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Webinar| 22 November 2022

Horizon Europe Open Science requirements in practice

Jonathan England





Horizon Europe reference documents Program Guide of Horizon Europe Annotated Model Grant Agreement (AGA) ERC Managing your project > Open Science MSCA Work Programme

EC Participant Portal – 'Continuous reporting' guide

OpenAIRE guides

- 'How to comply with Horizon Europe mandate for publications'
- 'Open Science in Horizon Europe proposal'
- 'RDM in Horizon Europe proposal'





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Open Science

"Open science is an approach based on open cooperative work and systematic sharing of knowledge and tools as early and widely as possible in the process"

European Commission









Requirements for publications



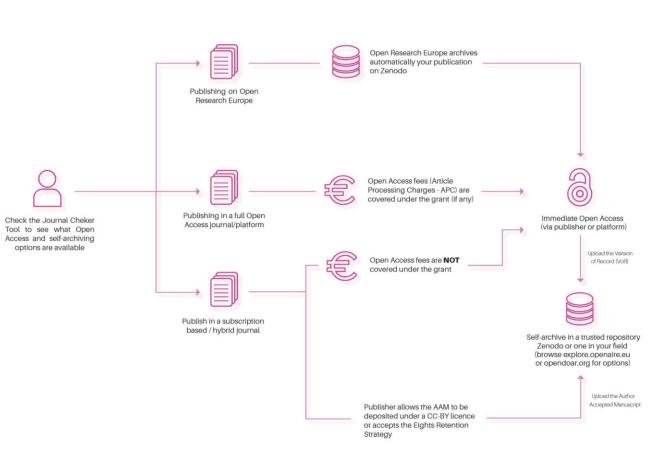


Requirements

- Peer-reviewed manuscript (AAM or VoR) in a trusted repository
- No embargo period (i.e. immediate OA)
- Authors retain their rights by having the AAM and/or the VoR under a CC-BY 4.0 licence
- Information about research outputs or tools/instruments needed to validate the conclusions of the publication
- Add the acronym/code of the project within

Specificities

- Publication fees (Article Processing Charges) are reimbursable if the venue is full OA
- No restrictions on where to publish (journal doesn't have to be full OA), but APCs for hybrid journals are not covered
- CC BY-NC/BY-ND allowed for long-text formats (e.g. monographs; a chapter in an edited book is not eligible)



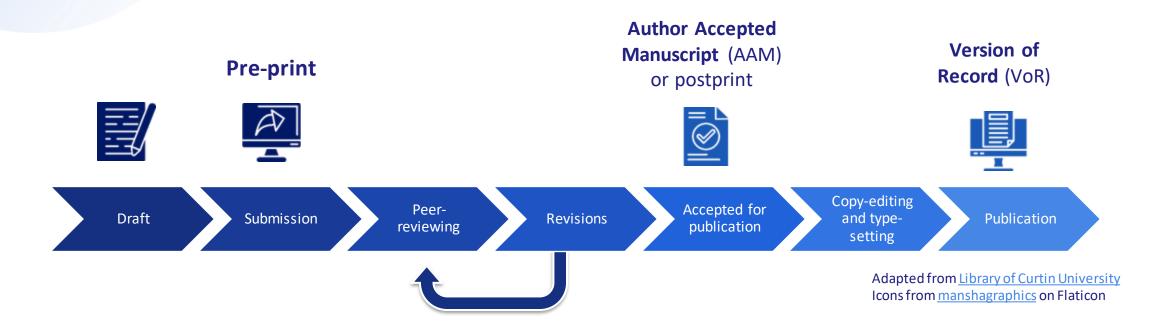


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Author Accepted Manuscript (AAM) vs Version of Record (VoR)

6







Self-archiving

Minimum for Open Access = **SELF-ARCHIVING**

Check the journal's eligibility



https://journalcheckertool.org/

Rights Retention Strategy

"For the purpose of Open Access, the author has applied a CC BY public copyright licence to any Author Accepted Manuscript version arising from this submission."

it is about where you

make it available in OA, NOT where you publish

- To assert ownership, the author as the intellectual creator and original copyright holder – applies a CC BY licence to the AAM
- Delivering publication services does not entitle publishers to ownership of the AAM, which remains the intellectual property of the author. Publication services should be paid for, but not with ownership of the AAM (from cOAlition S)

https://www.coalition-s.org/rights-retention-strategy/





Self-archiving

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Minimum for Open Access = **SELF-ARCHIVING**



Open Research Europe

If you publish in Open Research Europe, you do not need to self-archive. Your manuscript will be automatically archived on a repository (Zenodo) once it successfully passes peer-review





Requirements for research data





Requirements

- Must manage the digital research data in line with the **FAIR principles** (Findable, Accessible, Interoperable, Reusable)
- **Data Management Plan** (DMP) is required by M6; updated midproject and at end of project
- **Deposit (meta)data as soon as possible** after production/generation or after processing and quality controls
- Deposit data in a trusted repository and make them open as soon as possible (deadlines set in DMP), following the "as open as possible, as closed as necessary" (open by default) principles
- Data closed if necessary, but **metadata must be FAIR and under CCO** (trusted repositories will automatically share metadata in CCO)
- Open licence, preferentially CC-BY or CC0 licence
- Detailed information about research outputs or tools/instruments needed to re-use or validate the data (e.g. data, software, algorithms, protocols, models, workflows, electronic notebooks)



Examples of metadata author(s) name, author(s) ORCID, DOI, licence, language, journal, title, etc.





Valid justification for not opening the data

- Commercially valuable data if it would undermine its exploitation or other results (e.g. endanger trade secrets ('soft' IP)), or make IP protection of results more difficult
- Data protection/privacy rules of sensitive and/or personal data
- Security rules for projects dealing with ۲ strategic assets, interests, autonomy or security of the EU







A few definitions





Trusted repositories

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- Certified repositories (e.g. CoreTrustSeal, nesto Seal DIN31644, ۲ ISO16363)
- Disciplinary and domain repositories commonly used and endorsed ulletby the international research communities
- General-purpose (e.g. **Zenodo**) or institutional repositories that ٠ present the essential characteristics of trusted repositories:
 - services, mechanisms and provisions in place to secure the accuracy, integrity, authenticity and access of contents
 - use of PIDs
 - machine-actionable, standardised and detailed metadata (including provenance and licencing)

For your publications:

OpenDOAR

https://sherpa.ac.uk/opendoar/

For your research data:

re3data.org REGISTRY OF RESEARCH DATA REPOSITORIES

For everything:



https://zenodo.org/





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- Universally recognisable and juridically sound (you can still claim copyright infringements)



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Data Management Plan

A formal 'living' document

- Formal document that specifies how research data will be handled both during and after a research project.
- It identifies key actions and strategies to ensure that research data are of a high quality, safe, sustainable and where possible accessible and reusable.
- There are no absolute right answers
- But be clear, specific and detailed...
- And justify decisions
- The DMP is to prove to the funder that the researcher has taken time to reflect on what to do, that consideration has been given and the approach seems reasonable
- And that your data is "As open as possible, as closed as necessary" (FAIR principles)



Venkataraman, S. (2018, November). RDM, Open Research and DMP presentations and associated files. Zenodo, CC-BY 4.0 <u>http://doi.org/10.5281/zenodo.1489929</u>





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FAIR principles

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Findable

- Persistent identifier (e.g. DOI)
- Rich metadata
- Searchable and discoverable online

Interoperable

• Open and/or standardised file formats



https://www.openaire.eu/how-to-make-your-data-fair

Accessible

- Deposited on a trusted repository (e.g. Zenodo)
- Data can be restricted and still FAIR – "as open as possible, as closed as necessary"

Reusable

- Well documented (e.g. README files), including provenance and tools / instruments needed to reproduce the results
- Clear licence (e.g. CC BY 4.0, CCO) OpenAIRE webinar | 22 Nov 2022



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Requirements for specific cases





Validation of findings

 Restricted or closed data might need to be made available through agreements with relevant confidentiality provisions

Public emergencies

- Can be triggered by the request of the granting authority
- Immediate OA is extended beyond publications to any research outputs – as soon as feasible and in CC BY or CCO
- DMP provided with the proposal or before grant signature
- In case of conflict of legitimate interests for openness, beneficiaries must grant non-exclusive licences to legal entities that need the research to address the emergency (this provision applies up to 4 years after the end of the action)







Reporting and monitoring





Reporting-Monitoring

- Extensive reporting of Open Science practices:
 - Structured reporting of requirements regarding OA
 - Free-text reporting of encouraged Open Science practices
- Monitoring by project officers and reviewers in periodic reviews
- Monitoring of the FP through Key Impact Pathways (KIPs)





European Commission

Alea López de San Román, Open Science in Horizon Europe, CC-BY 4.0 https://doi.org/10.5281/zenodo.4681073



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EC Participant Portal – Continuous reporting

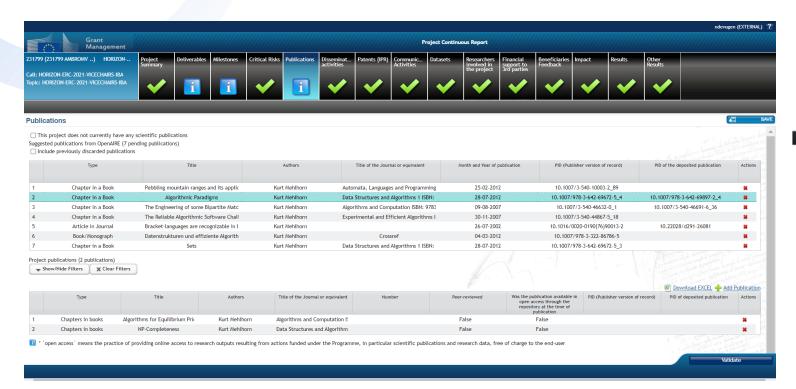
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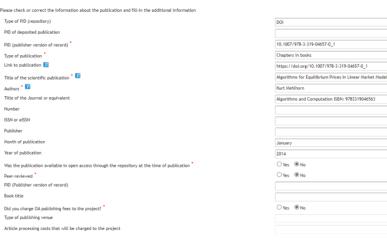


Publications



Type Chapter in a Book Title Algorithms for Equilibrium Prices in Linear Mark Authors Kort Methhom Title of the Journal or equivalent Algorithms and Computation ISBN: 97833190455 Month and Year of publication 17-01-2014 DID (Publikher version of record) 10.1007/978-3-319-04657-0_1 Dio of the deposited publication Winnber Web Source https://doi.org/10.1007/978-3-319-04657-0_1 Open AIRE ID doi______srt2256393aa09211562de8bc001 Journal Number

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- "PID of deposited publication" = URL to the repository where AAM/VoR is archived
- "PID (Publisher version of record)" = URL to the place where it was published (e.g. given by the journal)
- "Article processing costs that will be charged to the project" – remember that OA fees to publish in a non-full-OA journal/platform cannot be charged to the project

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lease check or correct the information about the publication and fill-in the additional information Type of PID (repository) PID of deposited publication 10.1007/978-3-319-04657-0 1 PID (publisher version of record) Type of publication Chapters in books Link to publication 🗊 https://doi.org/10.1007/978-3-319-04657-0_1 Title of the scientific publication Algorithms for Equilibrium Prices in Linear Market Model Authors Kurt Mehlhorn Title of the Journal or equivalent Algorithms and Computation ISBN: 9783319046563 Number ISSN or eISSt Publisher Month of publication January Year of publicatio 2014 ⊖Yes ®No Was the publication available in open access through the repository at the time of publication ○Yes ® No Deer-reviewed PID (Publisher version of record Book title ○Yes ® No Did you charge OA publishing fees to the project? Type of publishing venue Article processing costs that will be charged to the project







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Datasets

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Datasets

Import Dataset

This project does not currently have any dataset

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Description of Dataset *	ToF-ERDA data with partial GIC
PID	10.17632/hh9f7txd38
PID of the publication	10.17632/hh9f7txd38.1
Does the data underpin a publication *	◯ Yes
PID of the publication	Publication PID
URL to repository	http://dx.doi.org/10.176
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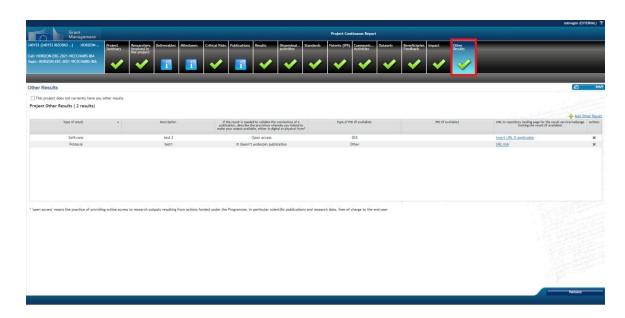
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Results vs Other Results

- 'Results' tab focused on the content of the results: discoveries and theories, products, services, methods, etc.
- 'Other Results' tab is for reporting about softwares, workflows, protocols, prototypes, etc.

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test2 SERV: Service (new or improved) High societal potential (other than clima High policy or regulatory potential	insert description	Citizens	Feasibility study Business plan	Emerging: growing demand, scarce suppl

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Type of result		
Description	Software	
If the result is needed to validate the conclusions of a publication, briefly describe the provisions whereby you intend to make your output available, either in digital or physical form	Workflow Protocol Prototype Other	
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Open Research Europe publishing platform

Giulia Malaguarnera







A multidisciplinary publishing platform

- **Diamond Open Access** publishing platform for Horizon 2020 and Horizon Europe beneficiaries
- Launched in March 2021 (currently over 270 publications)
- High-quality, reliable, efficient and transparent processes
- Expert Scientific Advisory Board
- No costs to authors or readers (i.e. no APCs) costs are met directly by the European Commission

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- **Open peer-review** (name of the reviewers, the revisions and the comments from the authors after revisions, are openly available)
- Immediate publication
- Can publish all research outputs (currently can only publish in English)
- New generation article metrics (novel and dedicated metrics are available for each article)
- All content is indexed in Google Scholar and Scopus (exploring subject-specific indexers as well)
- Automatically archived in Zenodo once passed peer-review

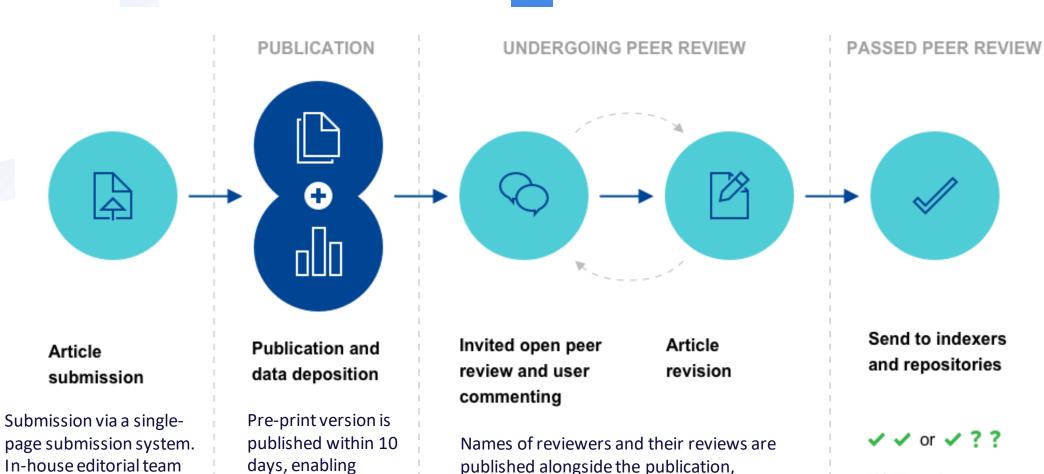






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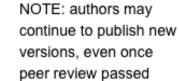




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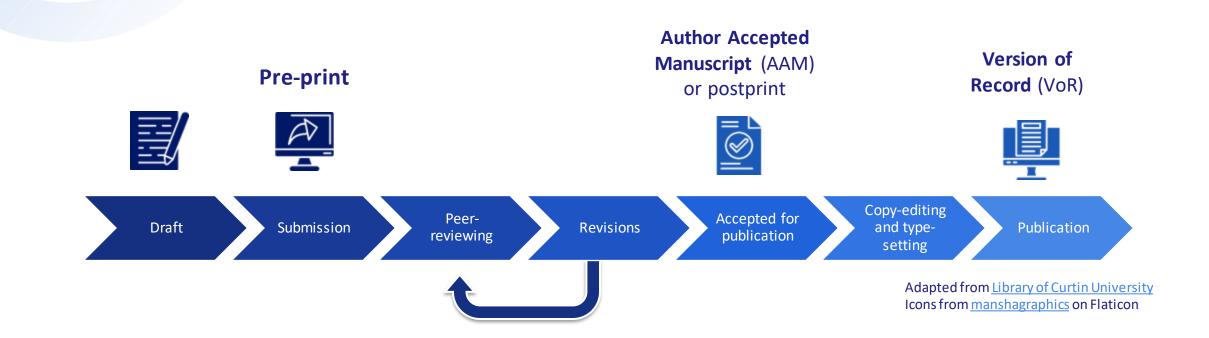


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and citation









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Open Research Europe



	Natural sciences	Engineering and technology	Medical and health sciences	Agricultural and veterinary sciences	Social sciences	Humanities and the arts	
Case Study	•	•	•	•	•	•	
Research Article	•	•	•	•	. 5	•	
Brief Report	•	•	•	•	•	•	
Data Note	•	•	•	•	• *****	•	
Method Article	•	•	•	•	•	•	
Open Letter	•	•	•	•	•	•	
Software Tool Article	•	•	•	•	•	•	
Review	•	•	•	•	•	•	
Case Report	•	•	•	•			
Registered Report	•	•	•	•	•		
Clinical Practice Article	•	•	•	•			
Study Protocol	•	•	•	•	•		
Systematic Review	•	•	•	•	•		
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Pre-publication checks



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The in-house editorial team does not review the academic/scientific content of the publication. Only the reviewers (selected by the authors) do that.





Open peer-review



Open Research Europe **Approval statuses:** what do they mean for authors?

European

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Approved

The article is of an **appropriate** academic standard. Reviewers may suggest small changes to improve the article or correct minor errors, but these changes will not affect the peer review status.

Approved with reservations

The reviewer believes the article has academic merit but has asked for several small changes to the article or more significant revisions.

Not approved

The article in its current form has issues that seriously undermine the findings and conclusions. More serious revisions will be required for the paper to pass peer review. A 'Not approved' status does not equate to rejection - it's possible to improve an article's status from 'Not approved' to 'Approved' upon publication of a new version.





RESEARCH ARTICLE

Open peer-review example



	REVISED Identifying entrepreneurial discovery processes with weak and strong technology signals: a text mining approach [version 2; peer review: 1 approved, 1 approved with reservations]
Advanced search ~	AUTHORS Levan Bzhalava, Jari Kaivo-oja, Sohaib S. Hassan, Wolfgang Dieter Gerstlberger
	FUNDER Horizon 2020 Framework Programme
REVISED To wards an integrated automatic design process for robot swarms [version 2; peer	PEER REVIEWERS Muhammad Ali; Hugo Pinto
review: 3 approved]	LATEST VERSION PUBLISHED 01 Nov 2022
AUTHORS Darko Bozhinoski, Mauro Birattari	
FUNDERS Horizon 2020 Framework Programme Wallonia-Brussels Federation Fonds De La Recherche Scientifique (FNRS)	CASE STUDY AWAITING PEER REVIEW
PEER REVIEWERS Adam Schroeder; Alan Millard; Edmund Hunt and James Ward	Hybrid AC/DC architecture in the CE.D.E.RCIEMAT microgrid: demonstration of the TIGON project [version 1; peer review: awaiting peer review]
LATEST VERSION PUBLISHED 04 Nov 2022	
	AUTHORS Paula Peña-Carro, Oscar Izquierdo-Monge
	FUNDER Horizon 2020 Framework Programme
	PEER REVIEWERS Invited
	PUBLISHED 26 Oct 2022





Open peer-review example

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Useful OpenAIRE tools and ORE to support Horizon Europe projects

Giulia Malaguarnera





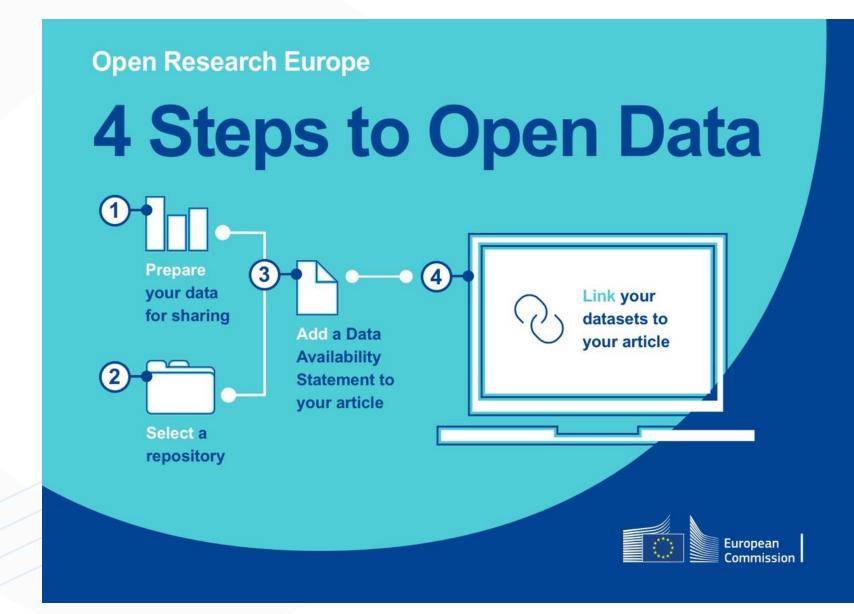




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Tips and Tricks for data management





PLAN YOUR DATA: DMP

The Data Management Plan contains key information about:

- The research:
 - Purpose of the research
 - Objectives
 - Researchers involved
- Documentation of research datasets
 - Datasets that highlight the steps followed
 - The means used across data management activities
 - Language, ethics, license (cc), etc











- Protect sensitive data by anonymization
- Chose a machinereadable format
- Check if your dataset is FAIR





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Increase the accessibility and reusability of spreadsheet data

DO

- Give each column a descriptive heading.
- Use a single header row.
- Ensure you have used the first cell, i.e. A1.
- Include a title and a legend to describe each spreadsheet.
- Save each data file with a name that appropriately reflects the content of that file.
- Deposit each table that is part of the dataset as a separate file.
- Deposit each worksheet as a separate file.

DO NOT

- Embed charts, comments or tables within a spreadsheet.
- Use color coding (machine-based data mining cannot interpret this).
- Include special (i.e. non alphanumeric) characters within the spreadsheet, including commas.
- Use merged cells.
- Deposit multiple worksheets within a spreadsheet (such as those used in Microsoft Excel), as these are not supported by CSV and TAB formats.



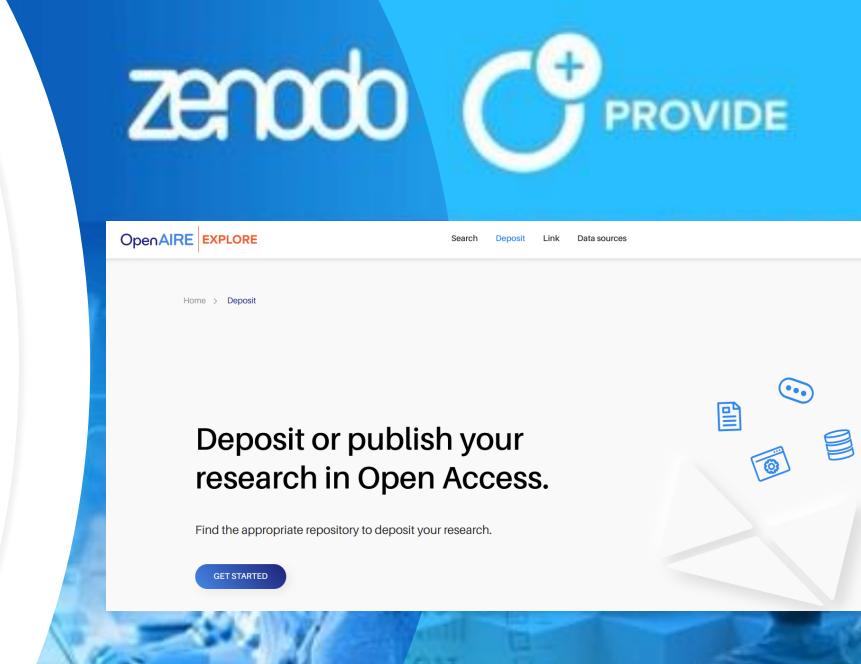
Select a Repository

Your datasets should be deposited in a stable and recognized open repository, under a CC0 license.

Your community might have a recognized repository, and some data types (such as genetic sequences or protein structures) have specific data banks they should be deposited in.

Struggling to decide which repository is right for your research?

- Ask librarians in your Institute for help
- Re3data is a search engine to browse all trusted repositories
- · Zenodo: a catch-all repository
- Browse the EOSC Portal



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Add a Data Availability Statement to Your Article

- All articles must include a Data Availability statement, even where there is no data associated with the article. This statement should be added to the end of the article prior to submission. The Data Availability statement should not refer readers or reviewers to contact an author to obtain the data, but should instead include the applicable details listed below.
- You can also mention the DMPs if it's published on Zenodo or to another repository



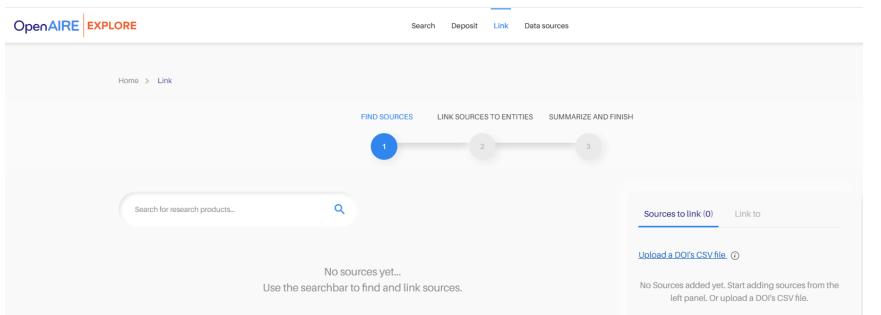






Make the links! Contextualise your data

- Update the DMP
- Update your metadata in the repository you have selected
- Make the links by using OpenAIRE Explore



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Horizon Europe grant proposals

Jonathan England





Open Science parts

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- PART A Application form
 - List 5 publications, widely-used datasets, softwares, goods, services or any other achievements relevant to the call
- PART B Project proposal technical description
 - Under 'Excellence' '1.2 Methodology' (Open Science, RDM and management of other research outputs)
 - Under 'Impact' '2.2 Measures to maximise impact' (dissemination, exploitation and communication)
 - Under 'Quality and efficiency of the implementation' '3.1 Work plan and resources' and '3.2 Capacity of participants and consortium as a whole'



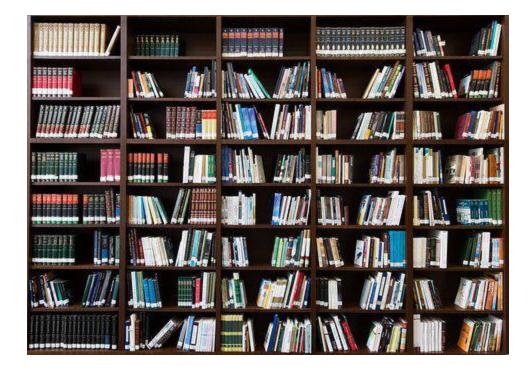
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Publications

- Your publications cited should be in OA ۲
- Your publications cited will only be evaluated ۲ qualitatively (i.e. the Impact Factor is irrelevant)
- Give insights in where you are hoping to publish (e.g. Open Research Europe, full OA journals)



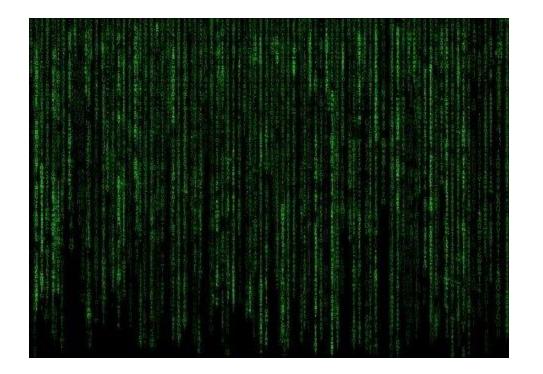






Data

- Your data listed should be FAIR, on a repository and the PID provided
- An official DMP is not needed but the grant proposal does include aspects very similar to a DMP (e.g type and size of data, PIDs, IPR, interoperability, licences, curation, responsabilities
- Distinct WP on 'project management' that must include the DMP as a deliverable







Other aspects eligible in the budget

- "engagement of citizens, civil society and endusers" – citizen science and participation in crowdsourcing activities
- Data curation costs
- Article Processing Charges (hybrid journals not eligible)







Writing tips

- Be as specific as possible ۲
- Don't let the project officer dig for information ۲
- You do not need to explain what Open Access, • FAIR data, Open Science, etc. mean. Focus on what concretely you will do







Special cases





ERC

- No explicit evaluation or requirement to describe Open Science practices; but if included, will (implicitly) positively affect assessment of 'scientific excellence'
- ERC projects do not have scientific work packages or deliverables.
- But now requires a "Research Data Management" WP, with "Data Management Plan" as the one deliverable (type "R – Document, report" with due data M6)

ERC DMP template



European Research Council

Established by the European Commission



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MSCA

- Underlying principles: Open Science, Responsible Research & Innovation
- Award criteria will consider the "soundness of the proposed methodology" **('Excellence' criteria** weighing 50% of the evaluation) which must consider "the quality of Open Science practices"
- Training activities and Career Development Plan must address key transferable skills "fostering the culture of Open Science, innovation and entrepreneurship" and prepare to the increase in "research collaboration and information-sharing" (e.g. collaborative tools, OA, open data, FAIR data, public engagement, citizen science)







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Horizon Europe Open Science recommended practices

Jonathan England





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Evaluation

- Mandatory Open Science practices score will be lowered for not sufficiently addressing them unless duly justified
- Recommended Open Science practices no impact on score if not addressed but score will be increased if sufficiently addressed
- Open Science practices listed in the template for proposals (section Excellence > Methodology) but is a non-exhaustive list







Open Science practices

What?	How?	Mandatory in all calls/recommended
Early and open sharing of research	Preregistration, registered reports, preprints, etc.	Recommended
Research output management	Data management plan (DMP)	Mandatory
Measures to ensure reproduciblity of research outputs	Information on outputs/tools/instruments and access to data/results for validation of publications	Mandatory
Open access to research outputs through deposition in trusted repositories	 Open access to publications Open access to data Open access to software, models, algorithms, workflows etc. 	 Mandatory for peer-reviewed publications Mandatory for research data but with exceptions ('as open as possible') Recommended for other research outputs
Participation in open peer-review	Publishing in open peer-reviewed journals or platforms	Recommended
Involving all relevant knowledge actors	Involvement of citizens, civil society and end-users in co-creation of content (e.g. crowd-sourcing, etc.)	Recommended

- Open science practices listed in the template for proposals (section excellence>methodology)
- Non-exhaustive list
- Mandatory in all calls: Model Grant Agreement or call requirement; all the rest recommended

European

Commission



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Pre-registration

- Quantitative evaluation of research outputs has pushed towards less responsible research practices and the replication crisis (e.g. data dredging/p-hacking, cherry picking, HARKing [Hypothesising after the results are known])
- Pre-registration = "practice of publishing the plan for a study, including research questions/hypotheses, research design, data analysis before the data has been collected or examined" (FORRT)
- Some research domains have standard procedures in place; e.g. pre-registration of clinical trials, check ECRIN: <u>https://ecrin.org/</u>



https://www.cos.io/initiatives/prereg

Nosek et al. (2018). The preregistration revolution.

https://doi.org/10.1073/pnas.1708274114



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Pre-prints

- Traditional scholarly publishing is usually time-consuming and slow
- Preprints allow authors to share their results ahead of peer-reviewing on preprint servers
- Faster dissemination and broader access to research outputs, opportunities for early feedback
- Visible outputs for early-career researchers, can increase employability

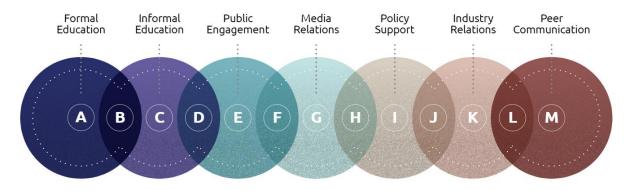






Public engagement

- Open and inclusive research and innovation includes society that can be listened to, awarded relevant input and influence during all stages of the research process (<u>RRI Tools</u>) – public engagement contributes to the democratisation of science
- Increases scientific literacy of the public, improves societal relevance of science, increases the support and uptake of research
- E.g. <u>European Researchers' Night</u>, <u>Science is</u> <u>Wonderful</u>, public talks, talks in schools or cultural centres, popular science books, social media, documentaries, TV shows, school activities, art/science projects



Pompea & Russo (2020). The role of astronomers in the astronomy education ecosystem. <u>https://doi.org/10.48550/arXiv.2011.11350</u>







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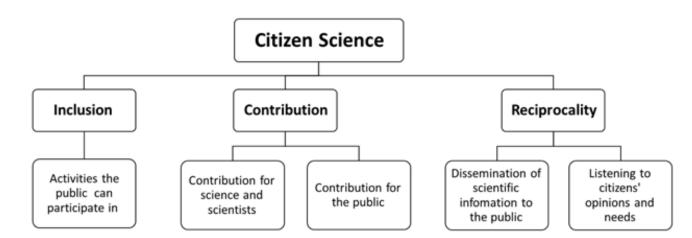
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Citizen Science

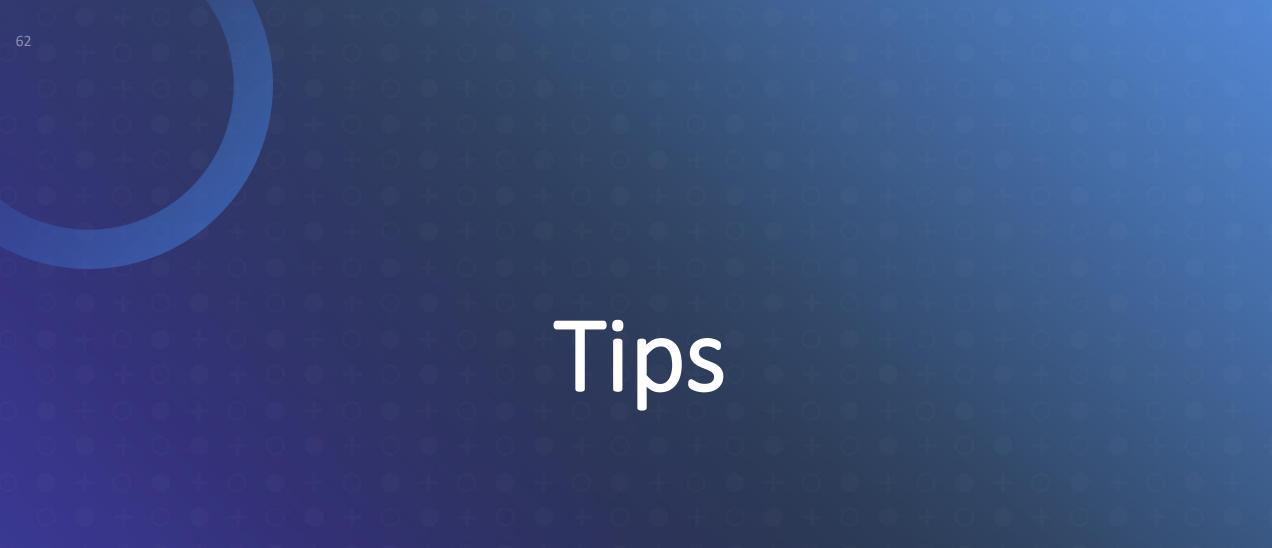
- Projects that actively involve the general public, in any of the stages of research, acting as collaborators, contributors or project leaders (FORRT)
- Increases scientific literacy of the public, empowers citizens with scientific approaches, improves societal relevance of science, increases the support and uptake of research, explores new pathways for participatory governance
- <u>European Citizen Science Association</u>, <u>EU</u> <u>Citizen Science platform</u>
- E.g. <u>Zooniverse</u>, <u>School Network Alerts Citizens</u> analysing seismograms, in video games (e.g. <u>Borderlands 3</u>)... and many more



Golumbic et al. (2017). CC-BY 4.0. <u>http://doi.org/10.5334/cstp.53</u>



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Overall tips

- Design an Open Science strategy for your project.
- Include specific provisions in the Consortium Agreement about where publications and data will be deposited and who is responsible for doing this. Who will make sure that all outputs have been deposited in the appropriate repositories?
- Implement your Open Science strategy, report at reviews and provide updates.
- Keep track of issues, discuss the solutions.







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