03.2022.
- https://www.horizon-europe.gouv.fr/

Thank you!

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