20IND04   ATMOC

DATA MANAGEMENT PLAN

Grant Agreement number	20IND04
Project short name	ATMOC

Project full title	Traceable metrology of soft X-ray to IR optical constants and nanofilms for advanced manufacturing

Data management plan	1st □ 2nd X 3rd

TABLE OF CONTENTS

Report Status: CO Confidential, only for members of the consortium (including EURAMET and the European Commission Services)

1   Data management plan

1.1   *Data summary*

Questions	Answers
1 What is the purpose of the data collection/generation?	The purpose of the data collection in this project is to provide a basis for further research and development activities.
2 What is its relation to the objectives of the project?	The data base is strongly related to objective 4.
3 What types and formats of data will the project generate/collect?	The project will collect simulation data from different modelling approaches, experimental data from scatterometry, Mueller ellipsometry and reflectometry, and metadata.
4 Will you re-use any existing data and how?	It is not yet known that data will be re-used.
5 What is the origin of the data?	The data is generated through simulations and measurements.
6 What is the expected size of the data *(if known)*?	It is expected to generate small to medium size data sets.
7 Outline who might find it useful *('data utility')*?	The data can be useful to research groups, stakeholders and standardisation bodies.

1.2   *Findable, Accessible, Interoperable and Reusable (FAIR) Data*

1.2.1   **Making data findable, including provisions for metadata**

Questions	Answers
8 Are the data produced and/or used in the project discoverable with metadata?	Yes, according to 'data format and metadata' document (A4.3.1).
9 Are the data identifiable and locatable by means of a standard identification mechanism *(eg persistent and unique identifiers such as Digital Object Identifiers)*?	Yes, we indent to use Zenodo. Identification by doi. In addition, individual datasets are also uploaded to the Euramet repository.
10 What naming conventions will you follow?	We use naming convention typical for optics according to the 'data format and metadata' document (A4.3.1).
11 Will search keywords be provided that optimise possibilities for re-use?	Yes, by Zenodo. Keywords are defined in 'data format and metadata' document (A4.3.1).
12 Will you provide clear version numbers?	Yes, this is intended for the complete data base.
13 What metadata will be created? *If metadata standards do not exist in your discipline, please outline what type of metadata will be created and how.*	Simulated data: • Simulation environment and date • Simulation parameters • Version of the software used Experimental data: • Environmental parameters • Institute and date • Parameters of the experimental device • Parameters of the sample measured

1.2.2   **Making data openly accessible**

Questions	Answers
14 Which data produced and/or used in the project will be made openly available as the default? *If certain datasets cannot be*	The data generated in this project will be made publicly available by Zenodo.

shared (or need to be shared under restrictions), explain why, clearly separating legal and contractual reasons from voluntary restrictions.	
15 How will the data be made accessible *(e.g. by deposition in a repository)*?	The data will make public by the open science database solution Zenodo.
16 What methods or software tools are needed to access the data?	We are intended to use the open science database solution Zenodo.
17 Is documentation about the software required in order to access the data included?	This is not necessary.
18 Is it possible to include the relevant software *(e.g. in open source code)*?	The software that is developed within the project will be as open source. The software tools that are part of the JRP deliverable will be stored at a Git repository. Not all software tools used can be made open source due to license requirements.
19 Where will the data and associated metadata, documentation and code be deposited? *Preference should be given to certified repositories that support open access where possible.*	These data will be deposit in the open science database (Zenodo).
20 Have you explored appropriate arrangements with the identified repository?	Git lab is hosted by PTB (software tools). We will check the licence agreement and terms and conditions of Zenodo.
21 If there are restrictions on use, how will access be provided?	There are no restrictions planned.
22 Is there a need for a data access committee?	Not planned so far.
23 Are there well described conditions for access *(i.e. a machine readable license)*?	A standard licence will be provided for each data set.
24 How will the identity of the person accessing the data be ascertained?	Not necessary.

1.2.3   Making data interoperable

Questions	Answers
25 Are the data produced in the project interoperable, that is allowing data exchange and re-use between researchers, institutions, organisations, countries, etc. (*i.e. adhering to standards for formats, that are as far as possible compliant with available (open) software applications, and in particular facilitating re-combinations with different datasets from different origins)*?	Interoperability of the data is archived according to 'data format and metadata' document (A4.3.1).

26 What data and metadata vocabularies, standards or methodologies will you follow to make your data interoperable?	Standard vocabulary is used as far as possible in the project.
27 Will you be using standard vocabularies for all of the data types present in your data set, to allow inter-disciplinary interoperability?	Standard vocabulary is used as far as possible in the project.
28 If it is essential to use uncommon, or generate project specific, ontologies or vocabularies, will you provide mappings to more commonly used ontologies?	Standard vocabulary is used as far as possible in the project.

1.2.4 Increase data re-use (through clarifying licenses)

Questions	Answers
29 How will the data be licensed to permit the widest re-use possible?	An open access licence will be used. The level of access is to be determined later.
30 When will the data be made available for re-use? *If an embargo is required to allow time to publish or seek patents, specify why and how long this will apply, bearing in mind that research data should be made available as soon as possible.*	There is no embargo. The data will be provided when ready for publication.
31 Are the data produced and/or used in the project useable by third parties, in particular after the end of the project? *If the re-use of some data is restricted, explain why.*	Data generated in the project can be used by third parties.
32 How long will the data remain re-usable?	The data in the database can be used as long as the repository (Zenodo) is maintained.
33 Are data quality assurance processes described?	Not yet. This will be done subsequently. We intent to apply Quality Assurance Tools developed in the JNP MATHMET, as soon as it was approved by Euramet.

1.3 Allocation of resources

Questions	Answers
34 What are the estimated costs for making data Findable, Accessible, Interoperable and Reusable (FAIR) in your project?	The costs are difficult to estimate, but expected to be low.
35 How will these costs be covered? *Note that costs related to open access to research data are eligible in EMPIR (if compliant with the Grant Agreement conditions).*	The costs are covered by the project fund.

36 Who will be responsible for data management in your project?	PTB (coordination) and CEA (WP4 leader) are responsible. This my change until the next revision of DMP.
37 What are the costs and potential value of the long-term preservation of the data *(also state who decides on what data will be kept and for how long)*?	The costs are difficult to estimate, but expected to be low (Git lab). Zenodo will charge no costs.

1.4 Data security

Questions	Answers
38 What provisions are in place for data security *(including data recovery as well as secure storage and the transfer of sensitive data)*?	For the data set there is a backup and recovery system at Zenodo.
39 Is the data safely stored in certified repositories for long term preservation and curation?	Yes, the data for the data base will be safely stored at one institute (PTB) that ensures these requirements. Further data are stored under the responsibility of the individual institutes.

1.5 Ethical aspects

Questions	Answers
40 Are there any ethical or legal issues that could impact on data sharing? *You can also discuss this in the context of the outcomes of the ethics review and if relevant, include references to ethics report(s) and the ethics section in the Annex 1.*	No, it is not known that such kind of data will be shared.
41 Is informed consent for data sharing and long-term preservation included in questionnaires dealing with personal data?	This is not applicable.

1.6 Other

Question	Answer
42 Do you use other national/funder/sectorial/departmental procedures for data management? If yes, which ones?	No such data are intended to use.