



5G ExPerimentation Infrastructure hosting Cloud-native Netapps for public proTection and disaster RELief

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D7.10: ORDP Open Research Data Pilot

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www.5gepicentre.eu

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Project Partners

Logo	Partner	Country	Short name
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	Foundation for Research and Technology Hellas	Greece	FORTH
	Universidad de Málaga	Spain	UMA
	Centre Tecnològic de Telecomunicacions de Catalunya	Spain	CTTC
	Istella SpA	Italy	IST
	One Source Consultoria Informatica LDA	Portugal	ONE
	Iquadrat Informatica SL	Spain	IQU
	Nemergent Solutions S.L.	Spain	NEM
	EBOS Technologies Limited	Cyprus	EBOS
	Athonet SRL	Italy	ATH
	RedZinc Services Limited	Ireland	RZ
	OptoPrecision GmbH	Germany	OPTO
	Youbiquo SRL	Italy	YBQ
	ORamaVR SA	Switzerland	ORAMA

List of abbreviations

Abbreviation	Definition
APC	Article Processing Charge
CC	Creative Commons
DevOps	Development and Operations
DOI	Digital Object Identifier
DMP	Data Management Plan
eMBB	enhanced Mobile Broadband
FAIR	Findable, Accessible, Interoperable, Re-usable
GA	Grant Agreement
GDPR	General Data Protection Regulation
mMTC	massive Machine Type Communications
NetApp	Network Application
OAI-PMH	Open Archives Initiative Protocol for Metadata Harvesting
OpenAIRE	Open Access Infrastructure for Research in Europe
ORDP	Open Research Data Pilot
PPDR	Public Protection and Disaster Relief
RD	Research Data
WP	Work Package
URLLC	Ultra-Reliable Low-Latency Communication

Executive summary

This document presents the 5G-EPICENTRE D7.10 “ORDP: Open Research Data Pilot” and responds to Task “7.3 Legal framework and ethical supervision” under Work Package 7 “Project management”. This document is based on D7.7 “Data management plan - preliminary version” created at the start of the project (M4) and with updates as deliverables in Months 18 and 30. The Open Research Data Pilot (ORDP) enables open access and reuse of research data generated by Horizon 2020 projects [1]. The document presents the shared repository Zenodo¹ selected by the project.

¹ Zenodo: <https://zenodo.org/>

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1 Introduction

D7.10 “ORDP Open Research Date Pilot” of project 5G-EPICENTRE was prepared under the activities of WP7. In line with the principles of Open Access to Research Data (RD) and publications generated through H2020 programmes, 5G-EPICENTRE will enable open access and reuse of RD generated during the project. This deliverable is based on D7.7 “Data Management Plan” preliminary version delivered on M4 and will be updated in M18 and M30.

1.1 Mapping of project’s outputs

The purpose of this section is to map 5G-EPICENTRE Grant Agreement (GA) commitments, both within the formal Deliverable and Task description, against the project’s respective outputs and work performed.

Table 1: Adherence to 5G-EPICENTRE’s GA Deliverable & Tasks Descriptions.

5G-EPICENTRE Task	Respective Document Chapters	Justification
<p>T7.3.2: Data management</p> <p><i>“This sub-Task will define the strategy for data management and allow a careful and guided data management assessment during the lifetime of the project. It will undertake all necessary technical and organisational measures regarding the handling and storage of data, such as the research data volume, access, licensing and integration features, in accordance to the relevant legal framework and in particular the GDPR. It will further report on detailed data characteristics, privacy preserving security plans and authorisations and will thus answer data security and privacy questions, such as where the data will be physically processed and what physical security protection features and privacy protocols will be implemented. This sub-Task requires the participation of consortium Partners to define and maintain an adequate strategy for data management throughout the project. Thus, although this sub-Task will be the responsibility of the Ethics Manager, other Partners of the consortium will also be involved in the development of the Data Management Plan”.</i></p>	2 – Open Research Data Pilot (ORDP)	Chapter 2 provides an overview of the preliminary Data Management plan to be followed for the 5G-EPICENTRE Project.

2 Open Research Data Pilot (ORDP)

2.1 Definition

The ORDP of the European Commission enables open access and reuse of RD generated by Horizon 2020 projects. There are two main pillars to the Pilot: developing a Data Management Plan (DMP) and providing open access to RD, where possible.

5G-EPICENTRE partners will:

- Develop (and keep up-to-date) a DMP.
- Deposit their data in an RD repository.
- Ensure that third parties can freely access, mine, exploit, reproduce and disseminate the available data.
- Provide related information and identify (or make available) the tools needed to use the raw data to validate their research.

The Pilot applies to:

- The data (and metadata) needed to validate results in scientific publications.
- Other curated and/or raw data (and metadata) specified in the DMP.

2.2 Research Data

Any RD refers to information, statistics, experiment results, measurements that derive from surveys, questionnaires, testing models and overall data/metadata in the context of the project are considered RD. This type of data is usually in digital form.

In the context of the project not all data should be shared, as per the framework laid out in the GA (2.2.3 Knowledge, data and IPR management). There is data that cannot be shared, and have to remain confidential in aid of the exploitation activities by the consortium partners.

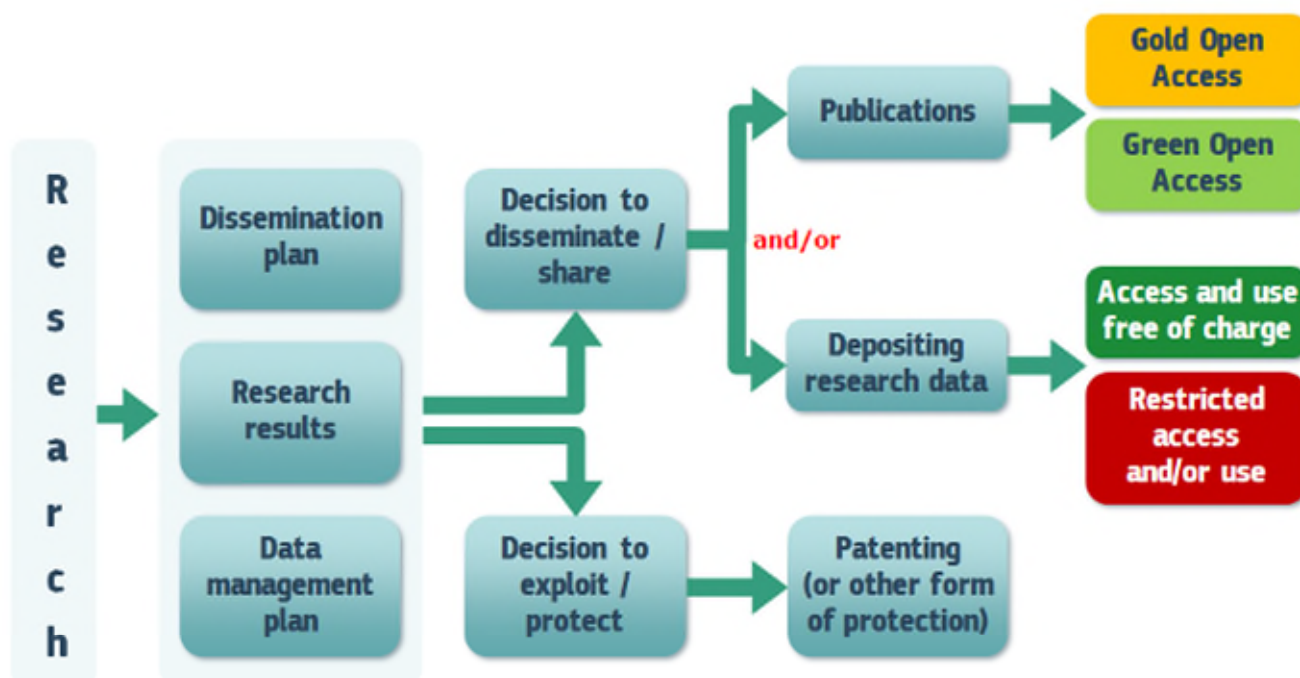
The diagram shown in Figure 1 depicts the flow of data whether this is indeed shared or kept confidential within the project scope.

According to the Horizon 2020 Online Manual referring to open access and data management [1], the following two open access models are available:

- Self-archiving (or 'green' open access): the published article or the final peer-reviewed manuscript is archived in an online repository. If the access is delayed ('embargo period'), beneficiaries must ensure open access to the publication within a maximum of six months (twelve months for publications in the social sciences and humanities).
- Open access publishing (or 'gold' open access): an article is immediately provided in open access mode (on the publisher/journal website). Publishers sometimes charge so called Article Processing Charges (or APCs) to make articles open. Such costs are eligible for reimbursement during the duration of the project as part of the overall project budget. Open access must be granted at the latest on the date of publication and with a copy deposited in a repository.

2.3 Requirements

The RD to be included in the ORDP must be deposited, preferably in an RD repository. Research repositories are online RD archives, which may be subject-based or thematic-based, institutional or centralised [2]. The Open

Figure 1: Research data².

Access Infrastructure for Research in Europe (OpenAIRE³) provides additional information and support on linking publications to underlying RD. Some repositories, such as Zenodo (an OpenAIRE and CERN⁴ collaboration), allow researchers to deposit both publications and data, whilst providing tools to link them. Moreover, Zenodo, like many academic publishers, provide appropriate metadata for the publications and underlying data, such as persistent identifiers and data citations, which can be used as references in other scientific publications.

Wherever possible, projects must then take measures to enable third parties to access, mine, exploit, reproduce and disseminate (free of charge for any user) this RD. One straightforward and effective way of doing this is to attach Creative Commons (CC) Licences (CC BY⁵ or CC0⁶) to the data deposited. The EUDAT B2SHARE tool includes a built-in license wizard that facilitates the selection of adequate license for RD [3].

At the same time, projects could provide information via the chosen project repository about the tools available to the beneficiaries which are needed to validate the results, *e.g.*, specialised software or software code, algorithms and analysis protocols. Where possible, they should provide these instruments themselves.

For all the above mentioned reasons, 5G-EPICENTRE will use Zenodo as ORDP repository of the produced RD.

2.4 Principles

The European Commission requires and suggests DMPs as a good tool for a simple data inventory register, which describes the data to be collected, processed and generated by a Horizon 2020 project. The DMP easily identifies

² Image retrieved from https://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/open-access-data-management/open-access_en.htm

³ OpenAIRE: <https://www.openaire.eu/>

⁴ CERN: <https://home.cern/>

⁵ CC BY Licence Deed: <https://creativecommons.org/licenses/by/4.0/>

⁶ CC0 Licence Deed: <https://creativecommons.org/share-your-work/public-domain/cc0/>

areas of caution, especially in case personal data is involved, where further actions and measures may need to be taken.

2.5 The 5G-EPICENTRE Project

5G-EPICENTRE will deliver an open end-to-end experimentation 5G platform focusing on software solutions that serve the needs of Public Protection and Disaster Relief (PPDR). The 5G-EPICENTRE platform will be based on an open Service oriented Architecture, following the current best Development and Operations (DevOps) practices (containerisation of micro-services) and will be able to accommodate and provide open access to 5G networks' resources, acting this way as a 5G open source repository for PPDR Network Applications (NetApps). The purpose of the use cases is to cover the entire range of the 3 ITU-defined service types (*i.e.*, enhanced Mobile Broadband – eMBB, massive Machine Type Communications – mMTC and Ultra-Reliable Low-Latency Communication – URLLC), as well as to provide the floor for overseeing the platform's secure interoperability capabilities beyond vendor-specific implementation.

5G-EPICENTRE will enable open access and reuse of RD generated by the use cases' realisation.

3 5G-EPICENTRE and the ORDP

3.1 The 5G-EPICENTRE vision and objectives

Within the project, datasets will be identified and assessed by the 5G-EPICENTRE's Steering Committee, Innovation Manager and Data Owners before becoming candidates for contribution to the ORDP. These parties and the originating consortium partner(s) will then agree on the licensing (for example, CC or public domain). Following approval, 5G-EPICENTRE will make the datasets accessible through appropriate open access repositories, following the guidelines of the GA (2.2.3 Knowledge, data and IPR management).

The 5G-EPICENTRE GA defines that future versions of the DMP will include the types of data that will be made available for open access and provide reasons in case some data are not made available.

The 5G-EPICENTRE DMP report (D7.7) includes information addressing the following relevant aspects:

- The guiding principles for data management in the project.
- The legal framework constituted by the General Data Protection Regulation (GDPR).
- Data Summary: overview of what data will be gathered and processed in the project (including, where applicable, personal data).
- How data will be stored and processed according to the H2020 FAIR Data Management principles, making data: findable, accessible, interoperable, and reusable (FAIR).
- Resource allocation: Resources required for making data FAIR in this project.
- Data Security: How we intend to keep the data secure and how they can be shared with the public.
- Ethical aspects: A summary of the ethics and privacy strategy in the 5G-EPICENTRE project.

The ORDP applies directly to the data (metadata and raw data) which is used to validate research results. 5G-EPICENTRE guarantees the maxim of the ORDP as well as the FAIR principles in the use and dissemination of data. 5G-EPICENTRE takes advantage of its vast communication and dissemination network to ensure that RD and research results are FAIR. RD and results are actively publicised through publishing channels, workshops, seminars, newsletters, and networking.

3.2 Open Access to Research Data

Public data will be used by the consortium to implement public deliverables, publications, advertisement materials, etc., which will be disseminated and communicated to stakeholder groups or to a wider public. All deliverables and publications will follow the project's DMP and will be made available through the shared repository.

5G-EPICENTRE will use OpenAIRE's repository Zenodo for data publication. More information on this repository is available on the web site <https://help.zenodo.org/>, or at <https://www.openaire.eu/zenodo-guide>. A screenshot of Zenodo is shown in Figure 2.

In summary, Zenodo's functionality that addresses the needs for publishing the project's RD is the following:

- **Sharing and linking research:** Zenodo provides a rich interface which enables linking research outputs to datasets and funding information.
- **Citeable and discoverable:** All uploads get a Digital Object Identifier (DOI) to make them easily and uniquely citeable. All open content is harvestable via the Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH) by third parties.
- **Supports versioning:** Via a top-level DOI, different versions of a file are supported.
- **Trusted, reliable, safe:** Data is stored at CERN, which has considerable knowledge and experience operating large-scale digital repositories. Multiple copies of data files and metadata are stored online and offline.

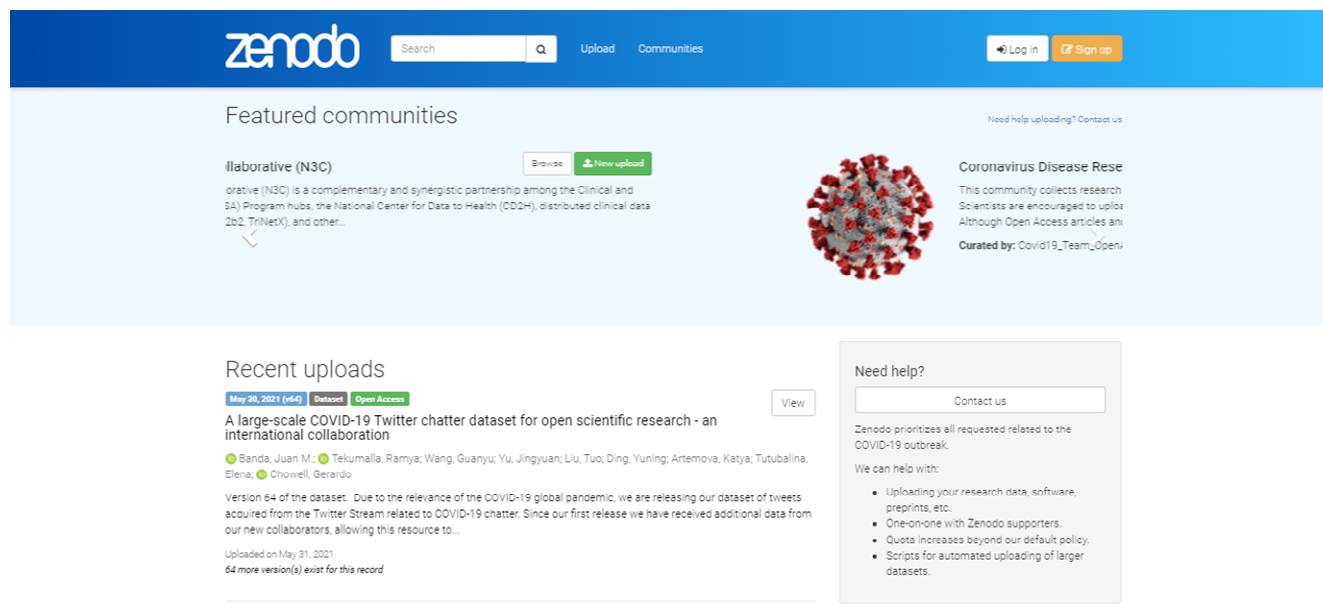


Figure 2: <https://zenodo.org> capture.

- **Includes funding information and makes reporting easier:** Zenodo allows users to link uploads with grants from more than 11 funders such as the European Commission, the National Science Foundation and the Wellcome Trust. Zenodo is further integrated into reporting lines for research funded by the European Commission via OpenAIRE. Zenodo automates the reporting process once researchers upload their research onto the platform.
- **Data level metrics:** Provides attention metrics for the uploaded data.
- **Flexible licensing:** Zenodo encourages researchers to share their research as openly as possible to maximise use and re-use of their research results. However, as one size does not fit all, Zenodo allows for uploading under a variety of different licences and access levels.
- **Reviewing:** Research materials can be set to share with reviewers only, and also embargoed.
- **Software preservation support:** Zenodo is integrated with GitHub for synchronising the available software with newer versions and updates.
- **Supports FAIR principles:** Zenodo makes data FAIR.

5G-EPICENTRE open-access data will be defined in the following versions of the DMP, and will be uploaded during the project. The second version of the DMP (D7.8) is scheduled for June 2022 and the final version (D7.9) for June 2023.

4 Conclusions

This deliverable described how 5G-EPICENTRE enables open access and reuse of RD generated by the project. The publishable data is defined in D7.7 “Data Management Plan” delivered by M4 and will be updated (D7.8) by M18 and M30 for the final version (D7.9). 5G-EPICENTRE generated data will be published on the Zenodo repository.

References

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