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Webinar|
16 March 2023

# 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'

**Next webinar**
Monday 03 July 2023
at 12:00 CEST



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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

- Open Access to publications
- Responsible management of data (FAIR principles)
- Open access to data 'as open as possible, as closed as necessary'
- Information about outputs / tools / instruments to validate/re-use results and data
- Digital /physical access of results to validate the conclusions

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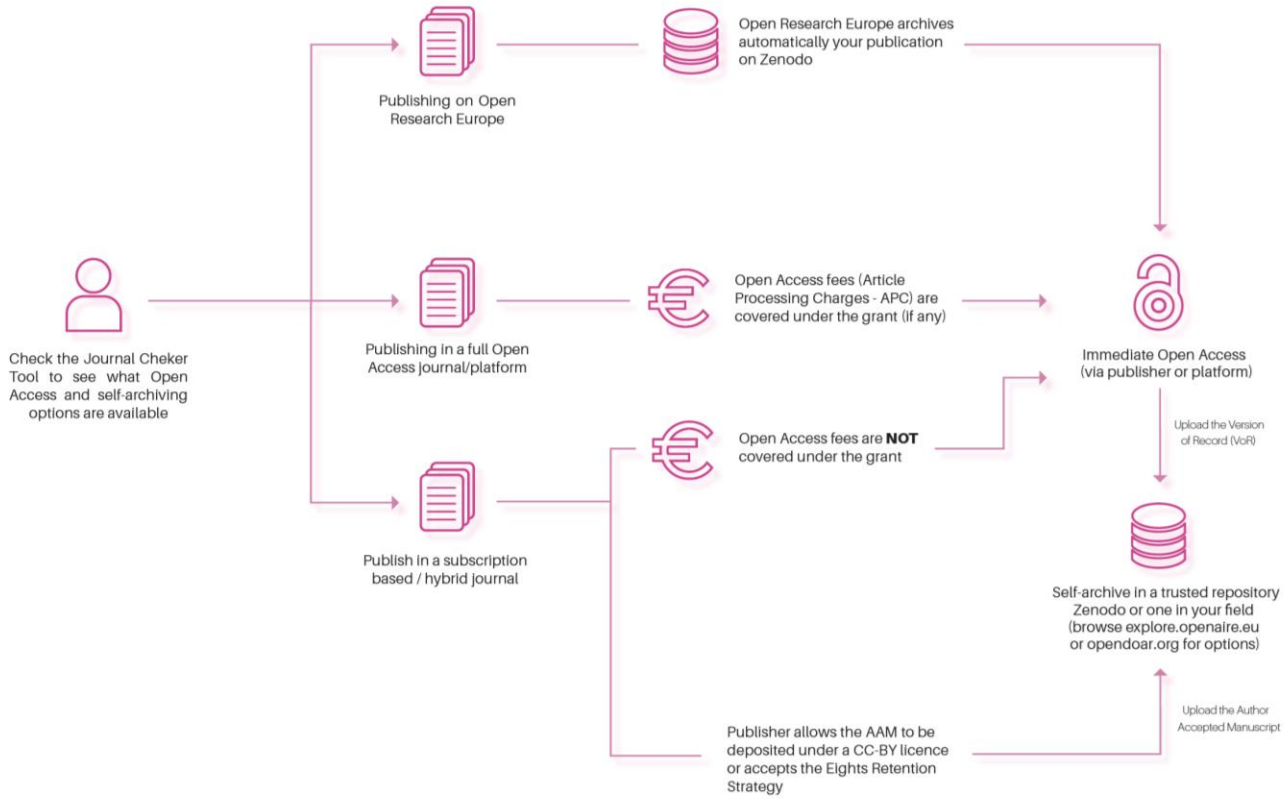
# Requirements for publications

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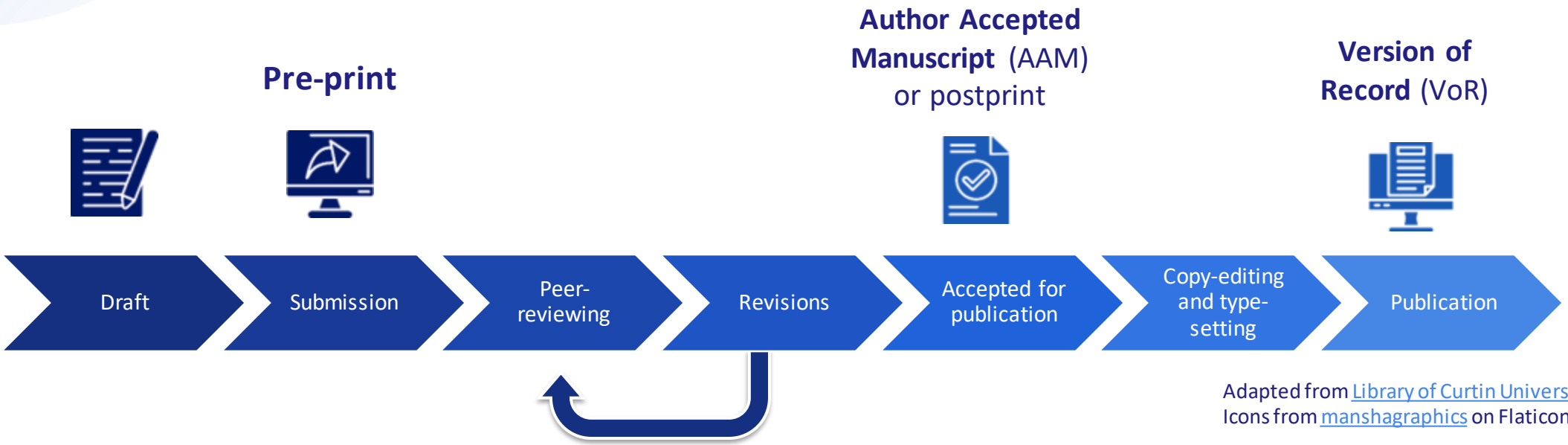
# Author Accepted Manuscript (AAM) **vs** Version of Record (VoR)




Adapted from Library of Curtin University
Icons from manshagraphics on Flaticon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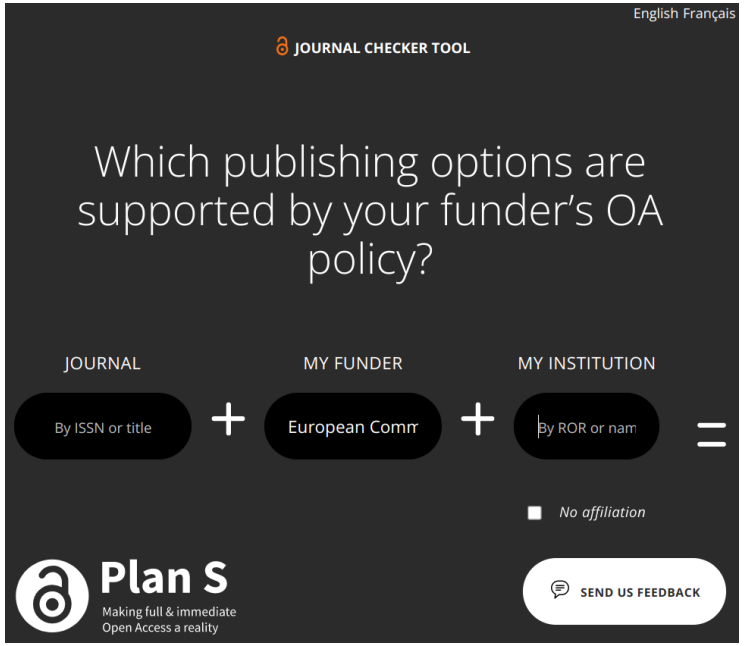
# Self-archiving

*it is about where you make it available in OA, NOT where you publish*

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."*

- 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/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# ~~Self-~~archiving

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


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# Requirements for research data



CC BY

# 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 mid-project 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.



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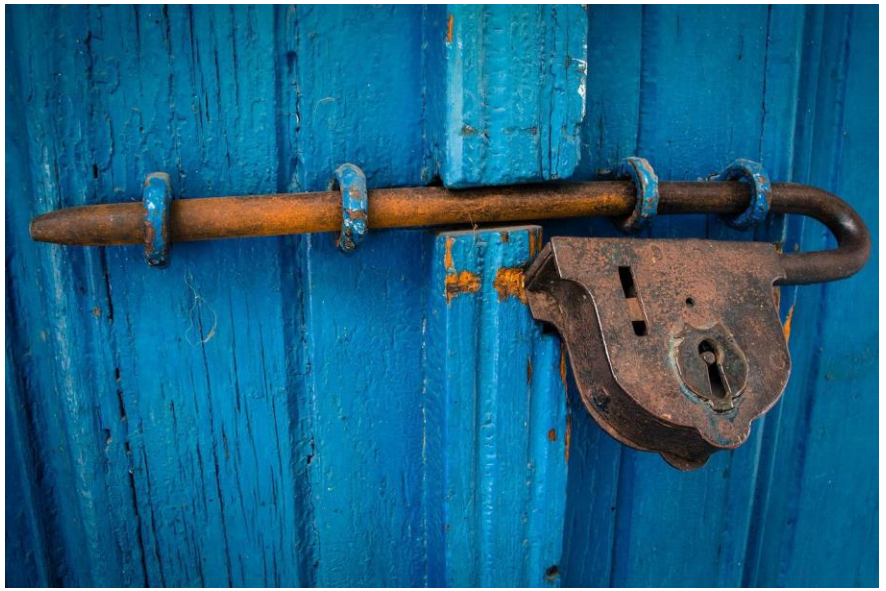
# Valid justification for not opening the data

- 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 strategic assets, interests, autonomy or security of the EU

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# A few definitions



CC BY

# Trusted repositories

- Certified repositories (e.g. CoreTrustSeal, nesto Seal DIN31644, ISO16363)
- Disciplinary and domain repositories commonly used and **endorsed by the international research communities**
- General-purpose (e.g. **Zenodo**) or institutional repositories that 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:*

zenodo

https://zenodo.org/



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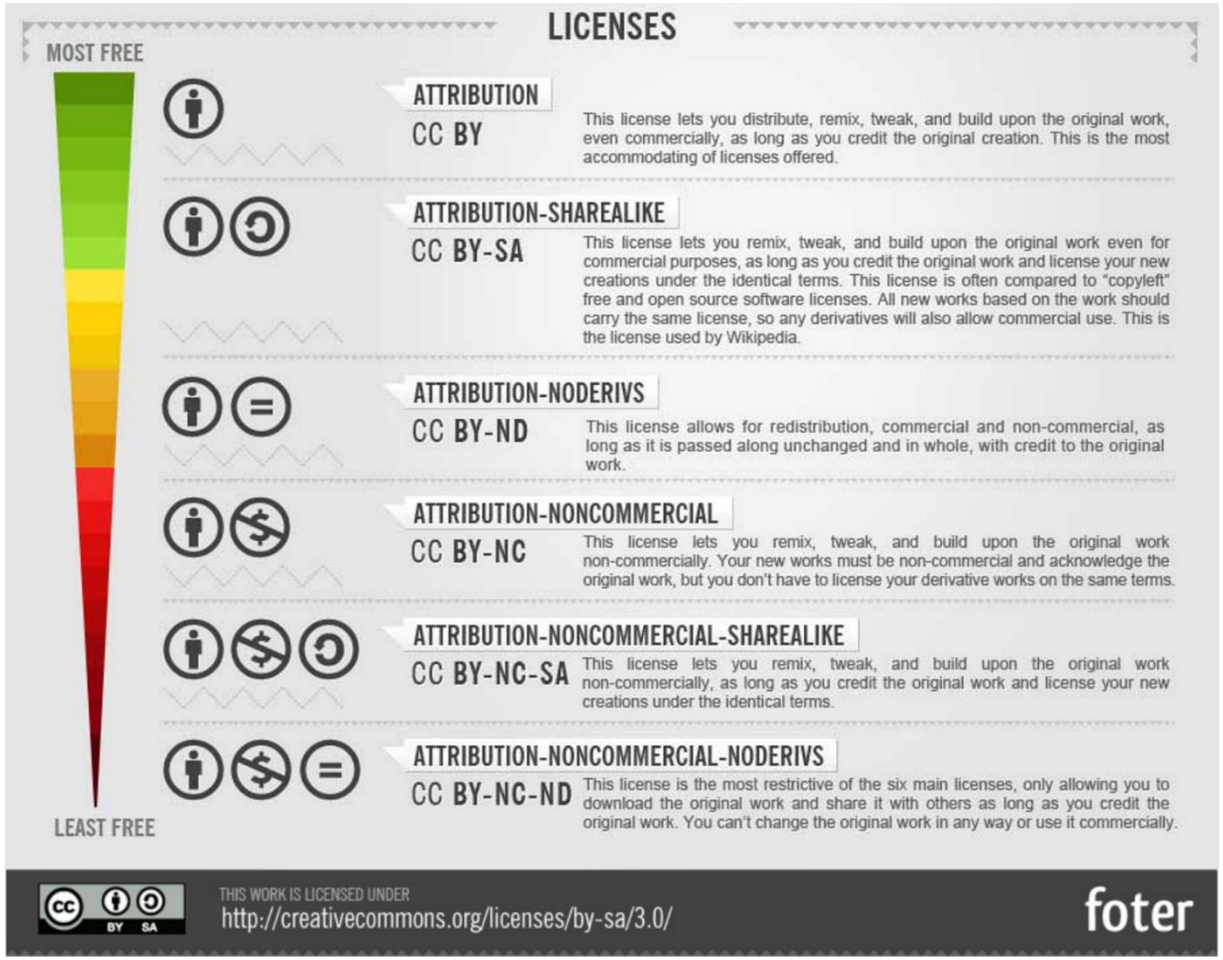
# Creative Commons

- Removes ambiguity over what others can and cannot do with your work
- You keep (certain) rights, but you grant certain reuses without them needing to contact you
- Universally recognisable and juridically sound (you can still claim copyright infringements)

You can share, adapt for any purpose, no attribution is required (it is similar to 'Public Domain' but is an actual licence

You can share, adapt for any purpose as long as you **credit the author**



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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 http://doi.org/10.5281/zenodo.1489929



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# FAIR principles

## Findable

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

## Accessible

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

## Interoperable

- Open and/or standardised file formats

## 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, CC0)

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



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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 CC0
- 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)

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# 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)

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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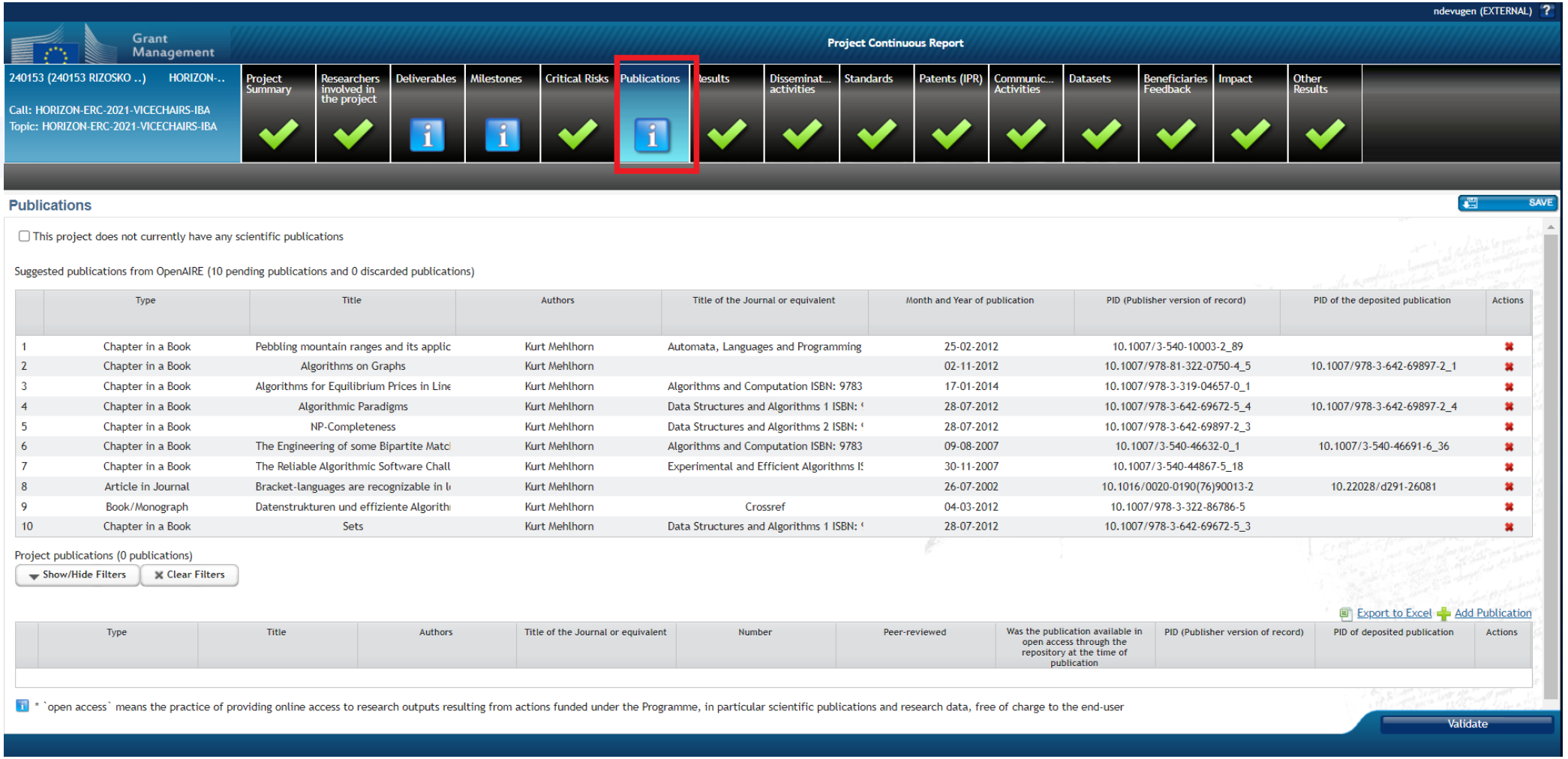
# EC Participant Portal – Continuous reporting



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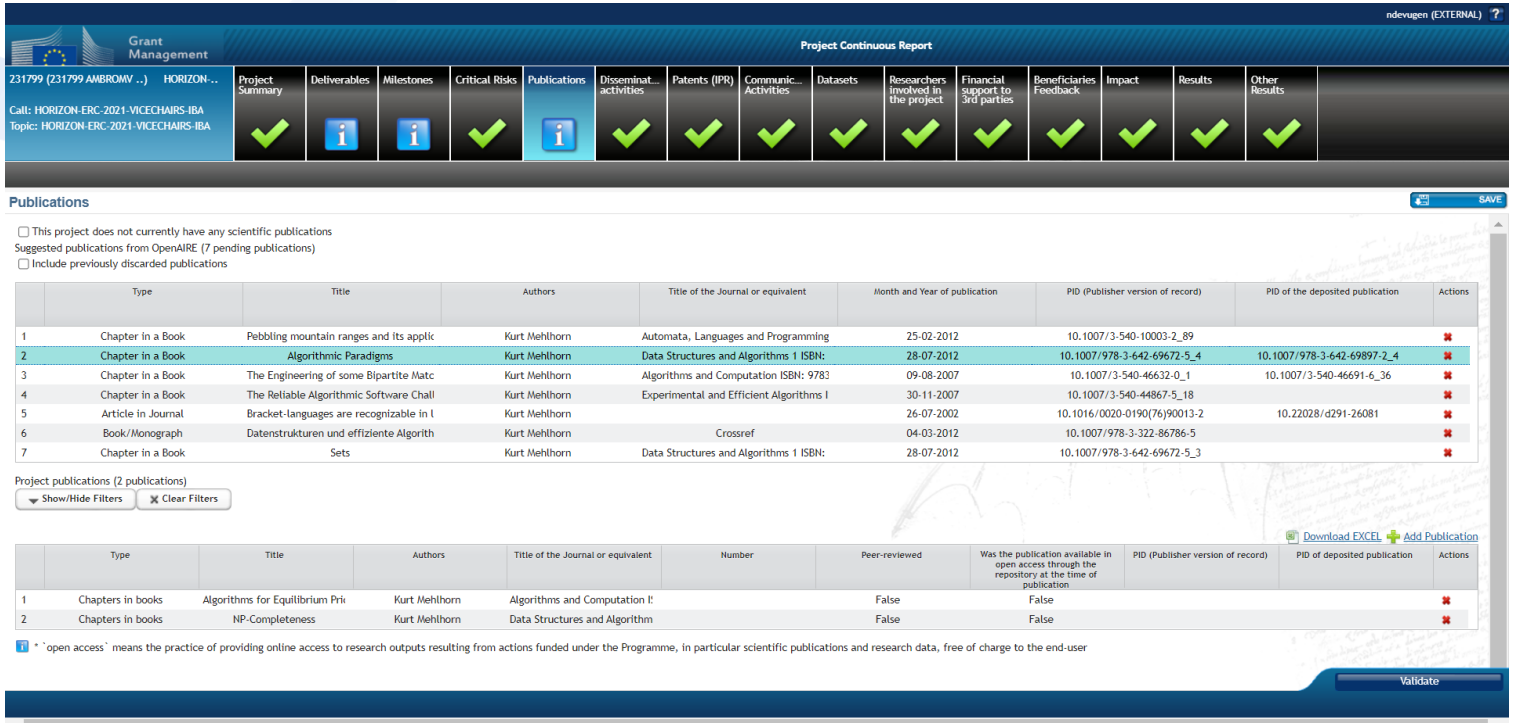
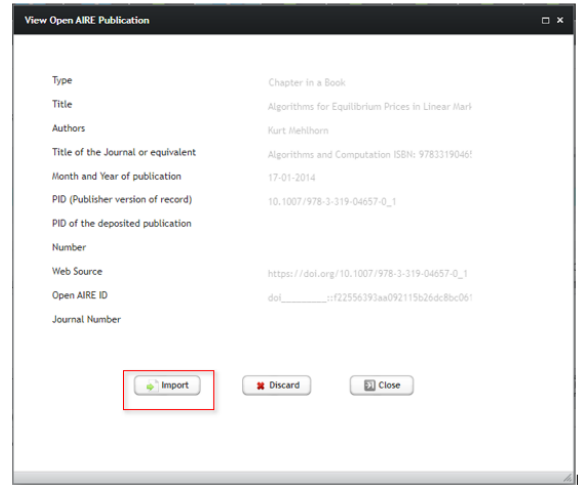
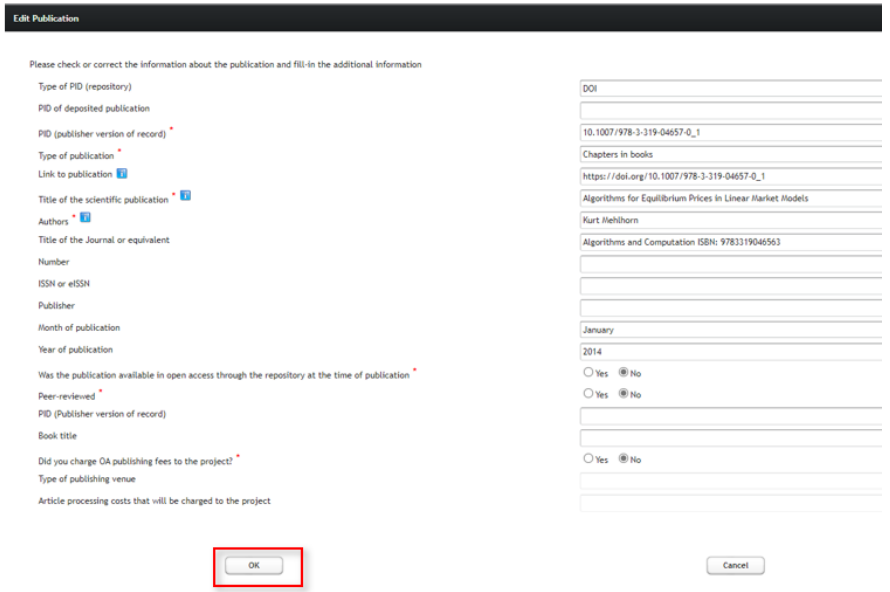
# Publications




https://webgate.ec.europa.eu/funding-tenders-opportunities/pages/viewpage.action?pageId=34472316



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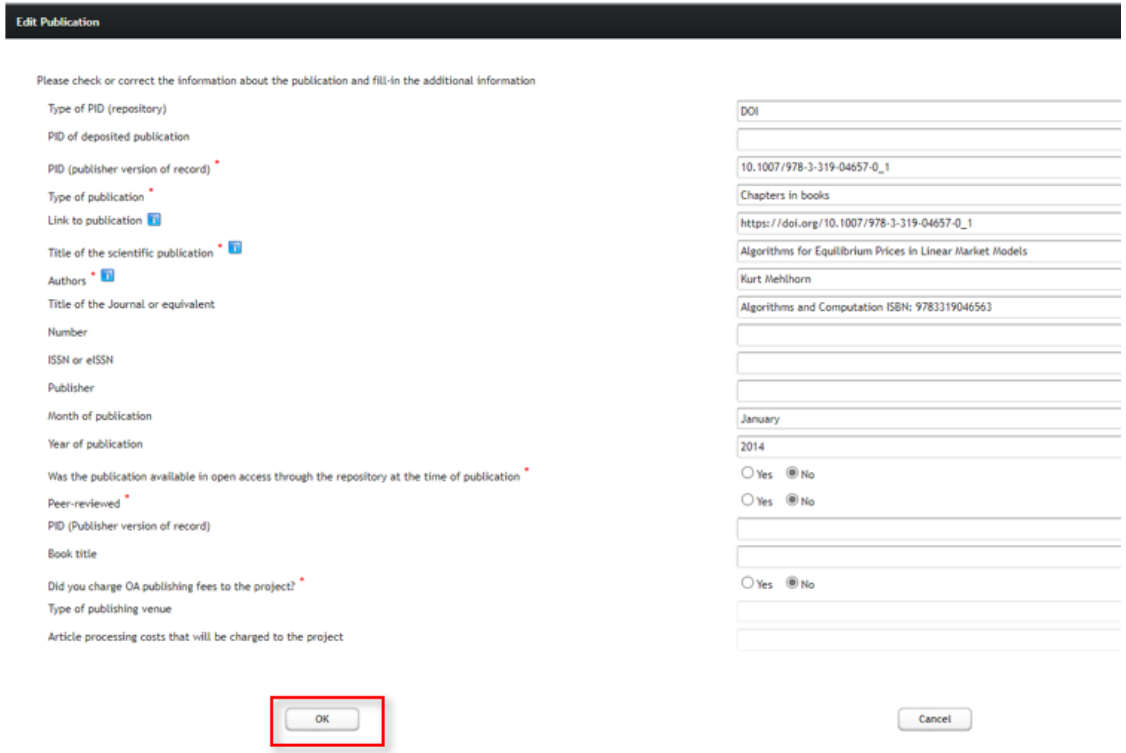
# Publications

- "Type of PID" = unique URL given by the repository or the publisher
- "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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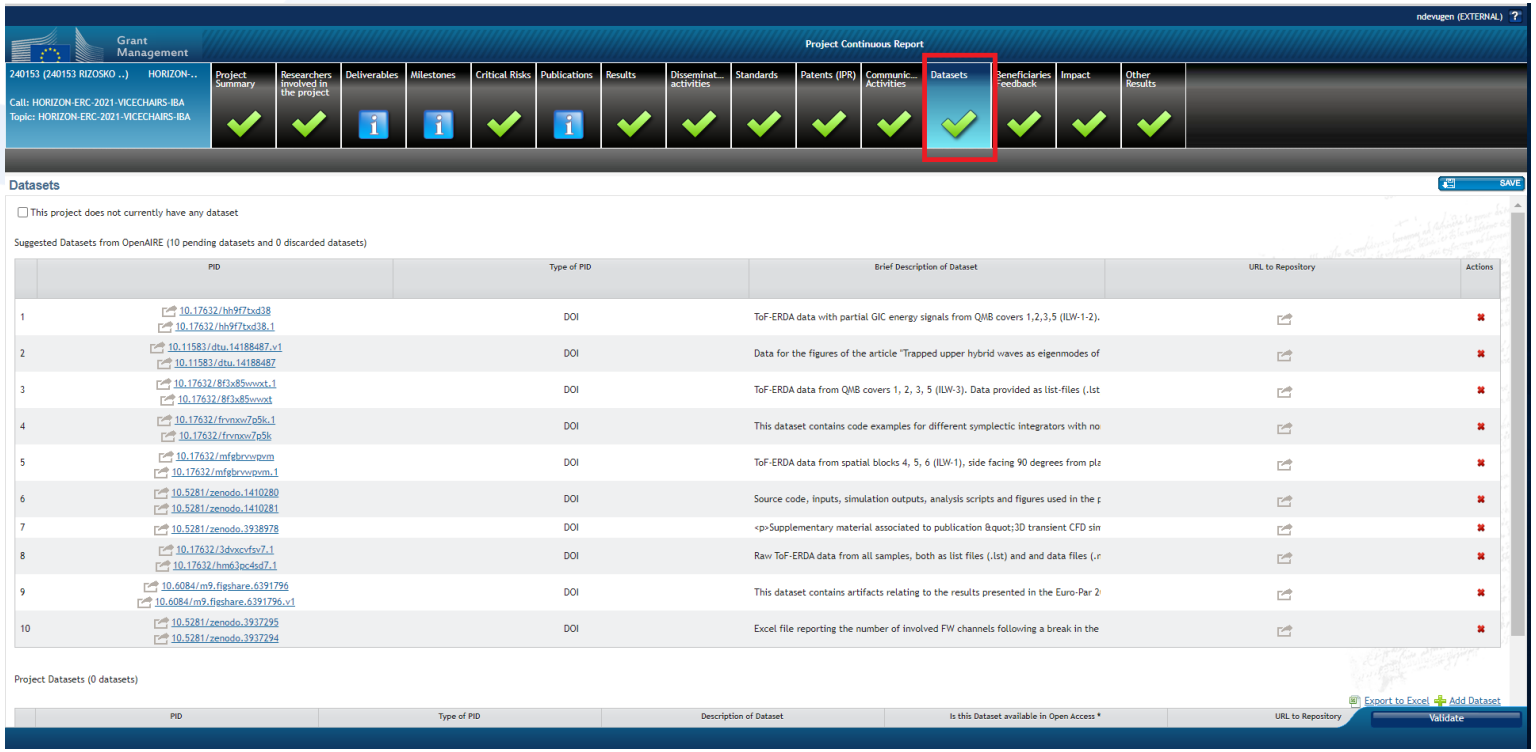
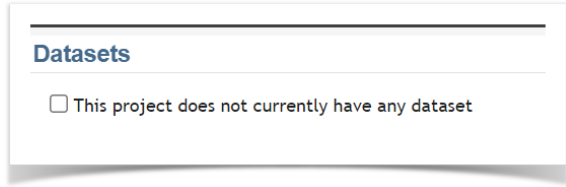
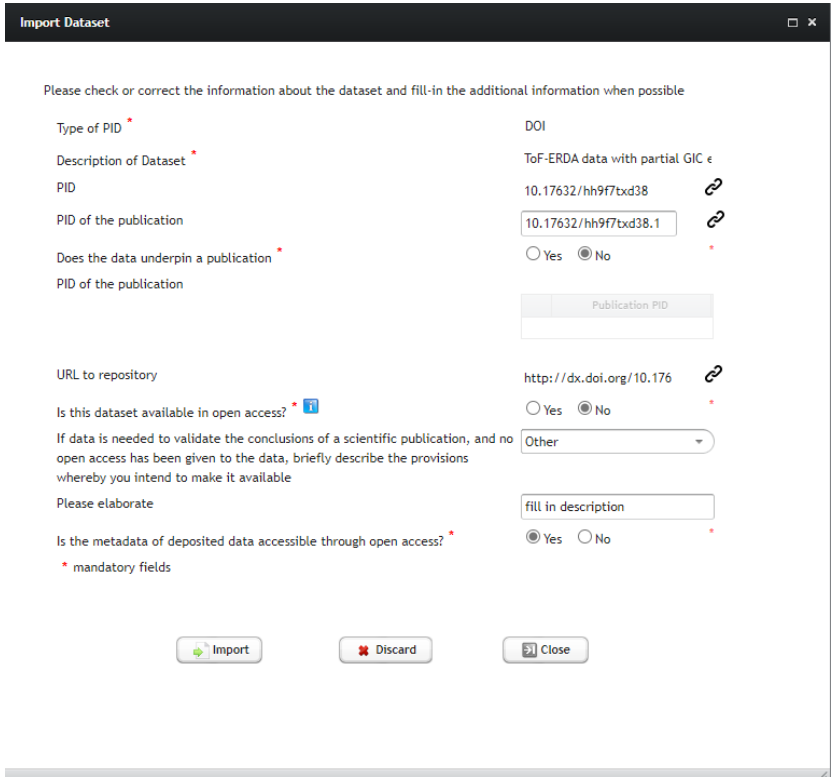
# Datasets




https://webgate.ec.europa.eu/funding-tenders-opportunities/pages/viewpage.action?pageId=25559674



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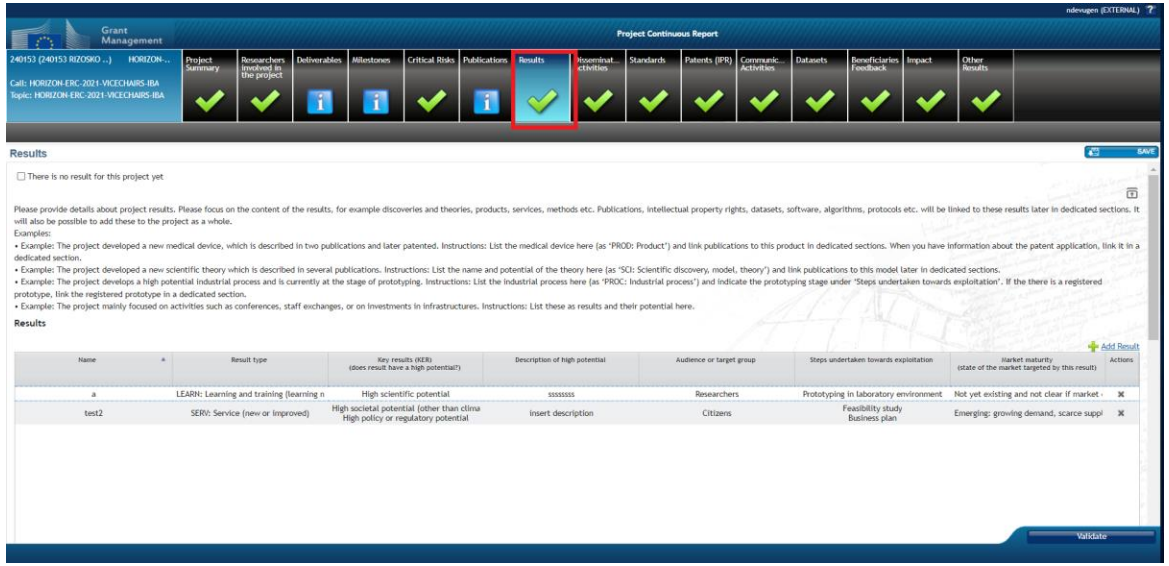
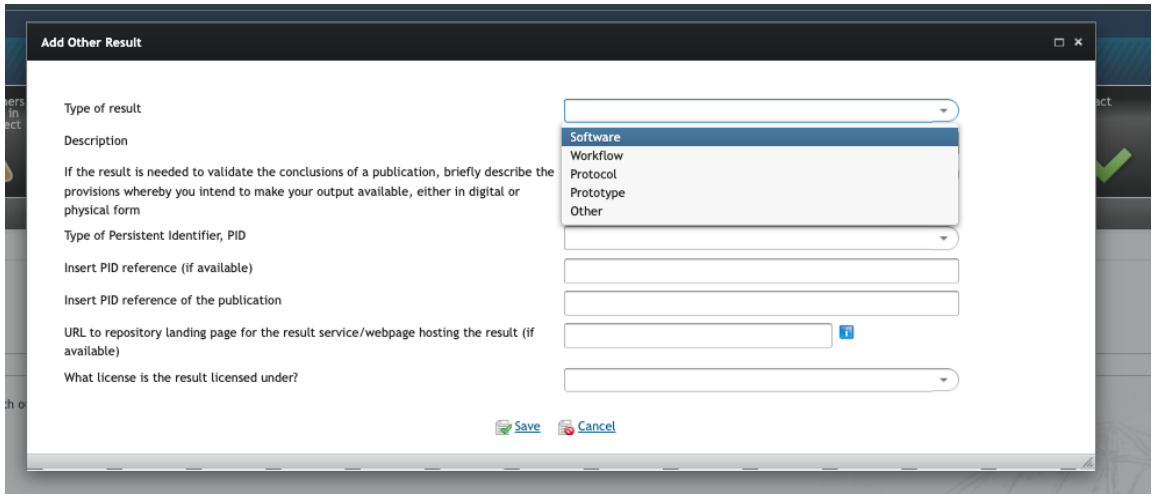
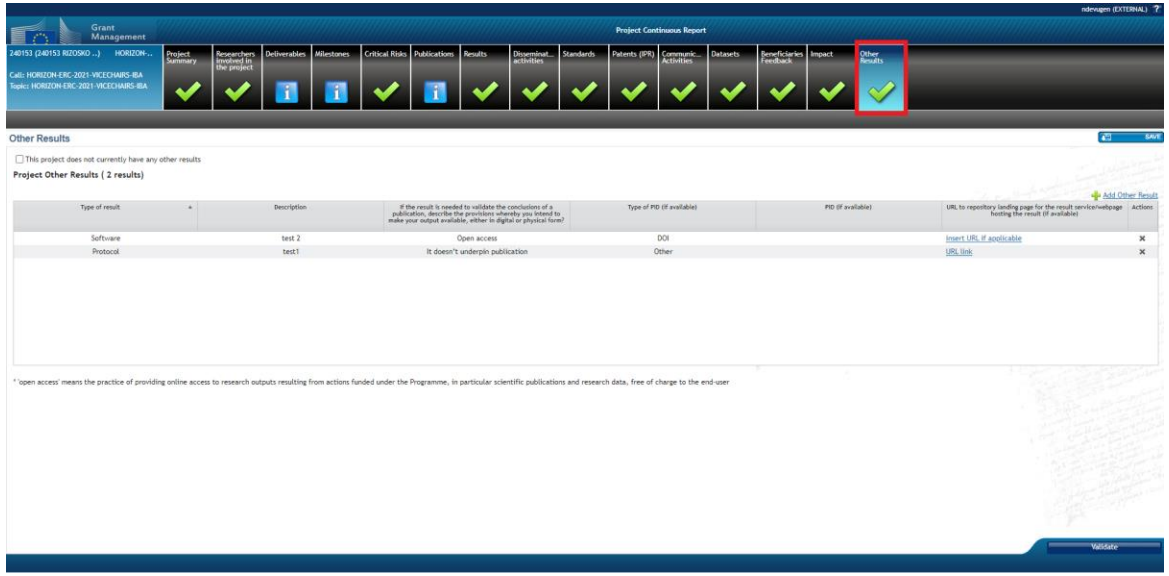
# Results vs Other Results

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





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16 March 2023

# Open Research Europe publishing platform

Giulia Malaguarnera

European Commission

# 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
- **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

Durowoju, G. 2022. Úvod do Open Research Europe (An Introduction to Open Research Europe). Zenodo. CC-BY 4.0 https://doi.org/10.5281/zenodo.7266373



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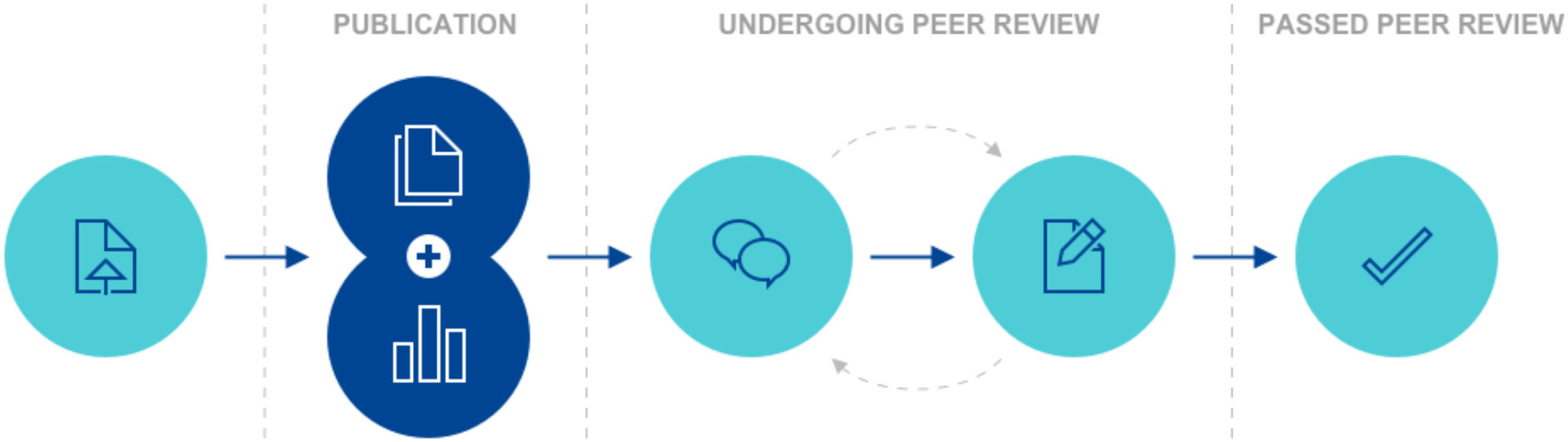



**Article submission**

Submission via a single-page submission system. In-house editorial team makes pre-publication checks to ensure all policies and ethical guidelines are adhered to

**Publication and data deposition**

Pre-print version is published within 10 days, enabling immediate viewing and citation

**Invited open peer review and user commenting**

**Article revision**

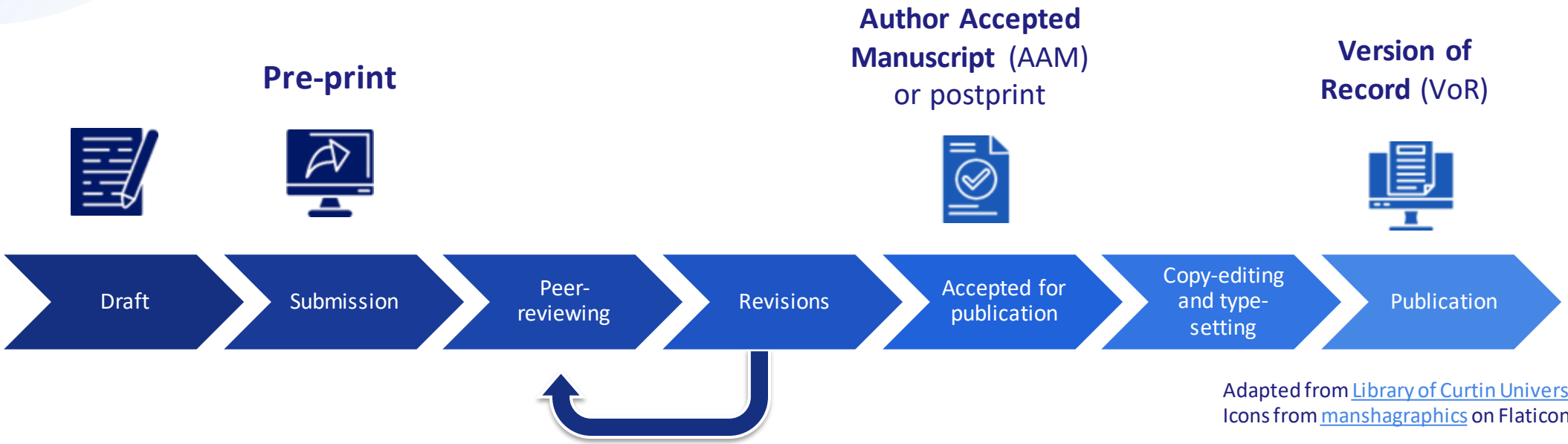
Names of reviewers and their reviews are published alongside the publication, authors' responses and comments from registered users

**Send to indexers and repositories**

✔ ✔ or ✔ ? ?

NOTE: authors may continue to publish new versions, even once peer review passed

# Preprint

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Open Research Europe

# ARTICLE TYPES by subject

| | Natural sciences | Engineering and technology | Medical and health sciences | Agricultural and veterinary sciences | Social sciences | Humanities and the arts |
|---|---|---|---|---|---|---|
| Case Study | ● | ● | ● | ● | ● | ● |
| Research Article | ● | ● | ● | ● | ● | ● |
| Brief Report | ● | ● | ● | ● | ● | ● |
| Data Note | ● | ● | ● | ● | ● | ● |
| Method Article | ● | ● | ● | ● | ● | ● |
| Open Letter | ● | ● | ● | ● | ● | ● |
| Software Tool Article | ● | ● | ● | ● | ● | ● |
| Review | ● | ● | ● | ● | ● | ● |
| Case Report | ● | ● | ● | ● | | |
| Registered Report | ● | ● | ● | ● | ● | |
| Clinical Practice Article | ● | ● | ● | ● | | |
| Study Protocol | ● | ● | ● | ● | ● | |
| Systematic Review | ● | ● | ● | ● | ● | |
| Essay | | | | | ● | ● |

European Commission



Durowoju, G. 2022. Úvod do Open Research Europe (An Introduction to Open Research Europe). Zenodo. CC-BY 4.0 https://doi.org/10.5281/zenodo.7266373



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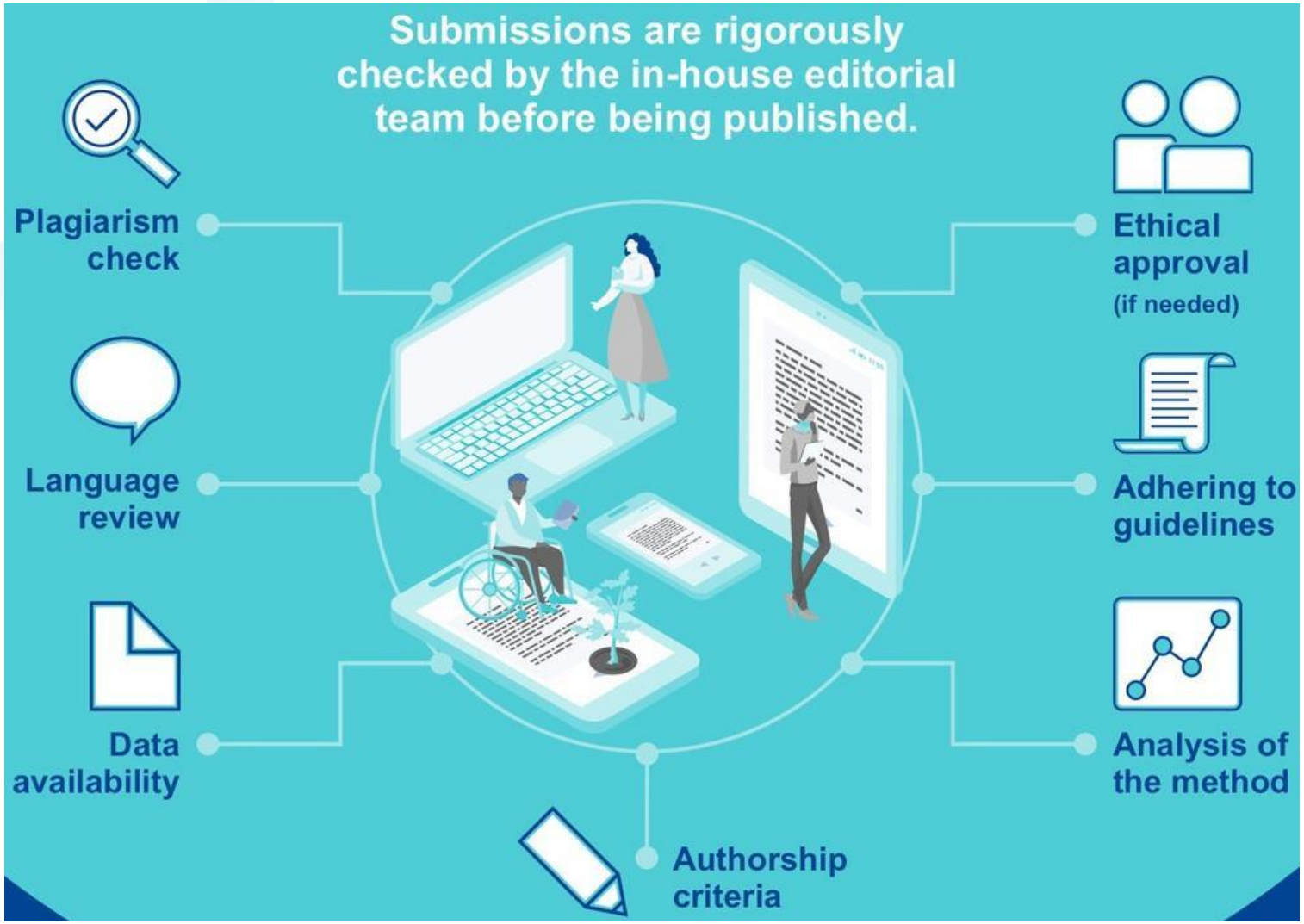
# Pre-publication checks




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

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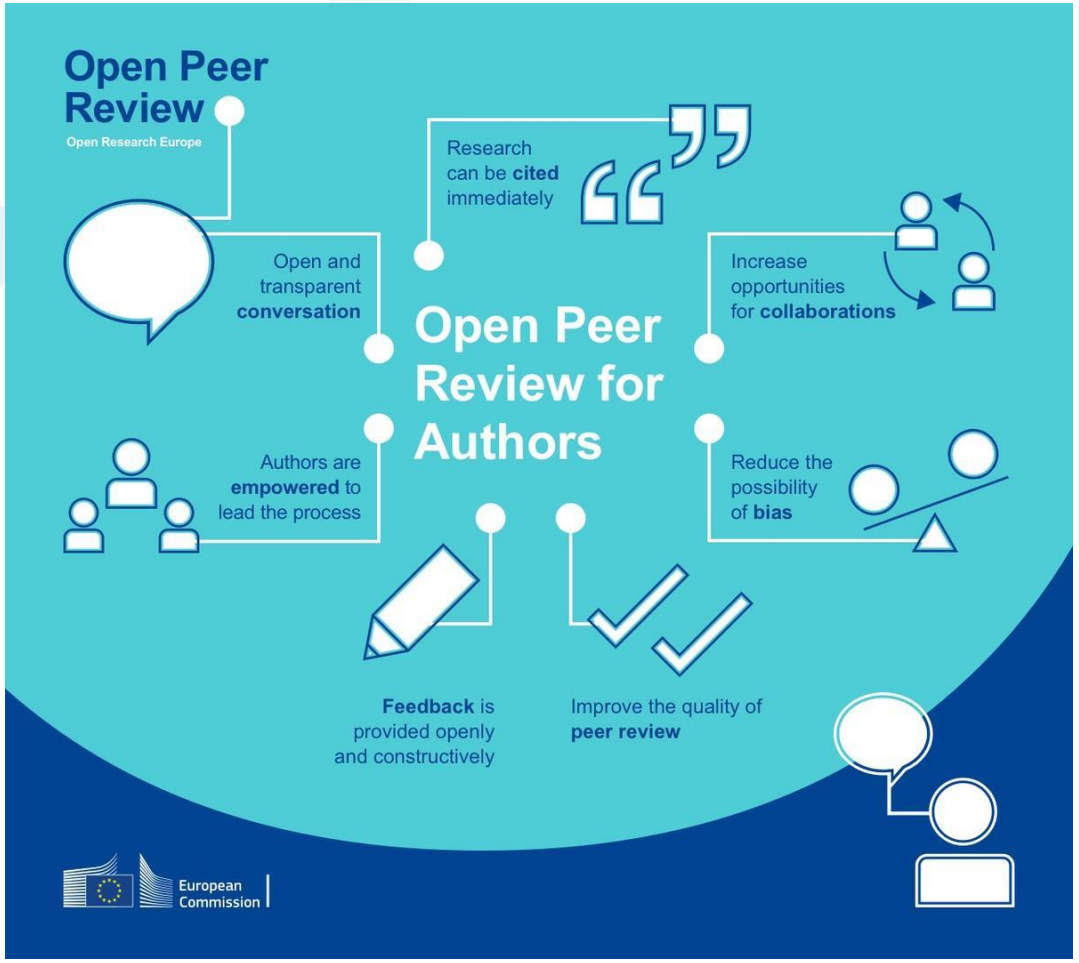
# Open peer-review



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# Open peer-review example

1-20 of 280 results  Advanced search

RESEARCH ARTICLE

REVISED **Towards an integrated automatic design process for robot swarms** [version 2; peer review: 3 approved]

AUTHORS Darko Bozhinoski, Mauro Birattari

FUNDERS **Horizon 2020 Framework Programme** | Wallonia-Brussels Federation | Fonds De La Recherche Scientifique (FNRS)

PEER REVIEWERS Adam Schroeder; Alan Millard; Edmund Hunt and James Ward

LATEST VERSION PUBLISHED 04 Nov 2022

RESEARCH ARTICLE

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]**

AUTHORS Levan Bzhalava, Jari Kaivo-oja, Sohaib S. Hassan, Wolfgang Dieter Gerstlberger

FUNDER **Horizon 2020 Framework Programme**

PEER REVIEWERS Muhammad Ali; Hugo Pinto

LATEST VERSION PUBLISHED 01 Nov 2022

CASE STUDY  AWAITING PEER REVIEW

**Hybrid AC/DC architecture in the CE.D.E.R.-CIEMAT microgrid: demonstration of the TIGON project [version 1; peer review: awaiting peer review]**

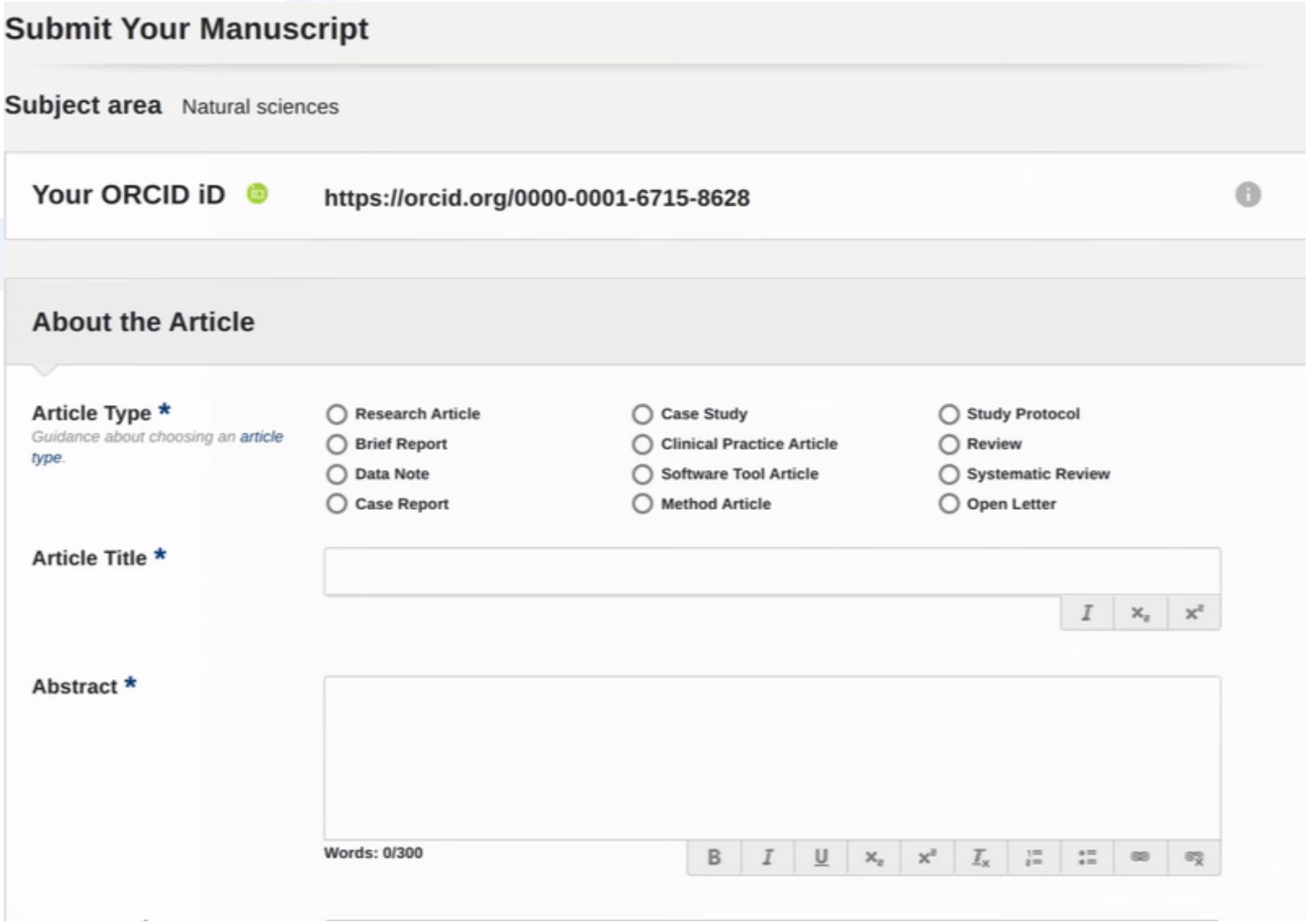
AUTHORS Paula Peña-Carro, Oscar Izquierdo-Monge

FUNDER **Horizon 2020 Framework Programme**

PEER REVIEWERS Invited

PUBLISHED 26 Oct 2022

# Open peer-review example

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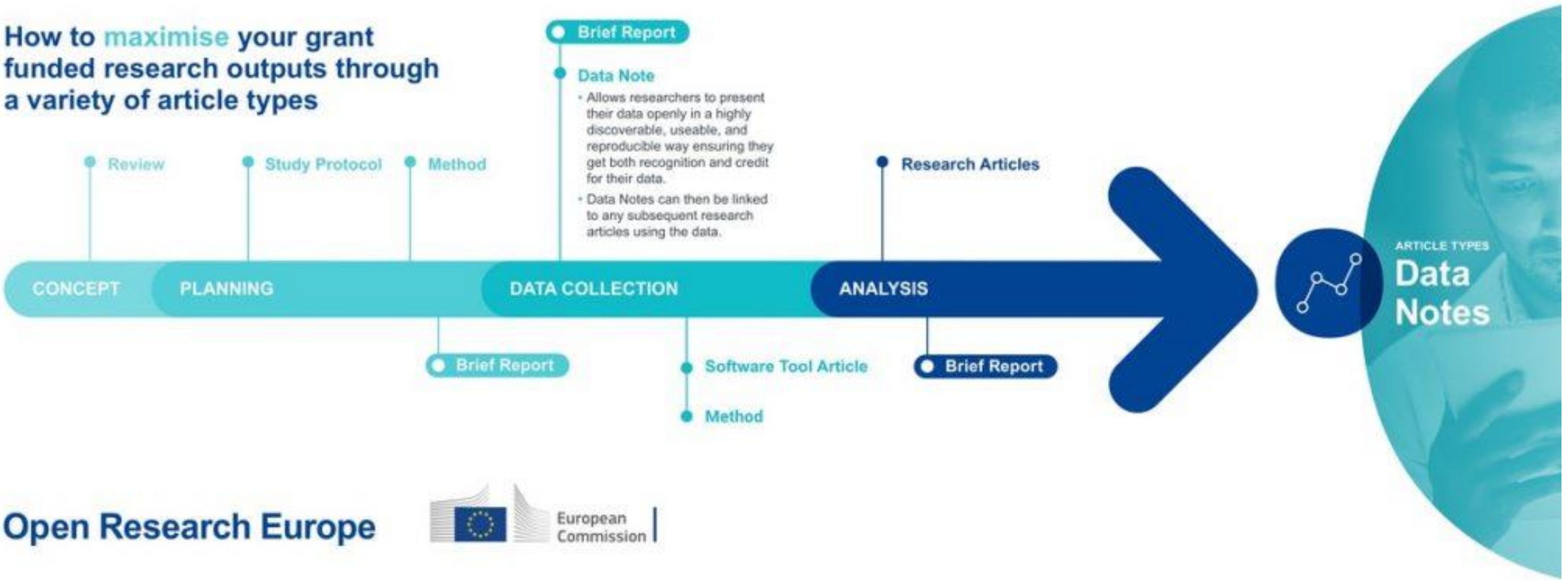
# Useful OpenAIRE tools and ORE to support Horizon Europe projects

Giulia Malaguarnera





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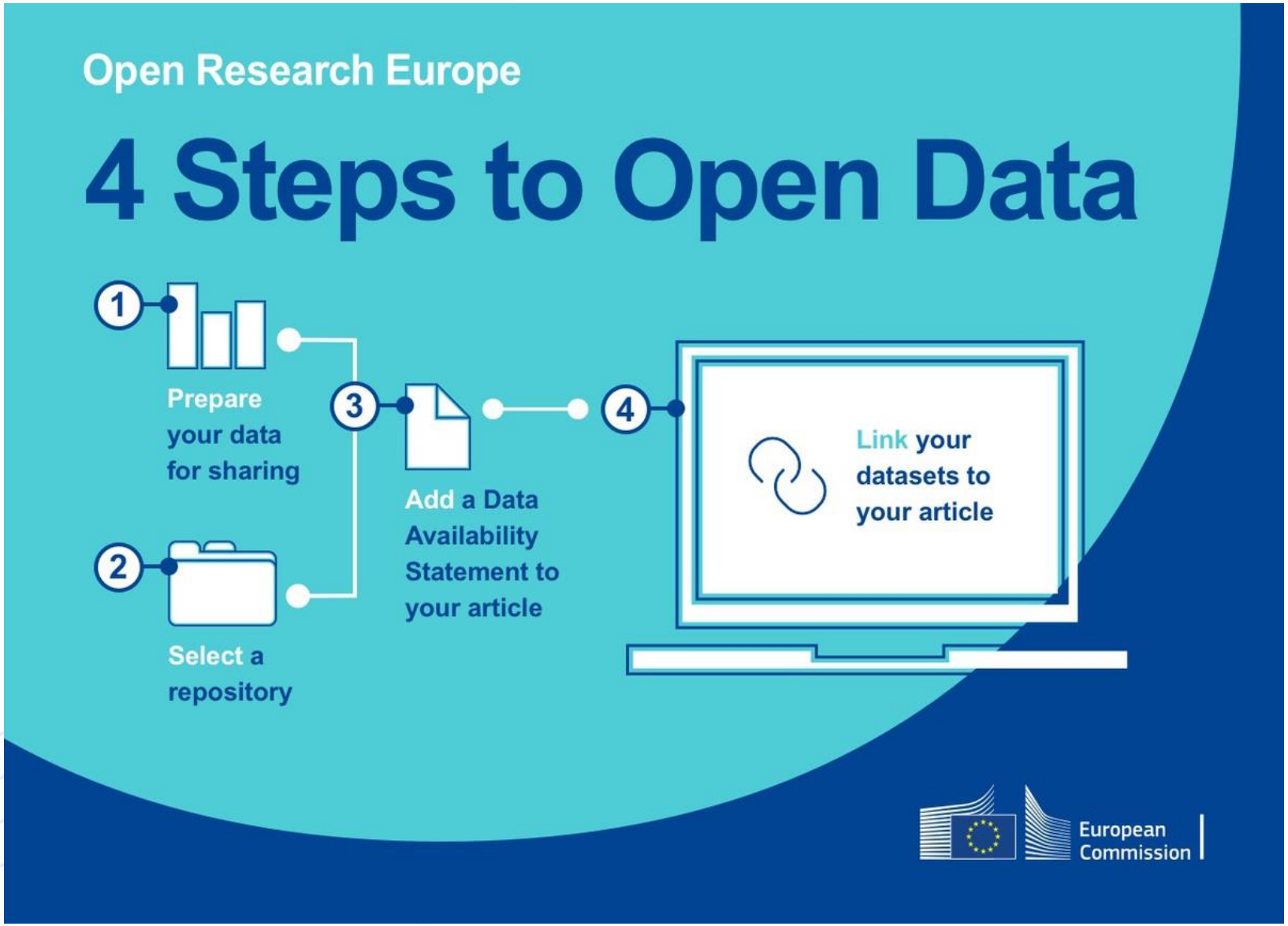



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# Tips and Tricks for data management

40

# 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

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# PREPARE YOUR DATA FOR SHARING

- Protect sensitive data by anonymization
- Chose a machine-readable 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.


CC BY

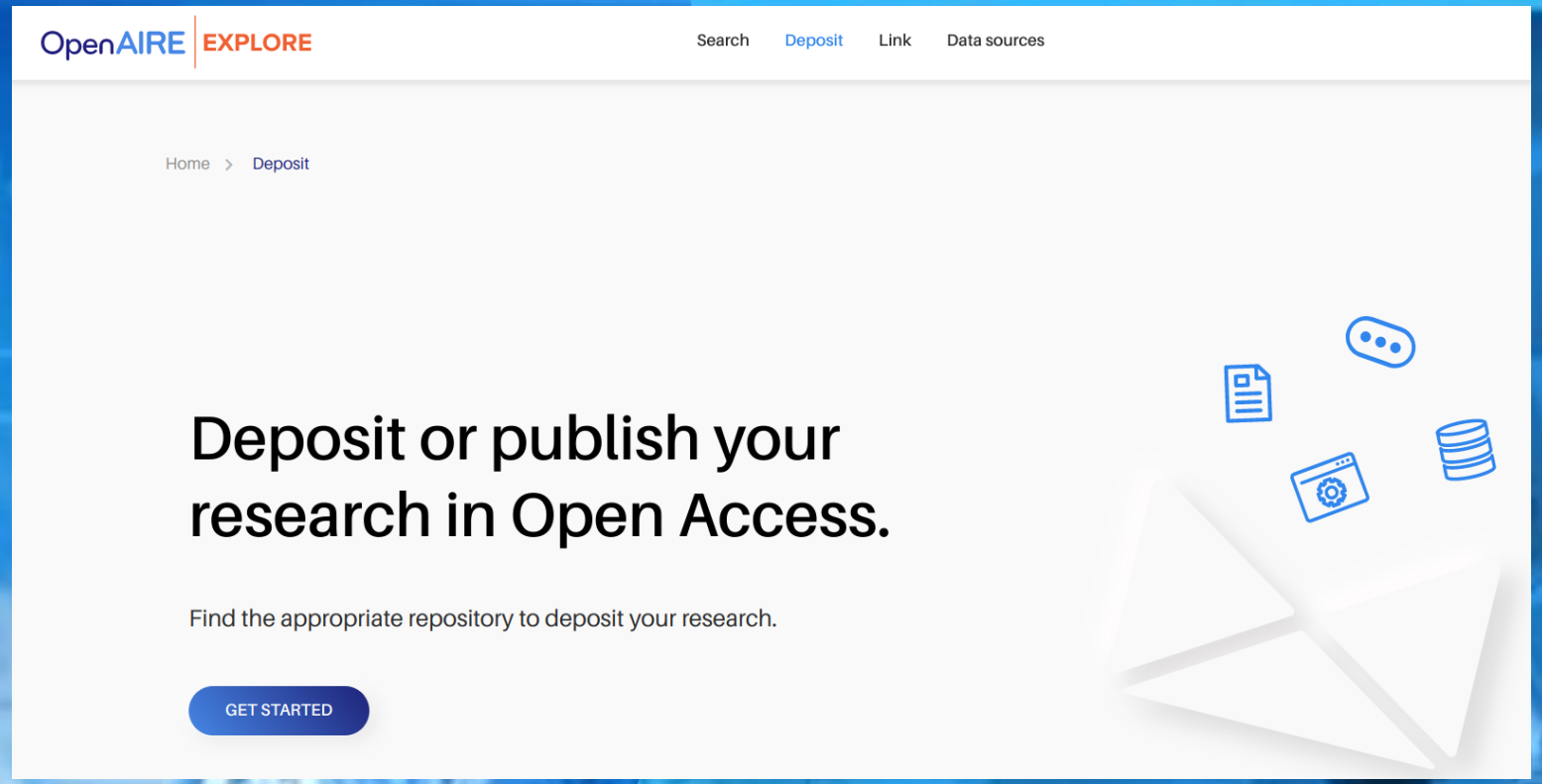
# Select a Repository

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


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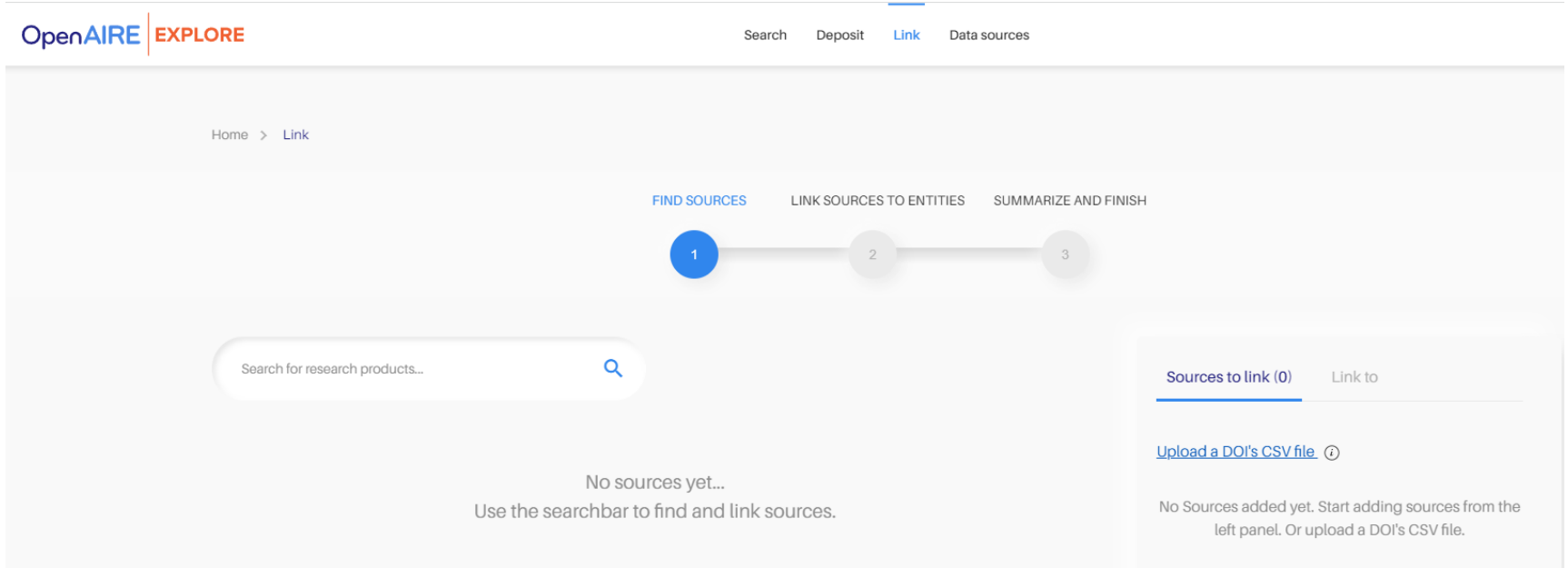
# Make the links! Contextualise your data

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



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Webinar|
16 March 2023

# Horizon Europe grant proposals

Jonathan England

# Open Science parts

- 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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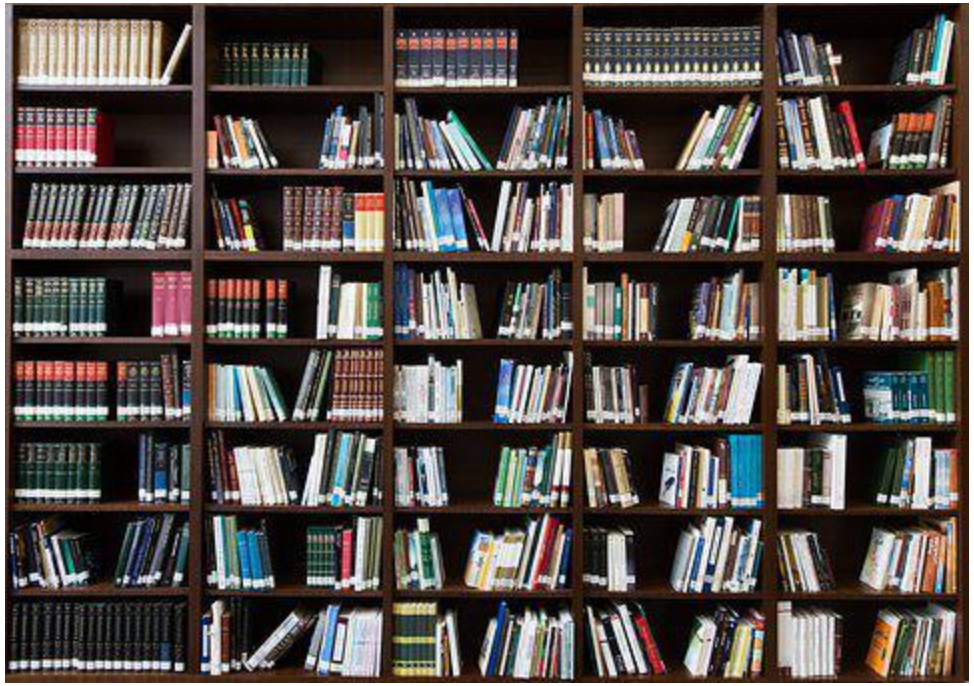
# Publications

- Your publications cited should be in OA
- Your publications cited will only be evaluated 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)



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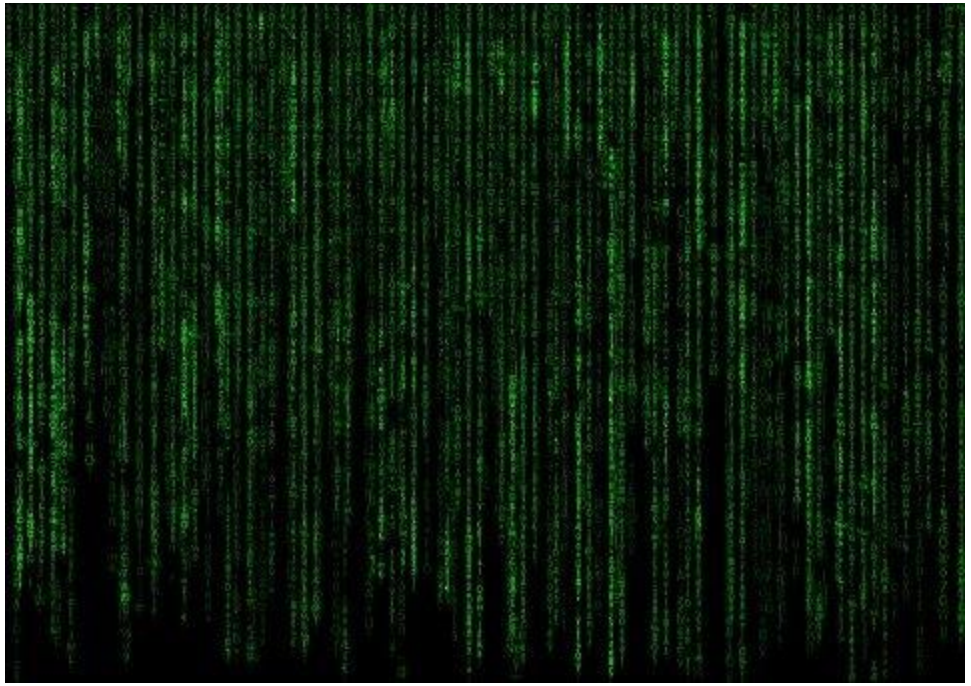
# Data

- 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

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# Other aspects eligible in the budget

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

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# Writing tips

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

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# 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

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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)

MARIE CURIE **ACTIONS**


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# Horizon Europe Open Science recommended practices

Jonathan England

# 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

de San Román (2021). Open Science in Horizon Europe. Train-the-trainer workshop. Zenodo. CC-BY 4.0 https://doi.org/10.5281/zenodo.5549524

# 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<br>• Open access to data<br>• Open access to software, models, algorithms, workflows etc. | • **Mandatory** for peer-reviewed publications<br>• **Mandatory** for research data **but** with exceptions ('as open as possible…')<br>• 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



de San Román (2021). Open Science in Horizon Europe. Train-the-trainer workshop. Zenodo. CC-BY 4.0 https://doi.org/10.5281/zenodo.5549524

# 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: https://ecrin.org/

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

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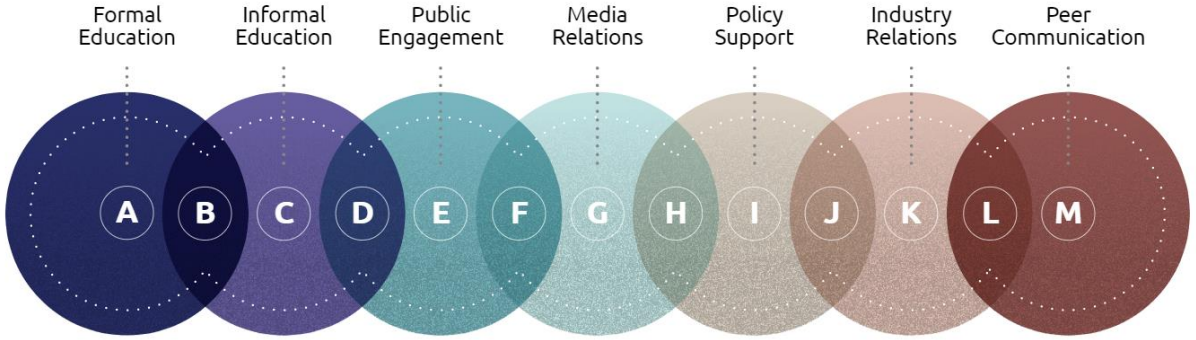
# Public engagement

- 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 (RRI Tools) – 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. European Researchers' Night, Science is Wonderful, 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. https://doi.org/10.48550/arXiv.2011.11350

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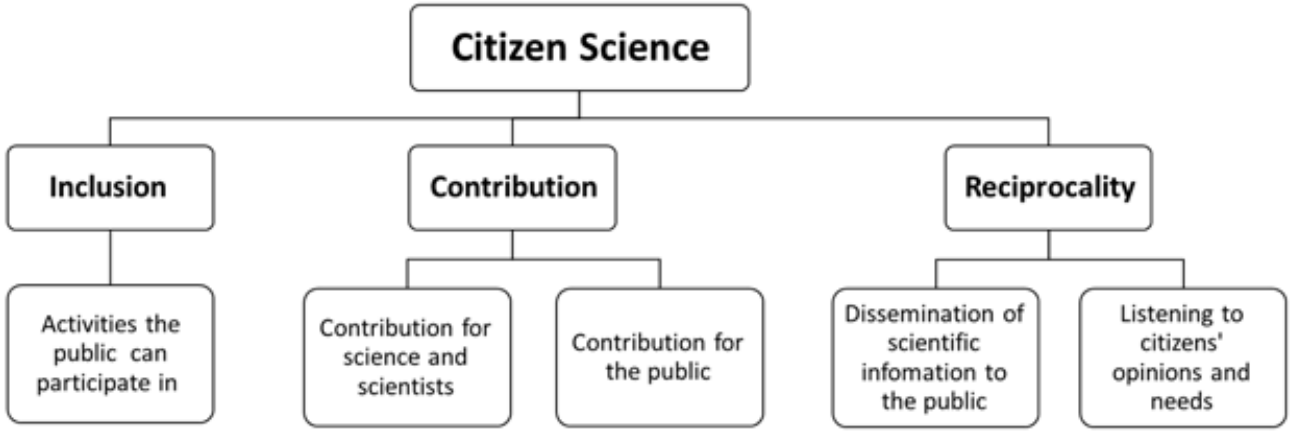
# Citizen Science

- 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
- European Citizen Science Association, EU Citizen Science platform
- E.g. Zooniverse, School Network Alerts Citizens analysing seismograms, in video games (e.g. Borderlands 3)… and many more




Golumbic et al. (2017). CC-BY 4.0. http://doi.org/10.5334/cstp.53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# Tips

# 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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**NEXT WEBINAR**
Monday 03 July 2023
at 12:00 CEST

https://bit.ly/3Tku5up


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**OPEN SCIENCE FAIR**
25-27 September 2023
Madrid, Spain

More information - https://www.opensciencefair.eu/
Call for proposals (deadline 24/04/23) - https://www.opensciencefair.eu/call-for-proposals


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**TRAIN-THE-TRAINER BOOTCAMP**
22-26 May 2023

More information (application deadline 02/04/23)
https://www.openaire.eu/3rd-open-science-train-the-trainer-bootcamp


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# THANKS

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