



**NanoBRIGHT**

**“BRInGing nano-pHoTonics into the brain”**

Grant Agreement Number: 828972, Collaborative Project

Topic: H2020-FETOPEN-01-2018-2020 (FET-Open Challenging Current Thinking)

**DATA MANAGEMENT PLAN I**

*Project start date:* 01.05.2019

*Duration:* 48 months



## Contents

|   |           |
|---|-----------|
| <b>1. Introduction</b>  | <b>3</b>  |
| <b>2. DMP management and update</b>                                 | <b>5</b>  |
| <b>3. Data summary</b>  | <b>6</b>  |
| <b>3.1 Nanobright datasets</b>                                      | <b>6</b>  |
| <b>3.2 Data purpose and utility</b>                                 | <b>7</b>  |
| <b>3.3 Data technical details: origin, type, formats &amp; size</b> | <b>8</b>  |
| <b>4. FAIR data</b>   | <b>11</b> |
| <b>4.1 Making data Findable including provisions for metadata</b>   | <b>11</b> |
| <b>4.2 Making data openly Accessible</b>                            | <b>12</b> |
| <b>4.3 Making data Interoperable</b>                                | <b>14</b> |
| <b>4.4 Increase data Re-use</b>                                     | <b>14</b> |
| <b>5. Ethics Aspects</b>  | <b>16</b> |
| <b>6. Allocation of resources</b>                                   | <b>16</b> |
| <b>7. Data security</b>   | <b>17</b> |
| Annex 1 <b>Keywords definitions</b>                                 | <b>17</b> |
| <b>Annex 2     NanoBright datasets forms</b>                        | <b>18</b> |
| DS1 TITLE XXXXXXXXXXXX  | 18        |



## 1. Introduction

This deliverable presents the first version of the Data Management Plan (DMP) for the Nanobright project (the Project). This document provides a preliminary analysis of the data management policy to be applied by the Partners to datasets generated within the Project. In particular, the DMP identifies the main data to be generated within Nanobright, outlining the handling of research data during the project as well as how and what parts of the data sets will be openly shared.

This document is intended for consortium internal use, aiming to provide guidance to Project Partners on data management. The DMP is indeed a useful tool to agree on data processing of the Nanobright project, facilitating the creation of a common understanding and, where possible, common practices.

This deliverable is submitted to the European Commission in M6 of Nanobright (October 2019, D1.1) and represents a preliminary plan. The document will be further detailed, updated, and corrected in line with the project life cycle.

This document has been produced following the EC guidelines and templates for project participating in the open Research Data Pilot:

- H2020 Annotated Model Grant Agreement - Open access to research data<sup>1</sup>
- Guidelines to rules on Open Access to Scientific Publications & Open Access to Research Data in Horizon 2020<sup>2</sup>
- Guidelines on FAIR Data Management in Horizon 2020<sup>3</sup>
- Template for the Data Management Plan<sup>4</sup>
- OpenAIRE Research Data Management Briefing Paper<sup>5</sup>
- DCC Checklist for writing a DMP<sup>6</sup>

---

<sup>1</sup> Version 4.0, April 2017: [http://ec.europa.eu/research/participants/data/ref/h2020/grants\\_manual/amga/h2020-amga\\_en.pdf#page=232](http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/amga/h2020-amga_en.pdf#page=232)

<sup>2</sup> Version 3.2, March 2017: [http://ec.europa.eu/research/participants/data/ref/h2020/grants\\_manual/hi/oa\\_pilot/h2020-hi-oa-pilot-guide\\_en.pdf](http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/oa_pilot/h2020-hi-oa-pilot-guide_en.pdf)

<sup>3</sup> Version 3.0, July 2016: [http://ec.europa.eu/research/participants/data/ref/h2020/grants\\_manual/hi/oa\\_pilot/h2020-hi-oa-data-mgt\\_en.pdf](http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/oa_pilot/h2020-hi-oa-data-mgt_en.pdf)

<sup>4</sup> Version 1.0, October 2016: [http://ec.europa.eu/research/participants/data/ref/h2020/gm/reporting/h2020-tpl-oa-data-mgt-plan\\_en.docx](http://ec.europa.eu/research/participants/data/ref/h2020/gm/reporting/h2020-tpl-oa-data-mgt-plan_en.docx)

<sup>5</sup> April 2017, <https://www.openaire.eu/briefpaper-rdm-infonoads>

<sup>6</sup> Version 4.0, 2014: [http://www.dcc.ac.uk/webfm\\_send/1279](http://www.dcc.ac.uk/webfm_send/1279)



It is also important to remark that this Data Management Plan reflects the provisions established by the project contracts and complements the project exploitation, dissemination and IPR procedures and decisions defined in several deliverables.

The relationship between the DMP and each key document are described below in Table1.

**TABLE 1 – RELATION TO PROJECT KEY DOCUMENTS AND DELIVERABLES**

| Document                          | Access <sup>7</sup> | Availability   | Relationship to Nanobright DMP   |
|-----------------------------------|---------------------|--|--|
| Grant Agreement: core text        | Confidential        | <ul style="list-style-type: none"> <li>Participant portal;</li> </ul>                                | <ul style="list-style-type: none"> <li>Article 27 details the obligation to protect results (27.1) and of providing information on EU funding (27.3)</li> <li>Article 29 details the obligation to disseminate results, defines open access to research data (29.3) as well as the obligation to provide information on EU funding (29.4) and to exclude Commission responsibility via a disclaimer (29.5)</li> <li>Article 36 details confidentiality obligations</li> <li>Article 37 details security-related obligations</li> <li>Article 39 details obligations to protect personal data</li> </ul>  |
| Grant Agreement: Annex 1 – Part A | Confidential        | <ul style="list-style-type: none"> <li>Participant portal;</li> <li>Nanobright repository</li> </ul> | <ul style="list-style-type: none"> <li>WP6 – Task 6.4 activities, responsibilities, timing and deliverables of Data Management actions.</li> </ul>   |
| Consortium Agreement              | Consortium          | <ul style="list-style-type: none"> <li>Nanobright Repository</li> </ul>                              | <p>Chapter 4.1 on the General principles: <i>“Each Party undertakes to notify promptly, in accordance with the governance structure agreed in the Coordination Agreement and directly to the Coordinator, any significant information, fact, problem or delay likely to affect the Project, submission of the deliverables or reports in accordance with the Grant Agreement and shall promptly provide all information reasonably required by the Coordinator to carry out its tasks. Each Party shall take reasonable measures to ensure the accuracy of any information or materials it supplies to the Coordinator or the Parties.”</i> This is a general declaration of the partners to abide by the rights and obligations set out in the Grant Agreement.</p> |

<sup>7</sup> *Confidential*: limited to Consortium, European Commission, appointed external evaluators and other EU bodies; *Consortium*: originally conceived as consortium but can be made available to European Commission, appointed external evaluators and other EU bodies if necessary; *Public*: public and fully open availability



| Document                                   | Access <sup>7</sup> | Availability | Relationship to Nanobright DMP   |
|--|---------------------|--------------|--|
| Dissemination and exploitation plan (D6.2) | Confidential        | M6           | The deliverable will further define the project target stakeholders as well as open access approach in relation to both publications and data. The deliverable will detail the exploitation and IPR plan and policies of the project |
| Communication material (D6.4)              | Public              | M6           | The deliverable will detail the communication materials including visual identity and basic project rules for communication tailored to different target audiences (project logo, PowerPoint presentations, social network posts)    |

## 2. DMP management and update

The project first development and future updates mainly rely on the collection of Data Management forms filled out for each project datasets by project partners responsible for producing data (Annex 2).

Two formal revisions to be submitted to the European Commission are foreseen in M24 and M48. Nevertheless, the document will be open for constant update and further development all along the project duration.

Different versions will be identified by a version number and a date. The versioning number will be composed of two digits separated by a period: the digit before the period represents in ascending order the official versions submitted to the European Commission as deliverables; digits after the period represent the periodic internal revisions of such official versions.

Official versions will be stored on the project online repository as PDF files. An editable word copy of the latest version will also be stored to facilitate revision and update of the already identified datasets and policies. Should a new dataset be identified along the project implementation, Partners can submit a new form to the coordinator. IIT will then be in charge of updating the document and its annexes, uploading them on the repository and notifying the consortium through the project mailing list system.



### 3. Data summary

#### 3.1 Nanobright datasets

In this paragraph we list the types of dataset that will be produced by Nanobright partners and the structure of their content.

*Type 1: Datasets concerning developed optical setups, can include:*

- A detailed description of the optical setup and its 2D or 3D drawing
- Any custom code implemented to control the setup
- Any custom code implemented to elaborate acquired data
- Example of data that can be acquired using the developed setup
- Raw data collected during the setup characterization

*Type 2: Datasets concerning the Design and characterization of plasmonic metamaterials, can include:*

- A Computer Aided Design file of the structure together with its description
- Any custom code implemented to perform the simulation
- Raw data collected during the design describing the electromagnetic field

*Type 3: Datasets concerning the Design and characterization of the realized devices, can include:*

- A Computer Aided Design file of the device together with its description
- Any custom code implemented to perform the simulation
- Raw data collected during the design describing the electromagnetic field
- A metadata file containing the parameters of the custom setup used to realize the device (if relevant)

*Type 4: Datasets concerning the acquired Raman Spectra from tissue, can include:*

- The acquired raw data (two dimensional matrices with signal intensity and Raman shift in  $\text{cm}^{-1}$ )
- A text file describing the experiment implemented to collect the data
- A metadata file containing the parameters of the custom setup used to collect the data and the main characteristics of the device used to collect it.

*Type 5: Datasets concerning histology, can include:*

- The acquired raw data (images)
- A text file describing the experiment implemented to collect the data
- A metadata file containing main characteristics of the device implanted before the histology and how it was used.



*Type 5: Datasets concerning electro and optophysiology, can include:*

- The acquired raw data (multidimensional matrices)
- A text file describing the experiment implemented to collect the data
- A metadata file containing the main characteristics of the device implanted before the histology and how it was used.

### 3.2 Data purpose and utility

The main purposes of the data generation of Nanobright are:

- *Design and characterization of plasmonic metamaterials*, including results of numerical simulations and experiments to obtain the expected plasmonic resonances (related to Objectives 1, 2 and 3)
- *Design and characterization of the realized devices*, including results of numerical simulations and experiments to realize the devices envisioned by the project
- *Design and characterization of optical setups*, including the implemented optical paths to use and realize and use the devices built during the project
- *Identify spectral features in Raman spectrum from brain tissue*, to try distinguishing between different types of tumorigenic tissue and to identify oxidative stress
- *Identify if heat generated by the realized devices can disrupt the blood-brain-barrier*, to understand if the system we will develop can improve drug delivery in specific spots of the brain

Detailed objectives for each dataset to be generated will be identified by the partner submitting the dataset identified in Annex 2 table. Each partner will submit the form to the coordinator when a dataset is ready to be published on the repository.

Aside to the utility for Nanobright teams, the data to be developed may be useful to several external entities and stakeholders who have been already identified in both Description of Action and Dissemination Plan. These mainly include:

- Scientific community
  - o Neuroscientists
  - o Computer science community
  - o Optical Engineers
  - o Micro and Nanotechnologies Engineers
  - o Solid State Physicists
  - o Electronic Engineers



- Education community
  - o School teachers
  - o Curriculum developers
- Other
  - o Policy makers
  - o Commercial/companies

Detailed expected utility for each dataset to be generated has been identified in Annex 2 tables.

### 3.3 Data technical details: origin, type, formats & size

NanoBright will not re-use any existing data but rather generate new ones, since the partners are devoted to develop new technologies to apply plasmonic metamaterials to the study and treatment of pathological states of the brain .

The data will be gathered by various researchers and different partners as detailed in **Errore. L'origine riferimento non è stata trovata.** and Annex 2.

The data generated within the project will mainly be experimental and theoretical and both quantitative and qualitative in nature. Datasets will be generated through various data collection techniques: numerical simulation, spectroscopic measurements, *ex vivo* and *in vivo* experiments.

More in details, NanoBright will generate different categories of data:

- **Raw collected data** – not yet subjected to quality assurance or control
- **Validated collected data** – raw data which have been evaluated for completeness, verified for compliance with standard operating procedure and validated for specific quality
- **Analyzed collected data** – validated data which have been analyzed through statistical operations or through qualitative analysis

In order to maximise the dataset interoperability, management and re-use, NanoBright consortium agreed to use, when possible, formats that are non-proprietary, unencrypted, uncompressed and commonly used by the research community. Since there is no unique recommendations on data recommended formats and neither the selected data repository<sup>8</sup> provide such indication, NanoBright

---

<sup>8</sup> As later specified: Zenodo, <http://about.zenodo.org/policies/>



will follow the indications of the UK Data Archive<sup>9</sup>, recommended by OpenAIRE, as indicated in Table 1.

**TABLE 1 - DATA RECOMMENDED FORMAT**

| Type of data<br>[Acronym]   | Recommended formats  | Other acceptable formats   |
|---|--|--|
| Quantitative tabular data with extensive metadata<br>(a dataset with variable labels, code labels, and defined missing values, in addition to the matrix of data)<br>[QTDEMD] | <ul style="list-style-type: none"> <li>SPSS portable format (.por)</li> </ul>  | proprietary formats of statistical packages: <ul style="list-style-type: none"> <li>SPSS (.sav),</li> <li>Stata (.dta),</li> <li>MS Access (.mdb/.accdb)</li> </ul>  |
| Quantitative tabular data with minimal metadata<br>(a matrix of data with or without column headings or variable names, but no other metadata or labelling)<br>[QTDMMD]       | <ul style="list-style-type: none"> <li>comma-separated values (.csv)</li> <li>tab-delimited file (.tab)</li> <li>delimited text with SQL data definition statements</li> </ul> | <ul style="list-style-type: none"> <li>delimited text (.txt) with characters not present in data used as delimiters</li> <li>widely-used formats:               <ul style="list-style-type: none"> <li>MS Excel (.xls/.xlsx),</li> <li>MS Access (.mdb/.accdb),</li> <li>dBase (.dbf),</li> <li>OpenDocument Spreadsheet (.ods)</li> </ul> </li> </ul> |
| Qualitative data (textual)<br>[QTD]   | <ul style="list-style-type: none"> <li>Rich Text Format (.rtf)</li> <li>plain text, ASCII (.txt)</li> <li>Adobe Portable Document Format (PDF/A, PDF) (.pdf)</li> </ul>        | <ul style="list-style-type: none"> <li>Hypertext Mark-up Language (.html)</li> <li>widely-used formats: MS Word (.doc/.docx)</li> <li>some software-specific formats: NUD*IST, NVivo and ATLAS.ti</li> </ul>   |
| Digital image data<br>[DID]   | <ul style="list-style-type: none"> <li>TIFF 6.0 uncompressed (.tif)</li> </ul>   | <ul style="list-style-type: none"> <li>JPEG (.jpeg, .jpg, .jp2) if original created in this format</li> <li>GIF (.gif)</li> <li>TIFF other versions (.tif, .tiff)</li> <li>RAW image format (.raw)</li> <li>Photoshop files (.psd)</li> <li>BMP (.bmp)</li> </ul>  |

<sup>9</sup> <http://www.data-archive.ac.uk/create-manage/format/formats-table>



|                                 |   |   |
|---------------------------------|---|---|
|                                 |   | <ul style="list-style-type: none"><li>• PNG (.png)</li></ul>  |
| Digital audio data [DAD]        | <ul style="list-style-type: none"><li>• Free Lossless Audio Codec (FLAC) (.flac)</li></ul>  | <ul style="list-style-type: none"><li>• MPEG-1 Audio Layer 3 (.mp3) if original created in this format</li><li>• Audio Interchange File Format (.aif)</li><li>• Waveform Audio Format (.wav)</li></ul>    |
| Digital video data [DVD]        | <ul style="list-style-type: none"><li>• MPEG-4 (.mp4)</li><li>• OGG video (.ogv, .ogg)</li><li>• motion JPEG 2000 (.mj2)</li></ul>  | <ul style="list-style-type: none"><li>• AVCHD video (.avchd)</li></ul>  |
| Documentation and scripts [DaS] | <ul style="list-style-type: none"><li>• Rich Text Format (.rtf)</li><li>• PDF/UA, PDF/A or PDF (.pdf)</li><li>• XHTML or HTML (.xhtml, .htm)</li><li>• OpenDocument Text (.odt)</li></ul> | <ul style="list-style-type: none"><li>• plain text (.txt)</li><li>• widely-used formats:<ul style="list-style-type: none"><li>- MS Word (.doc/.docx),</li><li>- MS Excel (.xls/.xlsx)</li></ul></li></ul> |

The project will generate data with an overall size of approx. 0.5 GB. Each datasets though will have limited size up to 1 GB maximum, well within the maximum upload limit recommended by the Zenodo platform of 50 GB.



## 4. FAIR data

### 4.1 Making data Findable including provisions for metadata

Each dataset will have Digital Object Identifier (DOI) so that it is findable and persistently citable. The repository chosen by the NanoBright consortium, Zenodo, assigns a versioned DOI, enabling to users the possibility to update the shared material.

NanoBright will follow a linear versioning rule<sup>10</sup>, without distinguishing between major and minor data revision.

The consortium has also established a naming convention for project datasets. Aside to the temporarily identified title, shared project datasets name should be "DSxxx\_NB\_partner\_title\_Vyyy" contain the following items:

- 1) "DS" (short for dataset) followed by a unique chronological number of the project datasets, in substitution of the xxx
- 2) A prefix "NB" indicating a NanoBright dataset
- 3) *partner* indicates the acronym of the partner that generated the DS (IIT, CNRS, CSIC or CNIO)
- 4) *title* indicates the title of the dataset
- 5) Versioning number, in substitution of the yyy

For instance, the first project dataset will be named: "DS1\_NB\_ IIT\_Mesoscope Implementation\_v1"

The name of the single files within a dataset has been established as well, and it will be DSXXX\_YYYY\_MM\_DD\_*Partner\_Type of data*\_.xxx, where:

- 1) "DS" (short for dataset) followed by a unique chronological number of the project datasets, in substitution of the Italic XXX
- 2) YYYY\_MM\_DD Indicates the year, month and day the data was acquired or the file was created
- 3) *Partner* The acronym of the partner that generated the DS (IIT, CNRS, CSIC or CNIO)
- 4) The title of the dataset
- 5) Versioning number

---

<sup>10</sup> <https://blogs.openaire.eu/?p=2010>



To increase findability of each dataset and consequent use, search keywords will be provided once uploaded to Zenodo.

Each project records will be annotated with metadata that includes the identifier of the data it describes and that are indexed in a searchable resource to increase data findability.

Zenodo follows the JSON metadata schema<sup>11</sup> and Data Cite metadata standards and already provides key data documentation such as:

- Creators and their affiliation
- Data location and persistent identifier
- Chosen license
- Funding
- Related/alternate identifiers
- Contributors
- References
- Related journals, conferences, books and/or thesis
- Subjects

In addition to this, complete project documentation will accompany the data to allow correct data interpretation and eventual experiment reproduction. This will include:

- Dataset overview – number of sub-datasets, if any; status of documented data (complete or in progress); eventual plan of future update
- Methodological information – methods used for experimental design, data collection and data processing; instruments and software used; experimental conditions; quality assurance procedures performed on data.

#### 4.2 Making data openly Accessible

Different levels of confidentiality are considered within the NanoBright consortium:

- *Confidential to partner.* This option is applied when, regardless of the long-term value and scope for wider use, the dataset contains data that can be shared only between a limited number of partners in the consortium (for instance non complete datasets or datasets that have to be generated in a collaborative experiment). Data expected to be included in patent applications, if any, will be shared between partners at this level of confidentiality.

---

<sup>11</sup> <https://zenodo.org/schemas/records/record-v1.0.0.json>



- *Confidential to consortium.* This option is applied for data not yet published in peer-reviewed scientific papers or that are intended to be published before they are made public available.
- *Public.* This option is applied to most NanoBright datasets.

While datasets confidential to partner or to the consortium will be safely stored by the developing partner and in a private download area of the website, public data will be shared via Zenodo platform.

Since there is no precise disciplinary repository nor all partners have access to an institutional one, Zenodo ensures unified management procedures for both data and publications. In order to facilitate deposit, update, and management, a project community will be setup and linked to project website: <https://zenodo.org/communities/xxxxxxx>. Partners wishing to deposit new datasets or publications can access the upload URL<sup>12</sup> that will automatically add new records to the community. Aside to the project one, additional communities should be indicated in the uploading phase to increase the document visibility: these should include at least the "European Commission Funded Research (OpenAIRE)" curated by Zenodo<sup>13</sup>.

In line with Zenodo policies, when uploading public datasets NanoBright partners will chose among three main options:

- *Open Access.* This is the highly recommended option which provides free access and rights to data
- *Embargoed Access.* This option will be applied in case of data underpinning publications. Data will indeed be deposited as soon as possible but open access will be provided only once such data have been published in a scientific paper to preserve the authorship of all authors involved. In such case, information about data will be published and details of when the data will become available will be included in the metadata.
- *Restricted Access.* This option, although not recommended, will be adopted for those data whose access to should be monitored and approved by the depositor if certain requirements to be defined are met.
- *Closed Access.* This option will be adopted for all datasets whose confidentiality is limited to consortium and EC services.

---

<sup>12</sup> [https://zenodo.org/deposit/new?c=h2020\\_wedraw](https://zenodo.org/deposit/new?c=h2020_wedraw)

<sup>13</sup> <https://zenodo.org/communities/ecfunded>



Although the embargoed or closed access option provided by Zenodo could be a valid option, the consortium agrees that research data linked to exploitable results will not be deposited to avoid compromising their protection or commercialization prospects.

Visibility and access to publicly shared datasets will be facilitated by Zenodo metadata and search facility as well as to the automatic link to both OpenAIRE<sup>14</sup> and project Cordis project page<sup>15</sup>.

### 4.3 Making data Interoperable

The consortium will strive to collect and document the data in a standardized way to ensure that datasets can be correctly understood, interpreted, and re-used.

A documentation describing the main variables included in the datasets will be provided in order to support the interpretation and re-use.

Standard vocabulary will be used for all data types present in the dataset to allow inter-disciplinary interoperability. If non-standard vocabulary will be employed, the documentation will include a general glossary used to share information about the vocabulary and general methodologies employed for the generation of the dataset.

### 4.4 Increase data Re-use

Public data will be made available for re-use. To avoid any potential doubt, the consortium will attach specific licenses to the deposited data to define all conditions under which the work is provided under either open or restricted access.

Zenodo automatically offers five different licensing options among Creative Commons Licenses, all foreseeing the attribution requirement to appropriately credit the authors for the original creation (credit, link to license and changes indications).

When possible, the consortium proposed license is **Creative Commons Attribution 4.0 International (CC BY 4.0)**<sup>16</sup> allowing third parties to share and adapt data with no restrictions as long as attribution is provided.

In case the partner would like to further limit access to the uploaded data, alternative licenses will be selected also through the CC license chooser among the Zenodo offered options:

---

<sup>14</sup> [https://www.openaire.eu/search/project?projectId=corda\\_h2020::80ee4a6af7ec0b1443afe4a1ff850ed0](https://www.openaire.eu/search/project?projectId=corda_h2020::80ee4a6af7ec0b1443afe4a1ff850ed0)

<sup>15</sup> [http://cordis.europa.eu/project/rcn/206189\\_en.html](http://cordis.europa.eu/project/rcn/206189_en.html)

<sup>16</sup> <https://creativecommons.org/licenses/by/4.0/>



- **Creative Commons Attribution Share-Alike 4.0 International (CC BY-SA 4.0)**<sup>17</sup> – allowing adaptation for any purpose to the work to be shared as long as it is distributed under the same original licence (or a license listed as compatible);
- **Creative Commons Attribution-NoDerivatives 4.0 International (CC BY-ND 4.0)**<sup>18</sup> – allowing sharing for any purpose, but forbidding the distribution of derivative work;
- **Creative Commons Attribution-NonCommercial 4.0 International (CC BY-NC 4.0)**<sup>19</sup> – allowing sharing and adaptation to the work, but limiting the use of the shared work to non-commercial purposes;
- **Creative Commons Attribution-NonCommercial- NoDerivatives 4.0 International (CC BY-NC-ND 4.0)**<sup>20</sup> – allowing sharing but restricting both derivative work and commercial use of data.

Although not directly provided through Zenodo, an additional Creative Commons Attribution license can be applied upon specific request to Zenodo team:

- **Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International (CC BY-NC-SA 4.0)**<sup>21</sup> – allowing adaptation to the work to be shared as long as it is distributed for non commercial purposes and under the same original licence (or a license listed as compatible)

All data will be stored in Zenodo as soon as possible, at the latest upon publication of the related scientific publication and will remain re-usable for the lifetime of the repository, which is currently warranted for a minimum of 20 years.

---

<sup>17</sup> <https://creativecommons.org/licenses/by-sa/4.0/>

<sup>18</sup> <https://creativecommons.org/licenses/by-nd/4.0/>

<sup>19</sup> <https://creativecommons.org/licenses/by-nc/4.0/>

<sup>20</sup> <https://creativecommons.org/licenses/by-nc-nd/4.0/>

<sup>21</sup> <https://creativecommons.org/licenses/by-nc-sa/4.0/>



## 5. Ethics Aspects

Our consortium will use human samples if time allows. The main goal will be to validate the probes in human specimens to perform similar measurements as those previously optimized in experimental models. Particularly, we will use fresh organotypic cultures of primary and/ or metastatic tumors obtained during the clinical practice (neurosurgery). In order to use these samples we will obtain all ethical requirements as specified by Biomedical Research Act (BRA) further developed in the 1716/2011 Royal Decree. The data generated with human tissue will be shared following the legal requirements as stated in the Regulation (EU) 2016/679 that is transposed into the Spanish legal system as Organic Law 3/2018, December 5, which establishes the rules regarding the protection of natural persons with regard to the processing of personal data and the rules regarding the free movement of such data.

## 6. Allocation of resources

At this preliminary stage of the project, the only costs foreseen for data management is related to the working time needed to set up and perform the data collection and analysis activities. Since Zenodo offers free data archiving, eventual long-term storage costs can be incurred for data confidential to the single partner.

The project coordinator is in charge of the DMP from both the scientific and technical perspective. IIT role include the first version release as well as the regular update.

Validation and registration of datasets and metadata, as well as backing up data for sharing through open access repositories is the responsibility of the partner that generates the data in the WP. Each partner will identify a specific responsible person for each dataset. Quality control of these data is the responsibility of the relevant WP leader, supported by the Project Coordinator. Each partner should respect the policies set out in this DMP.

Finally, in line with Grant Agreement (art 29.1) and Consortium Agreement (art 8.4.2.1), each partner should give at least 45 days prior notice to the other partners before disseminating/publishing data.



## 7. Data security

As previously stated, each partner is in charge of backing up data that will be openly shared through Zenodo.

Generally, a simple local backup system will be guaranteed during the project lifespan.

Once uploaded on Zenodo, data will also be stored in CERN Data Centre in multiple online independent replicas. Long-term preservation is guaranteed even in the unlikely event that Zenodo will cease operations migration of content on other repositories is planned.

### Annex 1 Keywords definitions

|  |  |
|--|--|
| <b>Anonymised data</b>                 | Data rendered anonymous in such a way that the data subject is no longer identifiable  |
| <b>Data Management Plan (DMP)</b>      | A document outlining how the research data collected or generated by a research project in Horizon 2020 will be handled during and after project end. It describes what data will be collected / generated, what methodology and standards are used, whether and how this data will be shared and/or made open, and how it will be curated and preserved.  |
| <b>Digital Object Identifier (DOI)</b> | A persistent identifier used to uniquely identify objects, standardised by the International Standard Organisation.  |
| <b>License</b>                         | Legal conditions under which an item or piece of knowledge being transferred is provided   |
| <b>Metadata</b>                        | Information about the research data, structured information explaining the purpose, origin, time references, geographic location, creator, access conditions and terms of use of a data collection.  |
| <b>Open Access (OA)</b>                | The practice of providing on-line access to scientific information that is free of charge to the reader. In the context of Research and Innovation, open access typically focuses on access to 'scientific information', which refers to two main categories: peer-reviewed scientific research articles (published in academic journals) and scientific research data (data underlying publications and/or raw data). |
| <b>Open Access to research data</b>    | The practice of providing access and the possibility to re-use digital research data. In a research context, examples of data include statistics, results of experiments, measurements, observations resulting from fieldwork, survey results, interview recordings, and images. Openly accessible research data can typically be accessed, mined, exploited, reproduced and disseminated free of charge for the user. |
| <b>Open research data</b>              | Openly accessible research data can typically be accessed, mined, exploited, reproduced and disseminated, free of charge for the user.   |
| <b>Personal data</b>                   | Any information relating to a natural person who is either identified or who could be identifiable by that data (e.g., by reference to an identifier such as a name, an identification number, location data, online identifier or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural or social identity of that person).   |
| <b>Repository</b>                      | Digital archives collecting, preserving and displaying datasets, related documentation and metadata.   |
| <b>Research data</b>                   | Research data refers to information, in particular facts or numbers, collected to be examined and considered as a basis for reasoning, discussion or calculation.  |
| <b>Zenodo</b>                          | Research data repository created by CERN through the OpenAIRE project to provide a place for researchers to deposit datasets.  |



## Annex 2 NanoBright datasets forms

DS1 TITLE XXXXXXXXXXXX

|  |  |
|--|--|
| <b>Responsible partner</b>                       |  |
| <b>Other partners involved</b>                   |  |
| <b>Goal and purpose</b>                          |  |
| <b>Relation to NanoBright project objectives</b> |  |
| <b>Related to NanoBright task(s)</b>             |  |
| <b>Dataset type</b>                              |  |
| <b>Data Origin</b>                               |  |
| <b>File format(s)</b>                            |  |
| <b>Expected volume data</b>                      |  |
| <b>Expected time of delivery</b>                 |  |
| <b>How data will be acquired and processed</b>   |  |
| <b>Data Repository</b>                           |  |
| <b>DOI</b>                                       |  |
| <b>Permanent link</b>                            |  |
| <b>Metadata description</b>                      |  |
| <b>Restriction on sharing</b>                    |  |
| <b>Copyright &amp; IP issues management</b>      |  |
| <b>Duration</b>                                  |  |
| <b>Licensing</b>                                 |  |
| <b>Resourcing</b>                                |  |
| <b>Long term value</b>                           |  |
| <b>Backup procedures</b>                         |  |
| <b>Ethical issues management</b>                 |  |