MSCA & OPEN SCIENCE

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Obzorje Evropa

Policy and horizontal considerations

Open Science across the programme

Gender dimension in R&I content

Pathway to impact

Measures to maximise impact

Artificial intelligence

These aspects must normally be considered in all Horizon Europe calls (unless explicitly mentioned in the topic description).

Specific calls may include other aspects to take into account.

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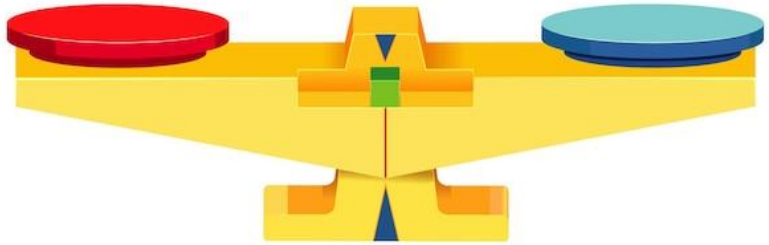
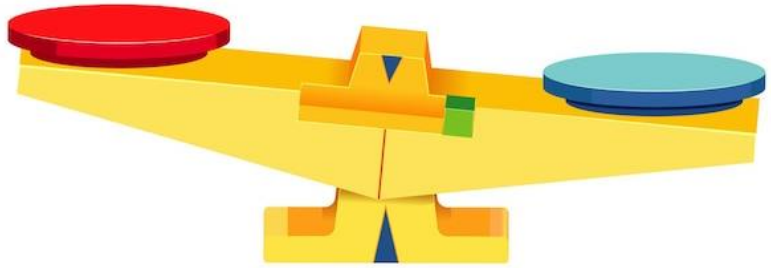
Source: Webinar: How to prepare a successful proposal in Horizon Europe (24 March 2021)

WHY?

Besides it‘s obligator per the rules ☺



Two equally excellent proposals, with the same number of points.



Assessment criteria for these proposals follows:

- *Excellence, Impact*
- *Gender dimension*
- *Geographical dimension*
- *Other factors*

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WEAKNESSES FROM THE EVALUATION SUMMARY REPORTS

1. *The proposed methodology to address the interdisciplinary approaches and multi-objective co-design aspects is not sufficiently described.*
2. *The methodology described in the proposal lacks specific details about the materials that will be used, the methods of their preparation, and the ways in which the experimental and modeling techniques will be employed. Furthermore, the emergent methodological challenges are not well identified.*
3. *The various elements of the methodology appear disjointed and not well justified in why they should be part of an integrated project.*
4. *The proposal does not adequately identify the methodological challenges and related possible solutions. Indeed, the degree to which cultural and socio-economic issues (age, gender, origin, racialization, and disability) may impact the methodology to be adopted is a relevant challenge given the wide geographical range of participating countries not sufficiently considered.*
5. *The interdisciplinary character of the methodology is not convincingly demonstrated: in particular, it is not clear how methods from different disciplines will be brought together and integrated to pursue the mentioned objective. More details on the contents of the "transnational and cross-sectoral multidisciplinary secondments" are needed to demonstrate the effectiveness of the integration of methods and skills. Furthermore, the proposal weakly refers to the possible methodological challenges that may occur during the secondments.*
6. *The gender dimension of the research topic is not taken into account and a justification for this is missing from the proposal.*
7. *Open science practices are insufficiently integrated into the methodology and are insufficiently elaborated in relation to the specific work. The methodology does not sufficiently detail the use of artificial intelligence and machine learning, nor where/how the consortium will collect the data that will be used.*
8. *The use of AI is insufficiently substantiated and elaborated, and it cannot easily be iden[illegible] the work plan, thus, the proposal does not sufficiently demonstrate the robustness of system they plan to use. This raises doubts as to whether the methodology will allow the c of the project's objectives.*

Weaknesses comments related to open science practices:

- The open science practices have not been described in sufficient detail, and concrete actions to promote FAIR principles, including the findability and reusability of the datasets, have not been convincingly presented. The proposal lacks specific details regarding the quantification of open access publications, specific online market content details and what information will be disseminated/communicated. (CHE)
- The open science practices, presented in a generic way, are limited to the publication policy and repositories without involving the open sharing of other project outputs and/or specific actions beyond publications. (PHY)
- Open science practices are insufficiently discussed and do not provide a credible plan and sufficient details for the open-access of scientific knowledge and research data resulting from the project. (ENG)
- Aspects of the plans for open science practice are not sufficiently clear. In part B of the proposal, it is declared that data will be made openly available. Whereas in part A the proposal states that, "This data cannot be imported to the EU and must be accessed on-site." (ECO)

Open science practices	*Not sufficiently described, discussed in a generic way, have not been described in sufficient detail, not sufficiently clear, etc.* ***Aspects:*** *integration to project-specific aspects, quantification of open access publications, specific online market content details, inconsistence with part A (part B - data will be made openly available vs. part A the proposal states "This data cannot be imported to the EU and must be accessed on-site."), beyond open access publications, integration in the med otology, etc.*
Research Data Management Plan & FAIR principles	*Not foreseen, not been convincingly presented, not detailed in the proposal, not presented clearly and in sufficient detail, not clearly states, etc.* ***Aspects:*** *development of the Data management plan, concrete actions to promote FAIR principles, including the findability and reusability of the datasets, concrete actions to ensure reproducibility, data management approaches, in line with FAIR principle, etc.*

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OPEN SCENCE IS BETTER SCIENCE!

OPEN SCIENCE – requirements

OS PRACTICES			Comment
RESERACH OUTPUT MANAGEMENT	Data Management Plan (DMP)	**MANDATORY**	Usually first deliverable.
REPRODUCIBILITY OF RESERACH OUTPUTS	Information on outputs/tools/instruments and access to data results for validation of publications.	**MANDATORY**	FAIR principles & repositories.
OPEN ACCESS TO RESERACH 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 and research data (as open as possible, as closed as necessary). *Recommended for other research outputs.*
EARLY AND OPEN SHARING OF RESERACH	Preregistration, registered reports, preprints etc.	RECOMMENDED	
PARTICIPATE IN OPEN PEER-REVIEW	Publish in open-peer reviewed journals or platforms	RECOMMENDED	Like ORE.
INVOLVING ALL RELEVANT KNOWLEDGE ACTORS	Involve citizens, civil society, and end-users in co-creation of content.	RECOMMENDED	e.g. crowd-sourcing etc.

OPEN SCIENCE - requirements

- **Before** – to start writing proposal
- **During** – when writing proposal
- **After** – when the real work begins

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Requirements - BEFORE

In Part A, applicants are asked to **list up to five relevant publications**, widely used datasets or other achievements of consortium members that they consider significant for the action proposed.

Publications and/or research/ datasets/ softwares/ innovation products/ other achievements	Max 5 key elements of the achievement, including a short qualitative assessment of its impact and (where available) its digital object identifier (DOI) or other type of persistent identifier (PID). Publications, in particular journal articles, are expected to be open access. Datasets are expected to be FAIR and 'as open as possible, as closed as necessary'.

In open access, either published on open access or deposited in repository.

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Source: MSCA-NET POLICY-BRIEF: OPEN SCIENCE, https://msca-net.eu/wp-content/uploads/2023/06/Task-3.6-Open_science_Brief.pdf

Requirements - DURING

EXCELLENCE ***Part B1 section 1***	1.2. Soundness of the proposed methodology (including international, interdisciplinary and inter-sectoral approaches, consideration of the gender dimension and other diversity aspects if relevant for the research project, and the quality of open science practices)
IMPACT ***Part B1 section 2***	*Developing skills and enhancing long term employability for staff and researchers* *Planning your dissemination, exploitation, and communication activities*
QUALITY AND EFFICIENCY OF THE IMPLEMENTATION ***Part B2 section 5 and where relevant under Part B1 section 3***	3.2.Quality, capacity and role of each participant, including hosting arrangements and extent to which the consortium as a whole brings together the necessary expertise

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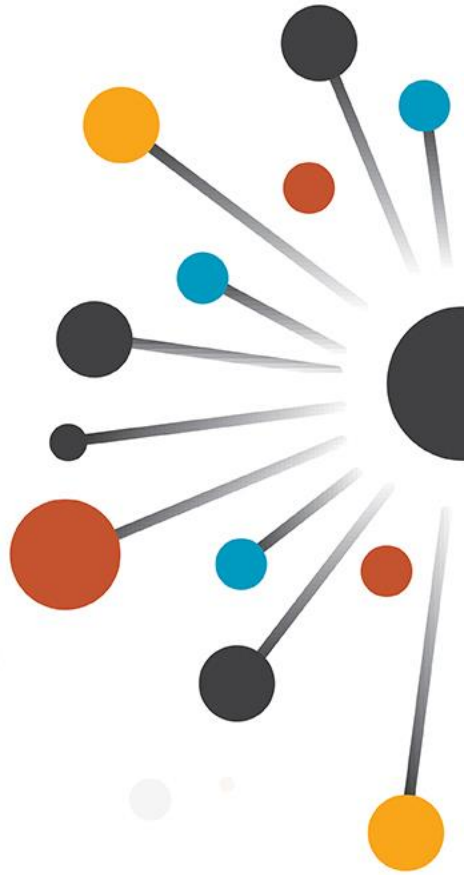
Source: MSCA-NET POLICY-BRIEF: OPEN SCIENCE, https://msca-net.eu/wp-content/uploads/2023/06/Task-3.6-Open_science_Brief.pdf

EXCELLENCE

- Open science practices: Describe how appropriate open science practices are implemented as an integral part of the proposed methodology. Show how the choice of practices and their implementation are adapted to the nature of your work, in a way that will increase the chances of the project delivering on its objectives. If you believe that none of these practices is appropriate for your project, please provide a justification here.

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. Open science practices include early and open sharing of research (for example through preregistration, registered reports, pre-prints, or crowd-sourcing); research output management; measures to ensure reproducibility of research outputs; providing open access to research outputs (such as publications, data, software, models, algorithms, and workflows); participation in open peer-review; and involving all relevant knowledge actors including citizens, civil society and end users in the co-creation of R&I agendas and contents (such as citizen science).

⚠ *Please note that this question does not refer to outreach actions that may be planned as part of communication, dissemination and exploitation activities. These aspects should instead be described below under 'Impact'*



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Source: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/temp-form/af/af_he-msca-se_en.pdf

EXCELLENCE

- Research data management and management of other research outputs: Applicants generating/collecting data and/or other research outputs (except for publications) during the project must provide maximum one page on how the data will be managed in line with the FAIR principles (Findable, Accessible, Interoperable, Reusable), addressing the following (the description should be specific to your project):
  - Types of data/research outputs/research outputs (e.g. experimental, observational, images, text, numerical) and their estimated size; if applicable, combination with, and provenance of, existing data.
  - Findability of data/research outputs: Types of persistent and unique identifiers (e.g. digital object identifiers) and trusted repositories that will be used.
  - Accessibility of data/research outputs: IPR considerations and timeline for open access (if open access not provided, explain why); provisions for access to restricted data for verification purposes.
  - Interoperability of data/research outputs: Standards, formats and vocabularies for data and metadata.
  - Reusability of data/research outputs: Licenses for data sharing and re-use (e.g. Creative Commons, Open Data Commons); availability of tools/software/models for data generation and validation/interpretation /re-use.
  - Curation and storage/preservation costs; person/team responsible for data management and quality assurance.

⚠ *Proposals selected for funding under Horizon Europe will need to develop a detailed data management plan (DMP) for making their data findable, accessible, interoperable and reusable (FAIR) as a deliverable at mid-term and revised towards the end of a project's lifetime.*

⚠ *For guidance on open science practices and research data management, please refer to the relevant section of the Horizon Europe Programme Guide on the Funding & Tenders Portal.*

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Source: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/temp-form/af/af_he-msca-se_en.pdf

Developing skills and enhancing long term employability for staff and researchers

Beneficiaries and individual researchers are encouraged to think critically about their training needs, especially those related to open science, as promoting, and fostering open science practises is a key aim of MSCA. The quality, and novelty of the research training must be detailed under the '**excellence criterion' in Part B1**. Measures to enhance the career perspectives and employability of staff and researchers as well as contributing to their skills development must be address under the **'impact criterion' in Part B1 section 2**.

Source: MSCA-NET POLICY-BRIEF: OPEN SCIENCE, https://msca-net.eu/wp-content/uploads/2023/06/Task-3.6-Open_science_Brief.pdf

3.2. Quality, capacity and role of each participant, including hosting arrangements and extent to which the consortium as a whole brings together the necessary expertise

Required sub-headings:

- Appropriateness of the research infrastructure and capacity of each participating organisation, as outlined in Section 4 (Participating Organisations), in light of the tasks allocated to them in the action;
- Consortium composition and exploitation of participating organisations' complementarities: explain the compatibility and coherence between the tasks attributed to each beneficiary/associated partner in the action, including in light of their experience; Show how this includes expertise in social sciences and humanities, open science practices, and gender aspects of R&I, as appropriate.

Source: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/temp-form/af/af_he-msca-se_en.pdf

Requirements - AFTER

Annex 5 of the MGA: COMMUNICATION, DISSEMINATION, OPEN SCIENCE AND VISIBILITY (— ARTICLE 17)	
Obligation	**Description**
Open science: open access to scientific publications	Beneficiaries must ensure open access to peer-reviewed scientific publications relating to their results. Beneficiaries (or authors) must retain sufficient intellectual property rights to comply with the open access requirements.
Open science: research data management	Beneficiaries must manage the digital research data generated in the action in line with the FAIR principles. Beneficiaries must develop a data management plan and regularly update it.
Open science: additional practices	Where a call imposes additional obligations, these must be complied with by the beneficiary.

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Source: MSCA-NET POLICY-BRIEF: OPEN SCIENCE, https://msca-net.eu/wp-content/uploads/2023/06/Task-3.6-Open_science_Brief.pdf

Requirements - AFTER

Open Science

Open science: open access to scientific publications

The beneficiaries must ensure open access to peer-reviewed scientific publications relating to their results. In particular, they must ensure that:

- at the latest at the time of publication, a machine-readable electronic copy of the published version or the final peer-reviewed manuscript accepted for publication, is deposited in a trusted repository for scientific publications
- immediate open access is provided to the deposited publication via the repository, under the latest available version of the Creative Commons Attribution International Public Licence (CC BY) or a licence with equivalent rights; for monographs and other long-text formats, the licence may exclude commercial uses and derivative works (e.g. CC BY-NC, CC BY-ND) and
- information is given via the repository about any research output or any other tools and instruments needed to validate the conclusions of the scientific publication.

Beneficiaries (or authors) must retain sufficient intellectual property rights to comply with the open access requirements.

Metadata of deposited publications must be open under a Creative Common Public Domain Dedication (CC 0) 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. Where applicable, the metadata must include persistent identifiers for any research output or any other tools and instruments needed to validate the conclusions of the publication.

Only publication fees in full open access venues for scientific publications are eligible for reimbursement.

annotated GRANT AGREEMENT

Source: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/common/guidance/aga_en.pdf

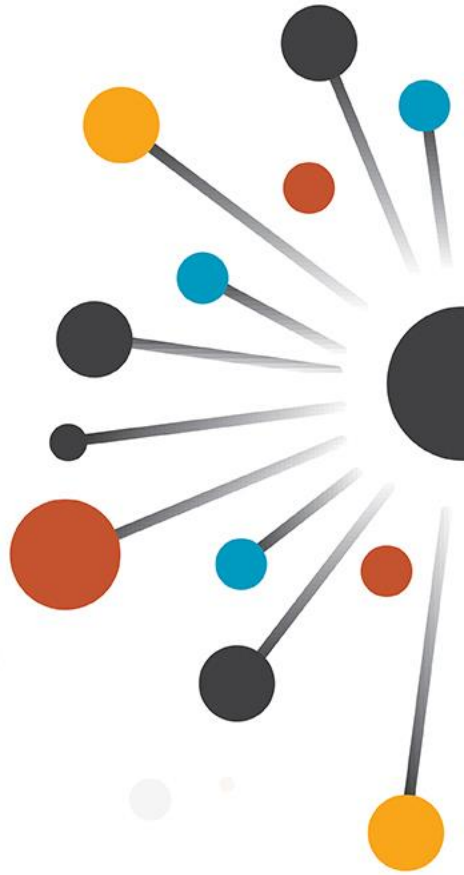
annotated GRANT AGREEMENT

Open science: research data management

The beneficiaries must manage the digital research data generated in the action ('data') responsibly, in line with the FAIR principles and by taking all of the following actions:

- establish adata management plan ('DMP') (and regularly update it)
- as soon as possible and within the deadlines set out in the DMP, deposit the data in a trusted repository; if required in the call conditions,this repository must be federated in the EOSC in compliance with EOSC requirements
- as soon as possible and withinthe deadlines set out in the DMP, ensure open access — via the repository — to the deposited data, under the latest available version of the Creative Commons Attribution International Public License (CC BY) or Creative Commons Public Domain Dedication (CC0) or a licence/dedication with equivalent rights, following the principle 'as open as possible as closed as necessary', unless providing open access would in particular:
  - be against the beneficiary's legitimate interests, including regarding commercial exploitation,or
  - be contrary to any other constraints, in particular the EU competitive interests or the beneficiary's obligations under this Agreement; if open access is not provided (to some or all data), this must be justified in the DMP
- provide information via therepository about any research output or any other tools and instruments needed to re-use or validate the data.

Metadata of deposited data must be open under a Creative Common Public Domain Dedication (CC 0) or equivalent (to the extent legitimate interests or constraints are safeguarded), in line with the FAIR principles (in particular machine-actionable) and provide information at least about the following: datasets (description, date of deposit, author(s) and embargo); Horizon Europe or Euratom funding; grant project name, acronym and number; licensing terms; persistent identifiers for the dataset, the authors involved in the action, and, if possible, for their organisations and the grant. Where applicable, the metadata must include persistent identifiers for related publications and other research outputs.



Source: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/common/guidance/aga_en.pdf

annotated GRANT AGREEMENT

Open science: additional practices

Where the call conditions impose additional obligations regarding open science practices, the beneficiaries must also comply with those.

Where the call conditions impose additional obligations regarding the validation of scientific publications,the beneficiaries must provide (digital or physical) access to data or other results needed for validation of the conclusions of scientific publications, to the extent that their legitimate interests or constraints are safeguarded (and unless they already provided (open) access at publication).

Where the call conditions impose additional open science obligations in case of a public emergency, the beneficiaries must (ifrequested by the granting authority) immediately deposit any research output in a trusted repository and provide open access to it under a CC BY licence, a Public Domain Dedication (CC 0) or equivalent. As an exception, if the access would be against the beneficiaries' legitimate interests, the beneficiaries must grant non-exclusive licenses —under fair and reasonable conditions —to legal entities that need the research output to address the public emergency and commit to rapidly and broadly exploit the resulting products and services at fair and reasonable conditions. This provision applies up to four years after the end of the action (see Data Sheet, Point 1).

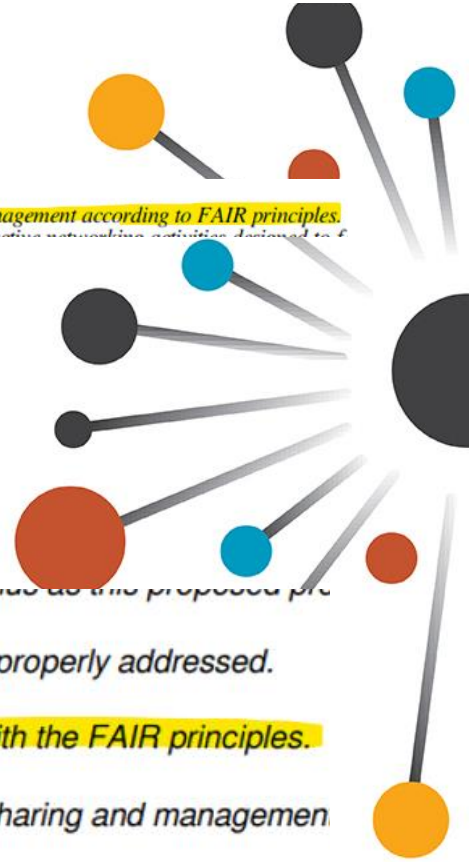
Source: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/common/guidance/aga_en.pdf

STRENGTHS

- The Working Plan is effectively illustrated with an appropriate allocation of tasks and re
- The proposed secondments are coherent with the implementation of the activities. The dur
research objectives.
- The number of available staff and their profiles are appropriate.
- The competencies and experiences of the participating organizations in the program are a
each other well. The tasks assigned to each organization are coherently aligned with their e
- The expertise and track record in open science achievements are coherently described.
- The identified risks are relevant and the proposed mitigation measures are appropriate.
- It is demonstrated that the infrastructure and the resources of all beneficiaries are clearly

disciplinarity and inter-disciplinarity aspects of the proposed research are well demonstrated.
- Open science practices are appropriately addressed.
- Expected actions associated to the research data management fit well with FAIR principles.
- The contribution of each participating organization to the activities planned is well described.

+ The inclusion of diversity and gender aspects in the research design are well considered.
+ There is a strong emphasis on the adherence to open science practices and effective data management according to FAIR principles.



+ The multidisciplinary character of the proposal is adequately explained and advocated wit
secondment scheme between participants.
+ The envisioned data management practices are in compliance with the FAIR principles.
+ Quality and appropriateness of knowledge sharing among the participating organisations a
secured by the appropriate secondment system and network-wide activities such as worksh
+ The proposal's suggested training activities and network activities are adequately presente
the participants is relevant.

also highly interdisciplinary.
- The gender dimension and other diversity aspects which are relevant for information overload research are properly addressed.
- The open science practices are integrated well in the methodology and adapted to the work proposed.
- The management of the data and other research outputs generated or collected is appropriate and in line with the FAIR principles.
- The contribution of each participating organisation to the project activities is very clearly described.
- The main networking activities are clearly described, following the three axes of secondments, knowledge sharing and managemen
their contribution to the planned research and innovation activities is convincingly justified.
- This proposal is AI based, i.e. Machine Learning and Natural Language Processing are among the techniques used. The technical
robustness of the proposed AI system is appropriate.

Weaknesses:
- No relevant weaknesses.

RESOURCES

Funding & Tender Portal: https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/home

Webinars:

- Commission webinars: https://research-innovation-community.ec.europa.eu/home
- OpenAIRE webinars: https://www.youtube.com/watch?v=wcuuW-cWEIM

Open Reserach Europe - ORE: https://open-research-europe.ec.europa.eu/

open access publishing venue for European Commission-funded researchers across all disciplines, with no author fees

EOSC NODES: https://open-science-cloud.ec.europa.eu/

platform that primarily supports multi-disciplinary and multi-national research promoting the use of FAIR (Findable, Accessible, Interoperable, Reusable) data and supplementary services in Europe and beyond

ZENODO: https://zenodo.org/

an open repository for all scholarship, enabling researchers from all disciplines to share and preserve their research outputs, regardless of size or format.

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RESOURCES

DMP TEMPLATES

There is no obligatory form to use, you can create one DMP yourself, but here are some possible templates:

- Horizon Europe template: https://enspire.science/wp-content/uploads/2021/09/Horizon-Europe-Data-Management-Plan-Template.pdf
- OpenAire: https://catalogue.openaire.eu/service/openaire.argos/overview

FAIR tools

Some online tools to help with FAIRification of reserach data, which is the process of making data compliant with FAIR principles:

- OpenAire AMNESIA: https://catalogue.openaire.eu/service/athenarc.amnesia/overview
- GoFair: https://www.go-fair.org/resources/internet-fair-data-services/
- FAIRsFAIR: https://www.fairsfair.eu/tools-software

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