Open Science

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Open Access (OA) to scientific information and knowledge can accelerate research and innovation processes. At the same time can increase research and development efficiency (fewer duplications) and allow all members of society to participate in developments. In order to exploit this potential, the European Union pursues an Open Science approach.

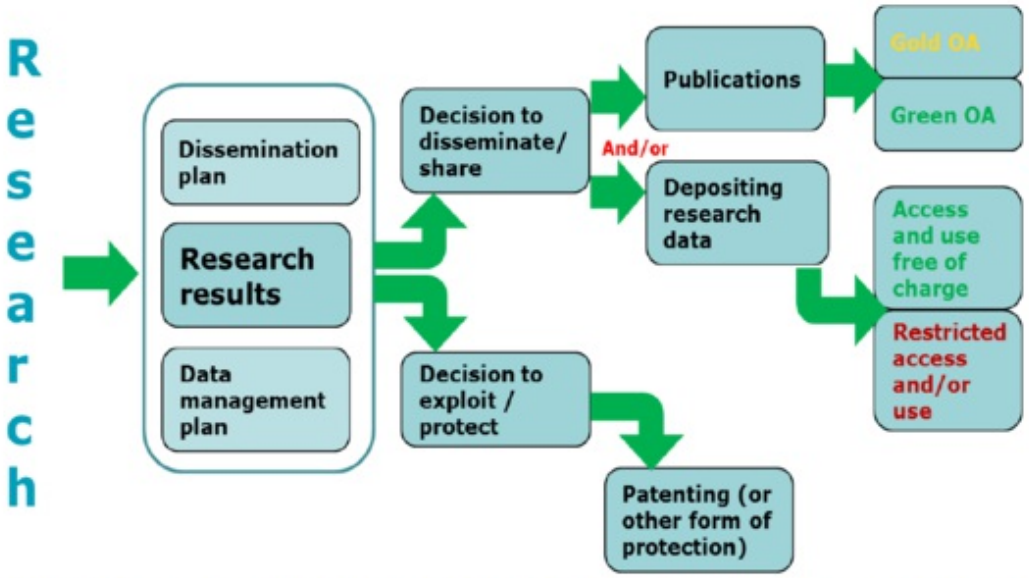
Open Science means, among other things, enabling free online access to scientific information - publications and research data.

Publication of Project Results

For publicly funded EU projects this means that

- Publications that are peer-reviewed (especially articles in journals) are to be made available in Open Access (OA),
- Research data (pertaining to OA publications and/or raw data) should, if possible, be made available as Open Research Data (ORD).

However, this does not mean that EU project results must generally be published to OA. Before publication, it has to be decided whether the results should be used for other purposes or should be legally protected (exploitation):



Graph: Open access to scientific publication and research data in the wider context of dissemination and exploitation

"Open Access to Publications and Data in Horizon 2020: Frequently Asked Questions (FAQ)", p. 3

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Strategies of Open Access Publication

• **Gold OA:** First published in an OA journal (or in OA monograph or in anthology published by OA)
These publications are immediately available in open access to the journal or publication.
OA journals are often financed through institutional memberships (e.g. specialist societies) in combination with Article Processin Charges (APC), most of which are borne by the author.
To learn more about › predatory OA publishing and strategies to avoid it.(https://scholcomm.columbia.edu/how-do-you-know-a-journal-is-legitimate/)

• **Green OA**, also Self-archiving: Publication is already published in closed access or reviewed manuscripts are published by t authors themselves on OA document servers, so-called repositories. This can be done concurrent with or after publication closed access and as pre- and postprint.
Making publications accessible by means of green OA is often delayed by an "embargo period" that is contracted by the origi publisher..
This platform provides an overview of what publishers authorize:› SHERPA/ROMeO. (http://www.sherpa.ac.uk/romeo/index.php)

• **The Hybrid Model** represents a inbetween-solution between closed and open access.
Individual articles from closed access journals are provided in OA by the journal against payment by the author (APC).
Hybrid magazines are funded by subscriptions to the closed access journals and the authors' APC for the OA articles ("double dipping").
If possible, this form of publication should be avoided.

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Repositorien

Repositories are document servers that are used primarily for archiving publications ("green OA") and research data.

Generic	Institutional	Disciplinary
Content of different origins and disciplinary affiliation	University libraries; research institutions, enterprises	Transinstitutional
Usually supported by several consortia and organisations	Content produced by members of these institutions	Specific discipline, thematically ordered
e.g. Zenodo - Figshare	e.g. Apollo (Cambridge), DepositOnce (Berlin), Share_it (University Libraries Saxony-Anhalt)	e.g. SSOAR, arXiv, GenderOpen

Source: D. Brenn, D. Pollmächer, R. Cozatl: "Wo gehören Forschungsdaten hin?" https://opendata.uni-halle.de/bitstream/1981185920/13458/3/02_Forschungsdaten_web.pdf (25.10.2018)

Lists of OA repositories can be found, for instance, on › OpenDOAR (http://opendoar.org/index.html) and in the › Registry of Open Access Repositories (http://roar.eprints.org/) .

With › OpenAire (https://www.openaire.eu/faqs) (Open Access Infrastructure for Research in Europe), the European Commission implements a technical infrastructure for achiving research data.

The › European Open Science Cloud (EOSC) (https://www.eosc-portal.eu/) was opened on 23 November 2018.

In cooperation with CERN, OpenAire offers the repository › Zenodo (https://zenodo.org/) .

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Open Access in Horizon 2020

In particular for journal articles that have undergone a peer review process, publication in OA is mandatory.

As publication costs processing fees (APC, Article Fees) are eligible project costs, if incurred during the project period.

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Open Research Data in Horizon 2020

Research data is information, especially in digital form and as facts or figures, that is collected and used as the basis for conclusions, discussions or calculations. This includes:

- Statistics
- Results of experiments
- Measurements
- Field observations
- Survey results
- Interview recordings
- Images.

In the context of Open Science, the European Commission supports OA to research data. The following principle applies: "As open as possible, as closed as necessary".

The European Commission provides the **Open Research Data Pilot (ORD Pilot)** with its two main pillars:
- the development of a data management plan (DMP) and
- the most open access to research data.

The EU › Open Research Data Pilot (http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/oa_pilot/h2020-hi-oa-pilot-guide_en.pdf) allows OA to research data and to its reuse if it was generated in Horizon 2020 projects. The ORD pilot affects the following data types:

- "underlying data" (the data necessary to validate the results presented in scientific publications) as they become available, including the associated metadata (i.e.metadata describing the deposited research data);
- any other data (such as curated data that can not be directly attributed to a publication or raw data), including related metadata at the deadlines set in the DMP by the project/Grantee.

The › Data Management Plan (DMP) (https://www.iprhelpdesk.eu/sites/default/files/newsdocuments/Fact-Sheet-Open-Access-to-Publications-and-Data-in-H2020-FAQ.pdf) describes how collected and generated research data are handled during and after the project's duration. I also shows what data were collected / generated, what methodology and standards, if and how these data are disseminated and/or made public ("open"), and finally how they are curated and maintained (also after the end of the project).

Template for Structure of DMP
1. Data Summary
2. FAIR Data
2.1 Making Data Findable, Including Provisions for Metadata
2.2 Making Data Openly Accessible
2.3 Making Data Interoperable
2.4 Increase Data Re-use (through Clarifying Licenses)
3. Allocation of Resources
4. Data Security
5. Ethical Aspects
6. Other

Furthr information: › "Guidelines on FAIR Data Management in Horizon 2020" (http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/oa_pilot/h2020-hi-oa-data-mgt_en.pdf)

From the Horizon 2020-2017 work programme, all projects initially automatically participate in the ORD Pilot (with the excepti the ERC Proof of Concept, SME Instrument Phase 1, ERA-NET Cofund measures in which no data are generated, EJP Cofu and prices). To opt-out is possible.

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Open Science in Saxony-Anhalt

With › Share_It (https://opendata.uni-halle.de/) Saxony-Anhalt university libraries provide a free central OA repository.

On Share_it, publication is possible of:

- Journal articles (second publication/green OA),
- Dissertations and habilitations,
- Other research publications,
- Research data.

Further information on Open Science at Saxony-Anhalt universities can be found in the box on the right.

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Toolkit Open Science

› Virtual Courses on OS; OA; ORD; Data Protection and Ethics

Open Access in H2020

› Fact Sheet for Researchers

› Fact Sheet for Project Managers

› Guidelines to the Rules on OA to Scientific Publications and OA to Research Data in H2020

› Guidelines on FAIR Data Management in Horizon 2020

› Open Access to Scientific Publications and Resarch Data in Horizon 2020: Frequently Asked Questions (FAQs)

› Open Access in Horizon 2020

› Publishing vs. Patenting

Call-Specific:
› OA in ERC Projects

› OA and Data Management in the Humanities and Social Sciences

Further Information on Open Access/ Open Science

› Factsheet "Open Science"

› Open-access.net

› BMBF: General Information

European Liaison Office of the German Research Organisations (KoWi) on Open Access and Research Data Management

› Open Access

› Open Science

Open Access at Universities in Saxony-Anhalt

MLU supports OA projects by means of a › Publication Fund.
Further information › here.

Information concerning OA at **OVGU**: › here.

Information concerning OA at **Anhalt University of Applied Sciences**: › here.