D 1.2 First version of the Data Management Plan

Guidelines for data management within the project, identification and description how the project will manage data, in support of the Ocean and water knowledge system, in particular by contributing to monitoring, modelling and knowledge creation and data.

Document Information

Grant Agreement no. 101112812

Call ID	**HORIZON-MISS-2022-OCEAN-01**
Project Name	**Preventing, Avoiding and Mitigating Environmental Impacts of Fishing Gears and Associated Marine Litter**
Project Acronym	**NETTAG+**
Project Website	**https://nettagplus.eu/**
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Quality information and Revision History

Version	Authors	Date
1	Rebecca Pflanz; Marieke Reuver	18/09/2023
2	Rebecca Pflanz; Marieke Reuver	05/10/2023

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NETTAG+ Project

NETTAG+ aims to provide a portfolio of three suitable innovative smart and sustainable solutions to address the negative impacts of fishing gears on marine life and habitats. NETTAG+ will be based on synergistic activities between the fisheries industry, scientists and NGOs to develop three solutions to PREVENT, AVOID and MITIGATE the harmful impacts of fishing gears.

We will PREVENT marine litter derived from fisheries activities, AVOID loss of fishing gears, and MITIGATE harmful impact by removing existing ALDFG. These three solutions will jointly contribute to reduce ALDFG and marine pollution, namely by: reducing the introduction of hazardous chemicals and microplastics originated from ALDFG; reducing ghost fishing, bycatch and entanglements of sensitive or endangered species on ALDFG; and improving mapping, tracking and recovery technologies to retrieve ALDFG.

NETTAG+ aims to upgrade and upscale the integrative preventive approach started in the previous NetTag project, and replicate it in Mediterranean regions. The three solutions will be developed to maturity (TRL 7-8) by the end of the project, and will be tested, validated and demonstrated in real conditions in Atlantic and Mediterranean countries, namely Portugal (PT), United Kingdom (UK), Spain (SP), Italy (IT), Croatia (HR) and Malta (MT). NETTAG+ ambition is to change the paradigm of the fisheries industry, aspiring to transform the societal perspectives about the role of fishers as Guardians and Cleaners of the Ocean. NETTAG+ will empower the sector to take active actions to address marine pollution, promoting their role as key-actors to tackle marine pollution, and will provide the fisheries industry with three smart and environmentally-friendly solutions to reduce ALDFG and prevent the environmental impacts of fishing gears.

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1. Introduction

The NETTAG+ Data Management Plan (DMP) aims to provide a strategy for managing digital research data generated and collected during the project and optimise access to and re-use of these data. It is intended to be a 'living' document that will outline how the NETTAG+ data will be handled during and after the project, and so it will be reviewed and updated at regular intervals. As detailed above, the DMP is an official project Deliverable (D1.2) due in M6 (October 2023); with the Final DMP (D1.3) due in M36 (April 2026) but it will also be updated as significant changes arise and periodic reviews at reporting stages of the project will take place to verify the applicability of the DMP to the generated data. The initial version of the NETTAG+ DMP (D1.2) has been developed by ERINN. For the reminder of the project lifetime, CIIMAR will manage the implementation of the DMP and the regular updating of the DMP, leading to the final DMP (D1.3) in M36.

2. DMP Approach

2.1 Open Innovation in the European Union

Open Science permits knowledge to circulate more quickly and to be more freely available; it does not mean 'free science'. It is essential to ensure that intellectual property is protected before making knowledge publicly available. This enables subsequent attraction of investments that can help translate research results into innovation. If this is taken into account, fuller and wider access to scientific publications and research data can help accelerate innovation. The potential benefits of opening up research information are clearly recognised in the European Commission's "recommendation on access to and preservation of scientific information", where it is stated that member states should ensure that '*research data that results from publicly funded research becomes and stays findable, accessible, interoperable and re-usable ('FAIR principles') within a secure and trusted environment, through digital infrastructures (including those federated within the European Open Science Cloud (EOSC), where relevant), unless this is not possible or is incompatible with the further exploitation of the research results ('as open as possible, as closed as necessary').*' (*Commission Recommendation (EU) 2018/790*).

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Starting with the Evolution of Open Science within the EC - the journey began in FP7 in 2008: Open Access (OA) Pilot: Grantees were asked to deposit copies of their publications into digital repositories which allowed open access.

In 2014, H2020 began, and OA became mandatory, and the Open Research Data Pilot (ORDP) was introduced – meaning that on a voluntary basis projects were encouraged to make their data open access and data management plans were introduced as a deliverable.

Half-way through H2020, the ORDP became the default position for all grantees. It was expected that all projects would participate in making the data supporting their publications open, but during GA negotiations you could provide justification to not participate.

The following scheme shows the evolution of Open Science Policy across the Framework Programmes.

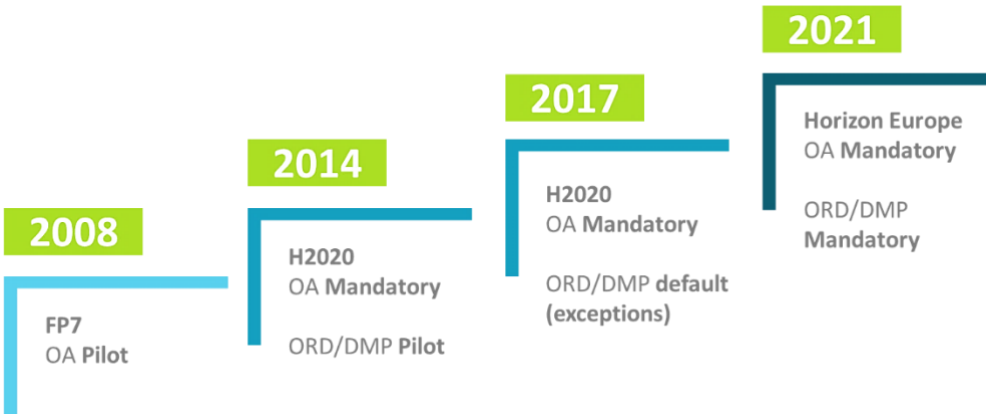

Figure 1 Evolution of open science policy across FPs

For explanations and definitions of terms, the OpenAIRE-Glossary can be consulted.

2.2 Open Access requirements in Horizon Europe

Grant Agreement Article 17 describes rules related to dissemination of results and open access to scientific publications and research data. These are outlined below. For further detail see the PDEC Section 2.2.4.

2.2.1 Obligation to disseminate

Each beneficiary must disseminate their results as soon as feasible, in a publicly available format. However, no dissemination may take place before a decision is made regarding **possible protection, security rules or legitimate interests**. Other beneficiaries may object to a beneficiary intending to disseminate, if they can show that their legitimate interests in relation to their results or background would be significantly harmed.

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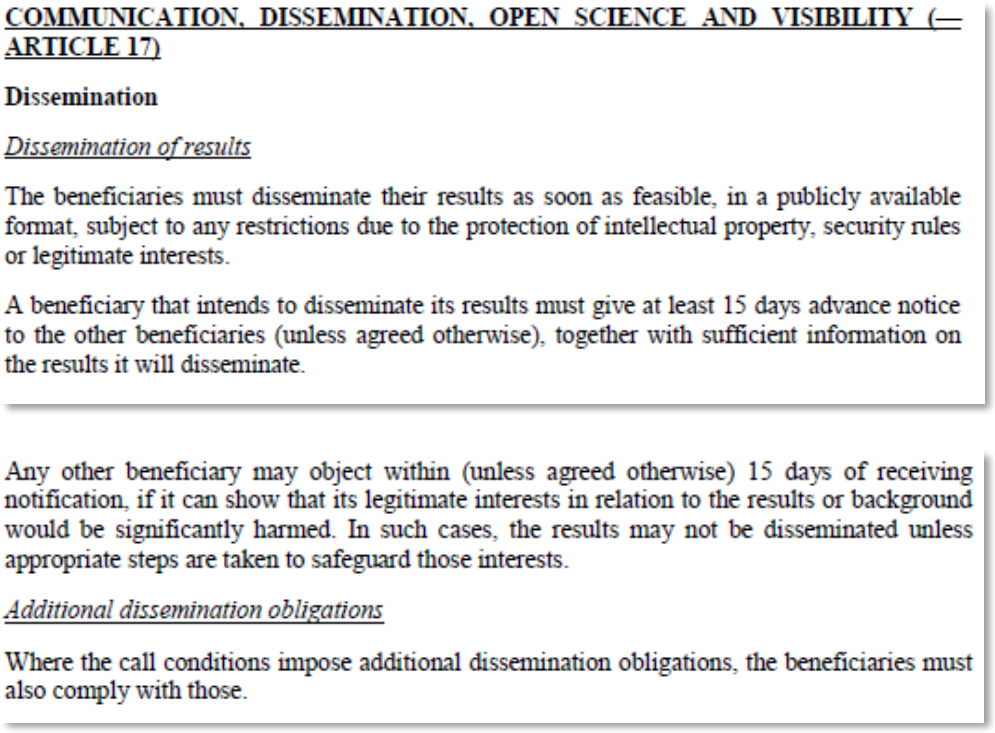

COMMUNICATION, DISSEMINATION, OPEN SCIENCE AND VISIBILITY (— ARTICLE 17)

Dissemination

Dissemination of results

The beneficiaries must disseminate their results as soon as feasible, in a publicly available format, subject to any restrictions due to the protection of intellectual property, security rules or legitimate interests.

A beneficiary that intends to disseminate its results must give at least 15 days advance notice to the other beneficiaries (unless agreed otherwise), together with sufficient information on the results it will disseminate.

Any other beneficiary may object within (unless agreed otherwise) 15 days of receiving notification, if it can show that its legitimate interests in relation to the results or background would be significantly harmed. In such cases, the results may not be disseminated unless appropriate steps are taken to safeguard those interests.

Additional dissemination obligations

Where the call conditions impose additional dissemination obligations, the beneficiaries must also comply with those.

Figure 2 NETTAG+ Grant Agreement Article 17 – Annex 5

2.2.2 Open access to scientific publications

Providing open access to peer-reviewed scientific publications in Horizon Europe funded projects is an obligation for all grants. Each beneficiary must ensure open access to all peer reviewed scientific publications relating to its results (GA Article 17 – Annex 5).

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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 peer-reviewed scientific publications are eligible for reimbursement.

Figure 3: NETTAG+ Grant Agreement Article 17 – Annex 5

2.2.3 Research Data Management

Managing research data generated in Horizon Europe funded projects is an obligation for all grants. Each beneficiary must ensure research data generated in the project is carefully managed in line with FAIR principles (AGA Article 17 – Annex 5).

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 a data management plan ('DMP') (and regularly update it)

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- 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 within the 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 (CC 0) or a licence 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 the repository 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), venue 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.

Figure 4 NETTAG+ Grant Agreement Article 17 – Annex 5

3. The NETTAG+ Data Management Plan

The DMP aims to provide a strategy for managing digital research data that are generated or collected during the project and optimise access to and re-use of research data for datasets based on results from NETTAG+. It covers:

- Protocols – Practical processes to manage NETTAG+ data in a FAIR way
- A data description with a summary of NETTAG+ Datasets, and Sample Collection;
- Guiding principles around data management following EC Horizon Europe requirements;
- How to make NETTAG+ data FAIR: Findable, Accessible, Interoperable and Re-usable;
- Data management cost and allocation of resources;
- Data security and ethics, and confidentiality.

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NETTAG+ will generate diverse outputs, including databases, innovation outputs, new methodologies, data, protocols, experimental approaches and strategies. To integrate the work performed within the different work packages and themes, and to align the scientific tasks with the overarching strategy of the NETTAG+ project, a structured and efficient Data Management is crucial.

The DMP also includes the following annexes which will evolve over the course of the project:

- Annex 1 consists of useful resources that are relevant to data management to support partners in making their research and data openly accessible in the context of Horizon Europe.
- Annex 2 will outline all NETTAG+ datasets. All datasets within the table in Annex 2 will be assessed and published Open Access, unless restrictions are applied, which will be mentioned accordingly. This Annex will be updated and added to as and when new digital research data is generated or collected.

4. Data Description

4.1 Summary of NETTAG+ Datasets

NETTAG+ will produce new data on environmental impacts of Abandoned, Lost or otherwise Discarded Fishing Gear (ALDFG); social data from surveys and interviews with fishers and port authorities; acoustic data from hydrophones to analyse the NetTag underwater communication/positioning technology; and data to assess the environmental impact of the acoustic tags and robotic retrieving system among others. All data will be accompanied by rich metadata that provide context and make the data relevant to different research fields. Specifically, NETTAG+ will produce the following data described below. Please note that each dataset owner in NETTAG+ will ensure that any (meta)data mentioned below will be disseminated to OpenAIRE to maximise data sharing, finding and re-use of research outputs from NETTAG+. For more information on how to ensure interoperability with OpenAIRE, please refer to the protocol on Data Management (section 5.1).

Summary of Expected Data To Be Generated or Collected:

WP2 (USC) – PREVENT: Fishers as Guardians and Cleaners of the Ocean

- **T2.1 - Co-production of educational/awareness material for best practices on board.** WP2 will develop educational materials co-created by scientists and fisher's representatives in participatory

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workshops and specific sessions in order to raise awareness on marine litter issues, to foster best practices on board and on ports, and to improve governance. Educational materials will be obtained after the integration of information on available information reviewed by scientists, that will be complemented with local ecological knowledge of fishers in participatory workshops. The data is:

- Derived / compiled from information during participatory workshops
- Data type: Text files, Video files, PDFs (in the form of educational material including posters, flyers, and rollups etc.)
- Estimated volume / size: 1GB
- Partners contributing to the datasets include: WWF Italy, WWF Adria, UAveiro, USC, WWF Mediterranean.

- **T2.2/T2.3/T2.5 – Social data from surveys and interviews with fishers and port authorities.** This type of data includes information from a semi-structured survey that will be shared with key stakeholders related to marine litter and data related to replies from workshops conducted with key stakeholders related to marine litter (T2.2). It also includes data on current waste management systems at ports from interviews with port authorities/representative fishers/national fisheries regulators etc. and data on the costs and benefits related to the implementation of the solutions delivered by NETTAG+ by estimating different inputs, e.g., energy and raw materials, fishing effort, fishing operations, catch, and profitability (T2.3/T2.5). This will allow the project to understand the marine litter problem, collection of litter on vessels and at harbour, best ways to collect and dispose of litter collected. The database with survey replies will remain for internal use only. The reasoning for the database with survey replies being kept closed, is due to sharing compromising anonymization of repliers as the interviewees might be easily identifiable. Outside access could be granted to appropriate researchers on request (on a one-by-one basis), but will need to be kept closed at all times. The data is:
  - Derived/compiled from surveys and interviews.
  - Data type: text files including survey and interview responses (txt, html, or pdf), Excel spreadsheets, audiovisual data, and reused data. Specialised software used to support virtual reality tools will also be included, along with a description of the specific hardware and software needed to access and use the files.
  - Estimated to be up to 1 TB in terms of data volume/size.

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- Partners contributing to the datasets include: WWF Italy, WWF Adria, UAveiro, USC, WWF Mediterranean.

- **T2.4 – Data on quantities of marine litter collected on Clean Ocean Day.** As part of WP2, a report with details of the Clean Ocean Day events organised in the five countries will be developed. Marine litter in specific geographical regions will be collected resulting from a standard fishing day, and:
  - sorted into litter produced on board (including domestic and operational litter) and
  - litter passively collected by the fishing gears.

  This is followed by a quantification and classification of the resulting litter (e.g. plastic, iron, glass, other) to assess the quantity and type of litter produced by fishing vessels versus that retrieved from the ocean. All data related to marine litter will be disclosed and available in EMODnet, MedBioLitter, and other open access monitoring systems of Mission's platforms if possible. The data created/captured under this WP2 is:
  - Of observational nature (visual observation of the items collected; weights of total litter; separation by categories; weight of each litter category);
  - Numeric in its data type (tables with numbers (excel format), photos);
  - Estimated to be less than 1 GB in terms of data volume/size.
  - Partners contributing to the datasets include: CIIMAR, APMSHM; ARVI; WWF; WWF-Adria; WWF-Italy; CoGePa; MAFA.

WP3 (UNEW) – AVOID: Fishing Gear Location with Acoustic Tags

- **T3.1 – Acoustic data from hydrophones to analyse the NetTag underwater communication/positioning technology.** Such data will be recorded as part of WP2 during field experiments to allow a detailed analysis of the NetTag underwater communication/positioning technology required for WP3 and to enable diagnosis of issues/challenges. This will capture the communication signals and background noise. There could also be derived data (e.g. noise or channel statistics) which may be shareable. There will also be algorithms and code generated but these will be too commercially sensitive to share, and this will be justified in the updated DMP. The value of such data to other researchers is limited but there may be some useful parameters that can be extracted (e.g. noise levels/spectra, channel impulse response if some details of the NetTag communication waveform are shared). The data generated under this task are:

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- Of observational nature, involving sensor data from experiments at sea and hence would not be exactly reproducible.
- Data type: Common lossless digital audio data formats (e.g. .wav, .flac). Readable into many commonly available software tools e.g. audio editing software, mathematical analysis software (e.g. MATLAB etc).
- Estimated to be around 100 MB in terms of data volume/size.
- Partners contributing to the datasets: It is likely that only UNEW will contribute to this dataset.
- Most data generated under this point will remain for internal use only but outside access could be granted to appropriate researchers subject to Non Disclosure Agreements.

- **T3.6 / T4.5 – Data obtained in field surveys and lab experiments to assess the environmental impact of the acoustic tags and robotic retrieving system** (Task 3.6) and **the robotic subsea system** (Task 4.5), including sound, water physico-chemical parameters, etc. This data will be:
  - 1) Observational, including probes for water physico-chemical parameters (e.g. temperature; salinity, oxygen concentration and saturation, pH, turbidity); probes for sound. 2) Experimental, involving the analysis in the lab of some physico-chemical parameters (e.g. nutrients concentrations) and contaminants in samples collected in field studies and samples obtained in lab experiments, after sample preparation and lab equipment's analysis.
  - Numeric in its data type/format including direct measurement from equipment (numbers, chemical parameters and contaminants) or visual observation (microplastics). Tables with data treatment, for example, calculated concentrations of contaminants by transformation of raw numbers given by the equipment or visual observation (excel and word files).
  - Estimated to be less than 1 GB in terms of data volume/size.
  - Partners contributing to the datasets include: CIIMAR, INESCTEC, C&S, APMSHM, UNEW.

WP4 (INESC TEC) – MITIGATE: Detection and Removal of ALDFG (Map, Track and Recover)

- **T4.2 – Development of high resolution multibeam sonar data (imaging/backscatter) processing algorithms (SW) for detection, localisation and quantification of ALDFG in the water column and the sea bead.** Detection experiments will be performed in different conditions in order to evaluate detection sensitivity and mapping capabilities of robotic aided acoustic detection and mapping. The developed methods will integrate AI techniques (using learned based approaches) and will

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explore multiple point of view sensing and data fusion mechanisms that can be obtained by underwater robotics or surface systems.

- **T4.6 – Data on the environmental hazardousness of ALDFG as sources of microplastics and sinks of chemical and biological contaminants through laboratorial and in-situ experiments to assess the potential of fishing gear to release MPs and adsorb chemical and biological hazardous agents.** This task includes different types of environmental data, such as water physico-chemical parameters, contaminants concentrations (microplastics, metals, etc.), and biological (microbial communities) data. The environmental data will be:
    - 1) Observational, including probes for water physico-chemical parameters (e.g. temperature; salinity, oxygen concentration and saturation, pH, turbidity); 2) Experimental, involving the analysis in the lab of some physico-chemical parameters (e.g. nutrients concentrations) and contaminants (e.g. microplastics, metals) in samples collected in field studies and samples obtained in lab experiments, after sample preparation and lab equipment's analysis.
    - Numeric in its data type/format including direct measurement from equipment (numbers, chemical parameters and contaminants) or visual observation (microplastics). Tables with data treatment, for example, calculated concentrations of contaminants by transformation of raw numbers given by the equipment or visual observation (excel and word files).
    - Estimated to be less than 1 GB in terms of data volume/size.
    - Partners contributing to the datasets include: CIIMAR

  Regarding biological data, it will involve the molecular identification (16S) data from the microbial communities associated with fishing nets, in order to evaluate the potential of fishing gears as source of biological (opportunistic pathogens) contaminants. Microbial communities associated with fishing nets will be characterised at the taxonomic and functional level using genomic and metagenomic next generation sequencing technology (NGS), in order to identify potential pathogens and their relation with the other microorganisms and with the environmental conditions. The biological (microbial communities) data can be summarized as follows:
    - Data types include: 1) Experimental data such as gene sequences, molecular identifications and alpha/beta diversity; 2) Derived/compiled data and reference/canonical data.

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- The data format of such data will be text (e.g. DOC, XLS) and bioinformatics data (e.g. FASTQ Sequence and Sequence Quality Format).
- Partners contributing to the datasets include: CIIMAR.

These assessments will be made with different fishing gear, which will include new fishing gear made of plastic and of biodegradable materials, as well ALDFG retrieved from the Ocean.

WP6 (WWF Med) – Dissemination & Communication

- **T6.2 – Data on quantities and types of marine litter collected during the national clean-up events.** These data will be collected during up to five National Clean-Up Events one in each country, namely: Portugal (organised by CIIMAR&APMSHM), Spain (organised by ARVI), Italy (organised by WWF Italy), Croatia (organised by WWF Adria) and Malta (organised by MAFA). It will be in the form of a large sea-clean up event, involving fishers, recreational divers, school kids, and the general public in sea-bottom and beach clean-ups (WP6). The data captured here is:
  - Of observational nature (data captured in real time at cleanup events) and derived/compiled data related to subsequent litter monitoring.
  - The data is audiovisual in its data type (images, sound recordings, video)
  - Estimated to be up to 1 GB in terms of data volume/size.
  - Partners contributing to the datasets include: WWF Italy, WWF Adria.
- **Data link building with other Mission monitoring systems** through links with relevant projects such as PREP4BLUE, BlueMissionMed, BlueMissionAA.

(Meta)Data

As there are different types of datasets expected within the NETTAG+ project, there may be different metadata standards that need to be considered for this project that define how the data should be structured, formatted and annotated. Where this is the case, the standards are followed and described accordingly in the interoperability section of the DMP (for more information, please see 6.3).

Below is a summary of the rich (complementary) metadata that will provide context of data generated within NETTAG+. For more information on the main metadata categories used for NETTAG+ research data as well as the guidelines followed as defined in the GA (Article 17), please refer to section 6.1:

- Probes for sound and for water physico-chemical parameters (including temperature; salinity, oxygen concentration and saturation, pH, turbidity, nutrients concentration);

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- Noise levels/spectra, channel impulse response related to the acoustic data from hydrophones to analyse the NetTag underwater communication/positioning technology;
- Metadata related to the database tools that will be developed to manage large numbers of tags such as owner / gear type / materials;
- Metadata related to collected litter including weights or litter;
- Metadata related to gene sequences, molecular identifications.

Once measured, the (complementary) metadata are logged within the datasets and will be included within the dataset upload of the chosen repository along with other relevant metadata (refer to the Metadata section, 6.1).

4.2 Sample Collection

Samples will be collected at different stages of the NETTAG+ project. Samples that will be collected include the following:

1) **Sampling for the assessment of the acoustic tags and robotic retrieving system's environmental impact**. Chemical pollutants (metals, organics, and microplastics) that could be leached from tags will be quantified in water and sand samples, through CIIMAR team standardised and validated methodologies. Additionally, the environmental impact of retrieving vehicle operations will be assessed in-situ during field trials. For this, several environmental variables will be monitored at specific locations including water characteristics (e.g., temperature, salinity, turbidity, oxygen saturation and concentration, pH), and sound which will be measured in-situ through a multiparametric probe and hydrophones; and chemical parameters (e.g., metals and hydrocarbons) which will be quantified in water, using the standardised methodologies.
2) **Sampling to assess the potential of fishing gear to release microplastics and absorb chemical and biological hazardous agents**. Different fishing gear, which will include new fishing gear made of plastic and of biodegradable materials and ALDFG retrieved in field trials, will be evaluated for their potential to release MPs and absorb hazardous chemicals (metals, PAHs) and pathogenic agents, through laboratory and in-situ experiments. Samples of water will be collected over time, for the quantification of microplastics. Microbial communities associated with fishing nets will be characterised at the taxonomic and functional level using genomic and metagenomic next generation sequencing technology (NGS).

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5. Data Management Plan Guiding Principles

The Data Management Plan (DMP) of NETTAG+ is coordinated under WP1, and is articulated around the following key points:

a) This DMP follows the definition of the **obligations/mandatory practices in the AGA Article 17 – Annex 5). The elaboration of the DMP based on these definitions will allow NETTAG+ partners to address all issues related to IP protection and data in line with the obligations/mandatory practices. The DMP will evolve with the project and will be updated at regular intervals, as and when significant changes arise.

b) The consortium will **comply with the requirements of Regulation (EU) 2016/679 and of the Council of 27 April 2016 as well as GA Article 14 and 15** on the protection of natural persons with regard to the processing of personal data and on the free movement of such data and repealing Directive 95/46/EC (General Data Protection Regulation).

c) **Type of data, storage, confidentiality, ownership, management of intellectual property and access:** Procedures surrounding data collection, storage, access, sharing policies, protection, retention and destruction are in line with EU standards as described in the NETTAG+ Grant Agreement (GA) and the Consortium Agreement (CA). Keeping records and supporting documents; GA Article 16 Intellectual Property Rights; GA Article 16.1 Background and access rights to background, especially GA Article 16.2 Ownership of results and GA Article 16.4 Specific rules on IPR, results and background; CA Article 8 Results; CA Article 9 Access Rights; CA Article 10 on Non-disclosure of information; and GA Annex I – ”Description of the Action”.

5.1 NETTAG+ Data Management Policy

The collection, organisation, formatting, and uploading of digital research data to guarantee open access will be the responsibility of the relevant data-owner. Each partner is responsible for their records and documentation in relation to digital research data generated, which must be in line with the accepted standards in the respective field. To avoid losses, partners must take measures to ensure that these data are backed-up using reliable methods (see 6.5 for more on Data Security).

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The right of the data owner (members of the research team) to the use of digital research data is reserved when providing open access. 'Right to use', here, refers to the right of the data owner to execute the original project plan before opening the data for further use. All results produced during the project will be assessed for the need of IPR protection by the data owners. The Co-ordinating team CIIMAR and ERINN can provide support and advice upon request.

NETTAG+ digital research data must be made openly accessible within and beyond the consortium and uploaded to an open-access repository complying with the FAIR principles, unless they have been evaluated as confidential. The collection and upload of publications and digital research data to the chosen Open Access repository is the responsibility of the data-owners.

If data owners wish to restrict access to their NETTAG+ digital research data, they must provide a 'justifiable' reason for doing so as soon as possible and provide evidence of such reason, which must be clearly outlined in the (updated) DMP. For a list of 'justifiable' reasons under EC rules, please see section 6.2 below.

For each digital research dataset collected, processed and/or generated in the project, the following elements will be documented and reported in the next DMP:

- **Data owner** – Description of the data owner, to include the project partner name, originating work package, task and activity, the responsible researcher(s)' name and the primary contact details for enquiries regarding the data.
- **Data Summary** – A description of the data and an overview on how it is being captured and stored, to include the name and description of the dataset, how it is being created and captured, the type and format of the data, the expected overall storage size of the data and whether an IP evaluation is needed.
- **Findability** – Description of domain-relevant repositories, the persistent identifiers for the dataset, and the type of metadata that will be provided. The provided metadata will give information on at least the following: datasets (description, date of deposit, author(s), venue and embargo); Horizon Europe 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.

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Where applicable, the metadata will also include persistent identifiers for related publications and other research outputs.

- **Accessibility** – Confirmation of whether all data is accessible and the methods or software tools needed to access the data. Any data that is deposited in repositories will be made open access under the Creative Commons Attribution International Public License (CC BY) or Creative Commons Public Domain Dedication (CC 0). In cases where it is not accessible a rationale for keeping it restricted must be provided.
- **Interoperability** – Description of whether the data is interoperable and the standard data/metadata vocabularies/ontologies relevant to it.
- **Reusability** – Description of the data licensing, any limits to the re-use of the data and the date (where applicable) the data will be made available for re-use. If applicable, information will be provided via the repository about any research output of other tools and instruments needed to re-use and validate the data.
- **Allocated resources** – Description of the estimated costs required to make the data FAIR and how these costs will be covered (e.g. covered by work package budget).
- **Security** – Brief description of the data security measures in place, including confirmation of plan for recovery, secure storage and protection over the transfer of sensitive data.
- **Ethics** – Any potential ethical issues must be noted.

A brief description of the NETTAG+ digital research datasets will be collected in the NETTAG+ Dataset Inventory (See Annex Table 1, also available in the Project Drive) by each data owner, which will inform both the 'pre'/prior notice process, as well as the updated DMP versions during the implementation of the project. The initial version of the NETTAG+ DMP (D1.2) has been developed by ERINN. For the reminder of the project lifetime CIIMAR will manage the implementation of the DMP and the regular updating of the DMP leading to the final DMP (D1.3) in M36. Additional datasets may be identified and added to future versions of the DMP as necessary.

PROTOCOL – Data Management

- *The collection, organisation, and formatting of NETTAG+ digital research data will be the responsibility of the relevant data-owner.*
- *Each partner is responsible for their records and documentation in relation to their data, which must be in line with the accepted standards in the respective field.*

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- *To avoid losses, partners must take measures to ensure that data are backed-up using reliable methods (see 6.5 for more on Data Security). Partners are advised to consult with their organisation's IT professionals to set up and manage data security and make sure the right safeguards are in place.*
- *Project partners should consider from the outset identifying the most suitable file types and structures they can utilise to support external interoperability once published.*

Best practices indicated hereafter should be followed by individuals involved in the project's research outputs:

- *Register at ORCID: **http://orcid.org** which provides a persistent identity for individuals, similar to that created for content-related entities on digital networks by digital object identifiers (DOIs);*
- *Follow Prior Notice procedures (see 5.2.1 below);*
- *Ensure that EC funding is acknowledged, including the project name and GA number (see PEDC for official text to use or contact ERINN (**rebecca.pflanz@erinn.eu**));*
- *Ensure that peer-reviewed scientific publications based on NETTAG+ results are published in Open Access;*
- *Ensure that selected repositories observe **OpenAIRE guidelines for interoperability**, including guidelines for data archives. These guidelines can be found online (**https://guidelines.openaire.eu/en/latest/**).*
- *Ensure that a brief description of the data is collected in the NETTAG+ Dataset Inventory (see Annex Table 1) and is submitted to the coordinators (**ssramos@ciimar.up.pt**, **calmeida@ciimar.up.pt**) for evaluation of adherence to OA data requirements (see Protocol – Accessible and Reusable). The Dataset Inventory table to be filled out can be accessed in the **Project Drive**.*
- *Ensure that digital research data acquired during the project are made openly accessible within and beyond the consortium and uploaded to an open-access repository complying with the FAIR principles. Digital research data that underly peer-reviewed scientific publications must be made accessible **at the latest at the time of publication**, unless beneficiaries have outlined justifiable reasons for maintaining data confidentiality.*
- *If data owners wish to restrict access to digital research data, they must provide a 'justifiable' reason for doing so as soon as possible and provide evidence of such reason. For a list of 'justifiable' reasons under EC rules, please see section 6.2.*
- *If a dataset is evaluated as closed or is of a sensitive nature as dictated by ethics considerations, metadata may still be placed in a suitable repository.*

5.2 Pre- and Post Requirements

5.2.1 Prior Notice Procedure

Data-owners are asked to notify the partnership of their planned intent to upload datasets to open-access repositories, following the same prior notice procedure as is set up for the publication of results (for more information, please refer to the PEDC (Section 3.1)). Participants involved in the NETTAG+ dataset (owned by one or several parties) must give at least **15 days advance notice** to the other partners (unless agreed otherwise), together with sufficient information on the dataset that is intended to be published in open access (GA Article 17 – Annex 5), by completing the NETTAG+ Dataset Inventory table – see protocol details below.

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PROTOCOL – DATA Prior Notice Procedure

- *Participant(s) planning to submit NETTAG+ datasets to open-access repositories should inform all project participants of their intent at least **15 calendar days** before making them open access, using the 'Prior Notice Email Template' established in the PDEC (section 3.1.1) and attaching the **filled out Dataset Inventory** table (see Annex Table 1) outlining some details around the dataset.*
  - *It may be possible that not all sections of the Dataset Inventory table can be completed at prior notice stage, and that is fine. Please complete as much as is possible at this stage. Finalisation should then be done at 'post' stage (see 'post' protocol below).*
  - *It is essential to provide access to the data themselves (either attach them to the prior notice email as well, or give a link to where the data has been temporarily stored) as partners should be able to view the data.*
- *Project participants have **15 calendar days** to object if they can show that their legitimate interests would be significantly harmed if the data disclosure is permitted. In such cases, the dataset may not be made open access, until appropriate steps are taken to safeguard those interests.*
- *Any objection to the planned dataset disclosure shall be made in accordance with the GA by written notice to the NETTAG+ Coordinator and to the participant(s) proposing the data disclosure, within **15 calendar** days after receipt of the notice. Any objection needs to be justified and precise suggested modifications given. An objection is justified if:*
  1. *It adversely affects protection of results/background of the objecting party.*
  2. *Legitimate interests of the objecting party would be significantly harmed.*
  3. *The proposed dataset includes Confidential Information of the objecting Party. (CA Article 8.4.2.2)*
- *If no objection is made within the above stated timeline, or if objections are addressed and accepted by the objecting participant(s), data disclosure is permitted.*
- *If an objection has been raised, the involved Parties shall discuss how to overcome the justified grounds for the objection on a timely basis (for example by amendment to the planned dataset and/or by protecting information before disclosure) and the objecting Party shall not unreasonably continue the opposition if appropriate measures are taken following the discussion.*

5.2.2 Post-Upload Requirements and Continuous Reporting

After having made a dataset open access, the new dataset must be reported on the EC Funding and Tender Opportunities Portal.

NOTE: CIIMAR will report new datasets to the EC Portal, data owners do NOT need to upload this information to the Portal themselves. Data owners will be asked to send a filled out Dataset Inventory table (based on Annex Table 1) to CIIMAR (ssramos@ciimar.up.pt; calmeida@ciimar.up.pt; nettag@ciimar.up.pt) as soon as available and no later than two weeks after publishing the data, see the

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detailed Protocol below. In addition, data owners should also complete the dataset tab on the "NETTAG+ Continuous Reporting Log" (located on the NETTAG+ Google Drive WP6 folder).

PROTOCOL – EC Reporting of Datasets

1. *After uploading new datasets to the chosen repository, data owner(s) are required to send a filled out Dataset Inventory table to CIIMAR (ssramos@ciimar.up.pt; calmeida@ciimar.up.pt; nettag@ciimar.up.pt) as soon as available and no later than two weeks after publishing the data.*

2. *In addition, data owners should also complete the dataset tab on the "NETTAG+ Continuous Reporting Log" (available in the Google Drive), at the same time as step 1. Please inform CIIMAR once the information has been added.*

3. *CIIMAR will complete the information on the EC Funding and Tender Portal, based on the provided information by the data owner(s), within 2 weeks after all the above information has been provided.*

5.3 Allocation of Resources

Costs related to open access of digital research data in Horizon Europe are eligible under the conditions defined in the NETTAG+ Grant Agreement (GA), in particular Article 6 – Eligible and Ineligible Costs, such as Article 6.2.C.3 – Other goods works and services, but also other articles relevant for the cost category chosen. These include the costs of data deposit, long-term storage and cost in time and effort needed to prepare the data for sharing and preservation. Costs cannot be claimed retrospectively. Project partners will be responsible for including any relevant costs in their financial statements.

6. FAIR data

The EU Open Science policy requires FAIR (Findable, Accessible, Interoperable and Re-usable) data and open data sharing to become the default for the results of EU-funded scientific research. NETTAG+ will integrate the principles of open science across the consortium, the systematic sharing and adoption of knowledge and tools as early and widely as possible, in accordance with the rules and regulations as established in the Horizon Europe (HEU) GA Articles, the ethical principles for research, publishers' terms and conditions, and EU legislation (unless there are justified reasons for keeping specific datasets confidential: see section 6.2).

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6.1 Making data findable, including provisions for metadata

NETTAG+ will ensure its digital research data are findable following the principle 'as open as possible as closed as necessary'.

Repositories

NETTAG+ partners will be asked to select the most appropriate data repositories that facilitate the finding, accessing, re-using and interoperating of data sets, which are the basic principles with which Horizon Europe projects must comply. Among the field-relevant repositories to which it is anticipated that NETTAG+ will contribute are EMODnet, Ocean Best Practices, and Litterbase.

The acoustic data from hydrophones to analyse the NetTag underwater communication/positioning technology generated in WP2 (UNEW) will use the partner's institutional data repository from UNEW.

The data in relation to surveys and interviews with fishers, port authorities and national fisheries regulators will be stored on Zenodo. For this purpose, a NETTAG+ community page within Zenodo has been established, which can be used by all partners for any project related Open Access publications and datasets.

With regards specifically to T6.4 involving data from the microbial communities associated with fishing nets, considered repositories include NCBI database, Silva database, Unite database and the European Nucleotide Archive. A full list of repositories is described in Annex I.

Digital research data acquired during the project (e.g. quantities of litter retrieved and produced by fishing vessels from the WP2 demonstration events; location and quantification of ALDFG in target countries (WP4); quantities and types of marine litter collected during the national clean-up events (WP6); environmental hazardousness of ALDFG and fishing nets as sources of microplastics and sinks of chemical and biological contaminants (WP4)), will be disclosed and available in one of the repositories mentioned above, unless providing open access would be against a beneficiaries' legitimate interest or contrary to any other constraints, in which case this will be justified in the DMP. Social and economic data gathered through surveys and enquiries will be disclosed keeping all the privacy regarding personal data in accordance with the Data Collection Framework (DCF) regulation (Regulation (EU) 2017/1004).

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Partners are encouraged to consider the Registry of Research Data Repositories (re3data) and Directory of Open Access Repositories (OpenDOAR) for useful listings of repositories that might be suitable for NETTAG+ outputs. A NETTAG+ community page within Zenodo has also been established and can be used by all partners for any project related Open Access publications and datasets that are deposited in Zenodo.

Identifiers:

Persistent identifiers (PIDs) are important because they unambiguously identify data and facilitate data citation. NETTAG+ partners will select data repositories that assign a persistent identifier e.g. a Digital Object Identifier (DOI). Partners that generate or re-use data within NETTAG+, will also comply with the open science requirements set out in GA (Article 17) by creating a personal professional unique identifier, for instance with ORCID.

A summary of the types of persistent identifiers used within NETTAG+ can be found below:

- DOI - Digital Identifier of an Object
- RRID – Research Resource Identification;
- InChI - IUPAC International Chemical Identifier;

Metadata:

Metadata is data that provides information about data. Metadata of deposited data within NETTAG+ will be open under a Creative Common Public Domain Dedication (CC 0). The main metadata categories for NETTAG+ research data will provide information about the following:

- Datasets (title, description, date of deposit, author(s), venue and embargo);
- Horizon Europe or Euratom funding;
- Grant project name, acronym and number;
- Licensing terms;
- Persistent identifiers for the dataset and the authors involved in the action. Metadata clearly and explicitly include the identifier of the data it describes. Specifically, (meta) data within NETTAG+ are assigned globally unique and persistent identifiers such as DOI. Authors are assigned unique persistent identifiers such as ORCID;

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- Where applicable, the metadata will include persistent identifiers for related publications and other research outputs.

Metadata is as important as the data itself as it allows applications to categorise and archive datasets, facilitating users to easily search and find relevant datasets. For this reason, metadata produced in NETTAG+ should be compliant with DataCite's Metada Schema minimum terms and will adhere to the OBPS recommendations on use of common vocabularies.

OpenAIRE is a platform funded and supported by the European Commission with the mission to shift scholarly communication towards openness and transparency and facilitate innovative ways to communicate and monitor research. **Each dataset owner will ensure that their chosen repositories disseminate (meta)data to OpenAIRE to maximise data sharing, finding and re-use of research outputs from NETTAG+.** Any repository that is listed in this DMP should ideally be interoperable with OpenAIRE or equivalent; partners who wish to use a different repository may make an inquiry to the Coordinating Team to check whether it disseminates to OpenAIRE. If it does not, the Coordinating Team may contact OpenAIRE to see whether it can be added.

A summary of the NETTAG+ relevant standards for metadata creation is described in the Interoperability section (6.3). As the project progresses and datasets are identified and collected, further information on specification of standards for metadata creation will be outlined in subsequent versions of the DMP. Search key words used for making the data findable will be provided in the DMP's Dataset Inventory table (see Annex Table 1).

PROTOCOL – Storing NETTAG+ data and making it 'Findable'

For each digital research dataset collected or generated through the NETTAG+ project:

- *Beneficiaries must select an open access repository observing the following principles:*
  1. *use a **disciplinary repository** if there is one;*
  2. *alternatively, use an **institutional repository**, if the data owner(s) have them, where the data will also be available for the long term;*
  3. *use the **catch-all repository Zenodo**, maintained by CERN (only to be used when no other, more suitable repository is available);*

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4. *or search in a global registry - **re3data** or **FAIRsharing** - for a fitting repository (they provide several filtering options).*

*Project appropriate repositories for you to consider: **EMODnet, Ocean Best Practices, Litterbase***

- *Each data-owner will be responsible for depositing relevant data in the appropriate repository.*
- *The organisation, and formatting of data collected will be the responsibility of the relevant data-owner.*
- *Each data owner will select data repositories that assign a persistent identifier e.g. a Digital Object Identifier (DOI). Data owners will also comply with the open science requirements set out in GA (Article 17) by creating a personal professional unique identifier, for instance with ORCID.*
- *Ensure that research outputs and datasets cross-reference each other (e.g. scientific publications and the data behind them).*
- *Outline the discoverability of the data (give metadata provision): Ensure that selected repositories observe **OpenAIRE guidelines for interoperability.** These guidelines can be found online (**https://guidelines.openaire.eu/en/latest/**).*

*Digital research data that underly peer-reviewed scientific publications must be made accessible **at the latest at the time of publication**, unless beneficiaries have outlined justifiable reasons for maintaining data confidentiality. All other digital research data should be made accessible as soon as possible and within deadlines set out in this DMP, where applicable.*

6.2 Data Sharing: Making NETTAG+ Data Openly Accessible

To **encourage re-use and further application** of project results, all NETTAG+ **digital research data** will be made available via open access platforms for verification and re-use, unless the data-owner can justify why data cannot be made openly accessible. Metadata are openly available in public databases and can be directly retrieved from there. The Coordinating Team will assess such justifications and make the final decision, based on the permitted exceptions for digital research data[1] and examination of the following elements regarding confidentiality of datasets:

i. Commercial sensitivity of datasets

ii. Priority to exploitation, protection of IPR, security and privacy rules

iii. Conflicts between open-access rules and national and European legislation (e.g. data protection

[1] Exceptions to open access to digital research data are permitted. These consider the obligation to protect results, confidentiality obligations, security obligations, the obligation to protect personal data and other legitimate constraints. Where open access is not provided to the data needed to validate the conclusions of a publication that reports original results, authors should provide the relevant access needed to validate the conclusions to the extent their legitimate interests or constraints are safeguarded (see Add a Data Availability Statement to Your Article).

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regulations).

iv. Sharing data would jeopardise the aims of the project

v. Other legitimate reasons, to be validated by the Coordinating Team

When considering the potential to make data open access, partners are requested to review the project **Consortium Agreement** and the **IP protection guidelines (D5.1 PDEC).** These documents define the main approach regarding the ownership, protection and access to key knowledge like IP and data. This approach will allow the NETTAG+ partners, collectively and individually, to pursue opportunities arising from the project's results.

As the project progresses and data are identified and collected, further information on making data openly accessible will be outlined in subsequent versions of the DMP. Specifically, information on methods or software tools needed to access the data, information on where data and associated metadata, documentation and code are deposited and how access will be provided in case there are restrictions.

6.3 Making Data Interoperable

Interoperable data allows exchange and re-use between researchers, institutions, organisations, countries, etc. (i.e. adhering to standards for formats, as much as possible compliant with available (open) software applications, and in particular facilitating re-combinations with different datasets from different origins). Data and metadata should be collected, stored, and published in readable forms that are easily converted into text files.

Project partners should consider from the **outset identifying the most suitable file types** and structures they can utilise to support external interoperability once published. Specifically, this includes what tools will be needed to validate the results, e.g. specialised software or software code, algorithms and analysis protocols. Where possible, partners should provide these instruments themselves alongside the open access dataset.

Partners must select repositories which observe OpenAIRE guidelines for interoperability, including OpenAIRE guidelines for data archives. These guidelines can be found online (*https://guidelines.openaire.eu/en/latest/).*

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As the project progresses and data are identified and collected, further information on making data interoperable will be outlined in subsequent versions of the DMP. Specifically, information will be given on data and metadata vocabularies, standards or methodologies followed to facilitate interoperability and whether the project uses standard vocabulary for all data types present to allow interdisciplinary interoperability.

For all data generated within NETTAG+ where relevant data sharing standards and metadata vocabularies exist, a summary is described below. For some data generated in NETTAG+ there is no standard metadata format, such as for hydrophone recordings, but if such data is shared, appropriate metada will be provided to define characteristics, sensitivity, sample rate, geographical location, depth etc.

- **MIBBI – Minimum Information for Biological and Biomedical Investigations.** This is a metadata standard and common portal to a group of nearly 40 checklists of Minimum Information for various biological disciplines such as biochemistry, biotechnology, cell biology, genetics, metabolism and more. The MIBBI Foundry is developing a cross-analysis of these guidelines to create an intercompatible, extensible community of standards.
- **TEI - Text Encoding Initiative TEI.** A consortium which collectively develops and maintains a standard for the representation of texts in digital form. Its chief deliverable is a set of Guidelines which specify encoding methods for machine-readable texts, chiefly in the humanities, social sciences and linguistics.
- **MIxS - MIGS/MIMS - Minimum Information about a (Meta)Genome Sequence.** Standard outlining a conceptual structure for extending the core information that has been traditionally captured by the INSDC (DDBJ/EMBL/Genbank) to describe genomic and metagenomic sequences. The MIMS extension describes key aspects of environmental context.
- **MINSEQE - Minimal Information about a high throughput SEQuencing Experiment**. Standard describing the Minimum Information about a high-throughput nucleotide SEQuencing Experiment that is needed to enable the unambiguous interpretation and facilitate reproduction of the results of the experiment.
- **INCHI - IUPAC International Chemical Identifier**. The IUPAC International Chemical Identifier (InChITM) is a non-proprietary identifier for chemical substances that can be used in printed and electronic data sources thus enabling easier linking of diverse data compilations.
- **CHMO – Chemical Method Ontology.** Describes methods used to: collect data in chemical experiments (such as mass spectrometry and electron microscopy), prepare and separate material

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for further analysis (such as sample ionisation, chromatography, and electrophoresis), synthesise materials (such as epitaxy and continuous vapour deposition). It also describes the instruments used in these experiments, such as mass spectrometers and chromatography columns.

PROTOCOL – Ensuring NETTAG+ data is "Accessible" & "Reusable"

*A brief description of the datasets that result from NETTAG+ activities must be collected by the responsible partners in the NETTAG+ Dataset Inventory Table (see Annex Table 1) and submitted to the NETTAG+ coordinators (**ssramos@ciimar.up.pt**, **calmeida@ciimar.up.pt**) who will assess it and upload it to the project Drive.*

Data owners are responsible for assessing their results for the need of IPR protection. The Co-ordinating team and ERINN can provide support and advice upon request.

Partners who intend to protect their data should notify all consortium beneficiaries, the project coordinators, and the Executive Board, as soon as possible to ensure that the optimum level of confidentiality is upheld from an early stage.

Evidence of applications for protection, and/or associated legal processes, should be sent to the Executive Board within six months of such notifications. If no evidence of protection is provided, they may request that such data be made accessible.

When considering the potential to make data open access, beneficiaries are requested to review the NETTAG+ PDEC. This defines the main approach regarding the ownership, protection and access to key knowledge like IPR and data. This approach will allow the NETTAG+ partners, collectively and individually, to pursue market opportunities arising from the project's results. Some of the major aspects covered are briefly indicated below:

- ***Confidentiality:** Each partner will treat information from other partners as confidential unless otherwise stated and not disclose it to third parties unless the information is publicly available.*
- ***Notification:** Data-owners will notify the partnership of their planned intent to upload datasets to open-access repositories following the same prior notice procedure as is set up for publication of results.*
- ***Pre-existing know-how**: Each partner is and remains the sole owner of its IPR in relation to its pre-existing know-how (background). In the CA, parties have identified and agreed on the background for the project and have, where relevant, informed each other that access to specific background is subject to legal restrictions or limits. Anything not listed in the CA shall not be the object of access right obligations regarding background.*
- ***Ownership and Protection of Results:** The ownership of results will belong to the partner/s generating it. Protection will be done appropriately. Two or more project participants' own results jointly if they have jointly generated them and it is not possible to establish the respective contribution of each participant or separate them, for the purpose of applying for, obtaining, or maintaining their protection (GA Article 16.2 – Annex 5). If a beneficiary wishes to assign any knowledge to a third party he should do so, if the other joint owners are given: at least 45 days advance notice and fair and reasonable compensation.*

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- ***Access Rights:*** *Beneficiaries grant to each other royalty-free access rights to knowledge generated in the project and to the background knowledge they bring to the project to the extent needed to successfully perform the project tasks allocated to them.*
- ***Patents:*** *NETTAG+ participants are responsible for tracking their Intellectual Property (IPR) resulting from the project. Whenever a new IPR has been filed (the EC recommends filing with the European Patent Office), participants are required to notify the coordinators (ssramos@ciimar.up.pt, calmeida@ciimar.up.pt) and ERINN (marieke@erinn.eu) with the relevant information. Project participants are responsible for uploading the required information in relation to their IPR directly to the EC Portal.*
- ***Use and dissemination:*** *If dissemination of knowledge does not adversely affect its protection or use and subject to legitimate interests, the partners shall ensure further dissemination of their own knowledge as provided under the GA (see Article 17 – Annex 5) which has been signed by all partners.*

6.4 Ensuring NETTAG+ Data Re-Use

Horizon EU GA clearly states the licensing it mandates for datasets and their metadata, which is the latest available version of the **Creative Commons Attribution International Public License (CC BY)** or **Creative Commons Public Domain Dedication (CC0)** or a licence with equivalent rights, following the principle 'as open as possible as closed as necessary'. All datasets and metadata related to NETTAG+ will be released under either of the above data licensing to permit widest re-use, 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 updated version of the DMP.

6.5 Data Security

Storage systems that meet the needs of the project will be considered. Partners must use multiple methods to backup and copy research data and **protect data from unauthorised access or use or from disclosure.** All partners should consult with their organisations IT professionals to set up and manage data security and make sure the right safeguards are in place. Partners should also consider that data files may need encrypting before storage or transfer and take the appropriate steps to ensure its security.

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Long-term data management primarily addresses security in relation to where the data will be kept, and how it will be accessible after the research project is complete. Partners must ensure that data are stored in certified repositories for long- term (a minimum of five years after the end of the project) preservation and curation. Below is an overview of the data security measures taken by partners to safeguard project data:

- **Data in relation to environmental hazardousness of ALDFG** as sources of microplastics and sinks of chemical and biological contaminants (CIIMAR) will be be stored on office computers, hard drives and institutional cloud storage (to be confirmed). The access to these storages is password granted.
- **Data in relation to the Clean Ocean Day event in WP2** will be stored on local HD synchronized with institutional and/or personal cloud storage. The access to these storages is password granted.
- **Data in relation to field surveys and lab experiments to assess the environmental impact of the acoustic tags and robotic retrieving system** will be stored on local HD synchronized with institutional and/or personal cloud storage. The access to these storages is password granted.
- **Acoustic data from hydrophones to analyse the NetTag underwater communication/positioning technology** will be stored on local HD synchronized with institutional and/or personal cloud storage. The access to these storages is password granted.
- **Data on on survey responses and interviews (T2) & data on quantities/types of marine litter collected at national clean-up events (T6)** will be stored on office an computer, hard drive and institutional cloud storage. The access to these storages is password granted.

6.6 Ethics and Confidentiality

NETTAG+ ensures compliance with the ethical commitments set in GA Article 14 in the Task 1.3, to ensure that ethical requirements are met for all research undertaken in the project, including data management aspects, in compliance with Horizon Europe ethical standards. NETTAG+ partners must comply with the ethical principles (see GA Article 14) and non-disclosure of information (see CA Article 10).

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Annex 1 – Online Open-Access Resources & Useful Links

Oceanographic specific best practices

- https://www.oceanbestpractices.org/
- https://www.bodc.ac.uk/resources/vocabularies/
- MedSeaLitter: https://medsealitter.interreg-med.eu/

Open Science in Horizon Europe

- Open Science: https://openscience.eu
- Open Research Europe: https://open-research-europe.ec.europa.eu/
- Annotated Grant Agreement (AGA): https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/common/guidance/aga_v1.0-draft-30112021_en.pdf

FAIR Findable (repositories)

- Directory of Open-Access Repositories: http://www.opendoar.org/
- Registry of Research Data Repositories: https://www.re3data.org/
- ZENODO Open-Access Data Repository: https://zenodo.org/
- EMODNET: https://emodnet.ec.europa.eu/en/contribute-data-emodnet
- Ocean Best Practices: https://www.oceanbestpractices.org/repository/
- Litterbase: https://litterbase.awi.de/
- NCBI database: https://www.ncbi.nlm.nih.gov/
- Silva Database: https://www.arb-silva.de/
- Unite Database: https://unite.ut.ee/
- European Nucleotide Archive: https://www.ebi.ac.uk/ena/browser/home
- UNEW Instituitional Repository: https://data.ncl.ac.uk/
- European Open science Cloud: https://eosc-portal.eu/

FAIR: Findable (Identifiers)

- Making Data 'Findable' using Persistent Identifiers: https://www.openaire.eu/how-to-make-your-data-fair
- Using Identifiers for Open Access- for Authors and Research Materials: http://ec.europa.eu/information_society/newsroom/cf/dae/document.cfm?action=display&doc_id=4607

FAIR: Findable (Metadata)

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- Oceanographic specific vocabularies for metadata: https://www.bodc.ac.uk/resources/vocabularies/
- Explanations of Scientific Metadata: http://www.dcc.ac.uk/resources/curation-reference-manual/chapters-production/scientific-metadata
- Metadata Standards Directory Working Group: http://rd-alliance.github.io/metadata-directory/
- Open Data and Metadata Standards: https://joinup.ec.europa.eu/sites/default/files/document/2015-05/d2.1.2_training_module_2.2_open_data_quality_v1.00_en.pdf
- Use of DataCite for metadata provisions: https://guidelines.openaire.eu/en/latest/data/use_of_datacite.html

FAIR: Interoperable

- OpenAIRE Guidelines for Literature Repositories, Data Archives, and CRIS Managers based on CERIF-XML: https://guidelines.openaire.eu/en/latest/

FAIR: Reusable (licensing)

- Creative Commons licensing : https://creativecommons.org/licenses/
- Advice on commercialisation of research data: https://eudat.eu/data-access-and-re-use
- Licensing Wizard: https://b2share.eudat.eu/
- IPR Helpdesk Advice on seeking IP Professionals: https://www.iprhelpdesk.eu/sites/default/files/documents/Guide-IP-professionals.pdf
- IPR Helpdesk Factsheet on IPR Valuation: https://www.iprhelpdesk.eu/sites/default/files/newsdocuments/Fact-Sheet-IP-Valuation.pdf

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Annex 2 – NETTAG+ Dataset Inventory

Within Table 1 (below) an overview of all generated or collected NETTAG+ datasets will be provided in next updates of the DMP. All datasets within this table will be assessed (as part of the data prior notice process) and published in Open Access, unless restrictions are applied, which will be mentioned accordingly.

FAIR data observance for these datasets are indicated as follows –

Findable	DOI, Keywords, OpenAIRE indexing
Accessible	Long term preservation / Minimum hosting time
Interoperable	File types
Reusable	License/Restrictions

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Table 1 NETTAG+ Dataset Inventory

Dataset Title	Dataset Description	Persistent Identifier / DOI	ORCID / Contact	Open/Restricted	License	File type	Keyword(s)	Dataset Preservation / Availability (in years)	OpenAire	EU Funding Acknowledgement

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