

# D9.4

## Data Management Plan 2





<b>PROJECT</b>	BBTWINS
<b>PROJECT NUMBER</b>	101023334
<b>PROJECT TITTLE</b>	Digital twins for the optimization of agrifood value chain processes and the supply of quality biomass for bio-processing
<b>PROGRAM</b>	H2020-BBI-JTI-2020
<b>START DATE</b>	1 June 2021
<b>DURATION</b>	48 months
<b>DELIVERABLE NUMBER</b>	D9.4
<b>DELIVERABLE TITTLE</b>	Data Management Plan 2
<b>SCHEDULE DATE &amp; MONTH</b>	31 May 2023 (M24)
<b>ACTUAL SUB. DATE &amp; MONTH</b>	23 May 2023 (M24)
<b>LEAD BENEFICIARY NAME</b>	CTIC CITA
<b>TYPE OF DELIVERABLE</b>	Report
<b>DISSEMINATION LEVEL</b>	PU level

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*This project has received funding from the Bio Based Industries Joint Undertaking under the European Union's Horizon 2020 research and innovation programme under grant agreement No 101023334.*



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## Glossary, abbreviations and acronyms

<b>DMP</b>	Data Management Plan
<b>ERP</b>	Enterprise Resource Planning
<b>FAIR</b>	Findable, Accessible, Interoperable and Reusable
<b>FAIR</b>	Findable, Accessible, Interoperable and Reusable
<b>GDPR</b>	General Data Protection Regulation
<b>LCA</b>	Life Cycle Analysis
<b>MES</b>	Manufacturing execution system
<b>MOM</b>	Manufacturing Operations Management software
<b>NDVI</b>	Normalized Difference Vegetation Index
<b>SLAM</b>	Simultaneous Localization and Mapping

# Executive Summary

This document is an update of a previous deliverable D9.3 Data Management Plan (DMP) submitted by November 2021. The current document is an update of D9.3 and adds the following aspects:

- About BBTWINS and the consortium
- Updates on raw feedstock and livestock data
- Updates on external user data
- Updates on making data openly accessible.
- Updates on allocation of resources
- Updates on data security
- Updates on ethical aspects

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# 1. Introduction

## 1.1. About BBTWINS and the consortium

Bio-Based Digital Twins (BBTWINS) aims to develop a digital platform for the optimization of agri-food value chain processes and the supply of quality biomass for bioprocessing.

The platform will be based on ‘digital twins’ technology – creating a real-time digital replica of physical processes in the agri-food industry. BBTWINS will also combine Artificial Intelligence (AI), Machine Learning, the Internet of Things (IoT) and software analytics in this single platform.

With 13 partners in 7 countries, the BBTWINS consortium will be focusing on meat and fruit production, integrating the value chain (from crop to final product) and will define the optimal pathway for each feedstock to maximize efficiency and minimize losses – without impacting quality.

The technical involvement of the key partners involved in this deliverable will be as high-level described below:

- CTIC-CITA: the coordinator will develop mathematical models to simulate physical and chemical food technology processes in each use case (pork meat and peaches)
- SOLTEC with its third party NORLEAN will develop the digital twin for each use case.
- PANOIMAGEN will focus on sensors to gather necessary data from and for each use case.
- STELVIOTECH will use blockchain technology to deploy traceability in the production chains of each use case.
- PORTESA, with its third parties CARTESA and AIRESANO, is one of the two use cases of BBTWINS. Portesa’s business is focused on feed for pigs, their breeding and farming; while Cartesa is the slaughterhouse providing fresh meat to be marketed and other meat to be cured; Airesano cures pork meat in its facilities to be later marketed. NATURUEL, the last third party of Portesa, clusters Portesa, Cartesa and Airesano under its own group and brand and managed the R&D of the three companies.
- VTT will focus on logistics and supply chain optimization of Portesa and its third parties.
- DIMITRA is the second use case of BBTWINS, being a cooperative of farmers mainly harvesting peaches and nectarines and sorting, packaging and storing fruit in their facilities to be later sold.
- VITO will concentrate on the optimization of the supply chain of DIMITRA.
- CVR will lead the work based on biomass and valorization of wastes from the two use cases.

## 1.2. Objectives

The procedures that will be followed in BBTWINS project for data collection, storage, protection, retention and destruction will comply with national and EU legislation (Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons regarding the processing of personal data and on the free movement of such data).

The data will be collected and managed following strict procedures to avoid misuse and to respect rights of the data owners guaranteed by EU law.

This Data Management Plan aims to provide an analysis of the main elements of the data management policy regarding all the datasets that will be generated by the project and provide a solid procedure to guarantee open and free access to them.

## 1.3. Relation to other deliverables

This document is an update of a previous deliverable D9.3 Data Management Plan 1 submitted by November 2021. Regarding data is the second and last deliverable. Regarding Management Plans, is the fourth and last after the mentioned D9.3, D9.1 Project Management Handbook and D9.2 Quality Management Plan.

Specific changes to the previous version of D9.3 are as follows:

- About BBTWINS and the consortium
- Updates on raw feedstock and livestock data
- Updates on external user data
- Updates on making data openly accessible
- Updates on allocation of resources
- Updates on data security
- Updates on ethical aspects

## 2. Data Summary

### 2.1. Purpose of the Data collection

The aim of this DMP 2 is to re-assess all the project data requirements and to enhance the utilization of the project data. This DMP 2 is a 'living' document and can be modified according to the project needs. This document will be updated and extended, if needed, through the lifecycle of BBTWINS project. Every time the document is updated, all the partners will be duly informed about the updates and the changes made with respect to the previous version.

### 2.2. Relation to the objectives of the project

The following objectives of the project have relation with this document:

- Objective 1: To properly characterize each step of the agri-food value-chains, gathering information at process level
- Objective 2: To improve feedstock availability and sustainability for bio-based operations
- Objective 3: To provide novel bio-based products from feedstock valorization
- Objective 4: To develop BBTWINS virtual tools for informing decision-making and optimizing bio-based processes in agri-food value chains
- Objective 5: To provide end-to-end traceability of the products from raw materials to the end users
- Objective 6: To validate the BBTWINS digital tools in a relevant and real-life environment
- Objective 7: To contribute to the reduction of GHG emissions and environmental impacts in the agri-food sector

### 2.3. Types and data collected

BBTWINS will develop two digital twins that will be fed by several types of data from the project partners, especially from PORTESA and DIMITRA. Data coming from several sources such as Enterprise resource planning software (ERPs), Manufacturing execution system (MES), and Manufacturing Operations Management software (MOM) (on-premises data), and near real-time data will be considered. Crop-data will be collected using in situ sensors, sensors for farm machinery and remote sensing (i.e., cameras on board tractors, satellite data). The project also envisaged Life Cycle Analysis, which in turn requires data of several kinds.



Deliverable D1.1 includes a first, preliminary description of the main parameters (or data) to be captured for the digital twin. The two partners providing most of the key data will be PORTESA and DIMITRA. In addition, other data is already being collected by these two partners for their own business processes and will be incorporated in the digital twin.

### 2.3.1. RAW FEEDSTOCK AND LIVESTOCK DATA

- Plant's NDVI (Normalized Difference Vegetation Index) maps captured using optical sensors embedded in farming machinery, drone flight, satellite imaging...).
- Fruit dimensions, colour and yield (i.e. counting) using optical sensors drone flight, satellite imaging depending on the crop conditions and location.
- Livestock dimensions using 3D cameras/lidar sensors.
- Livestock amount, race, sex, age, and sanitary status.
- Pig feed quantities in silos at selected facilities.
- Meteorological information: in-field weather stations, regional weather stations, forecasts.
- Additional data sources (presence of pests, phytosanitary/fertilizers applied, etc.) will be considered depending on their availability at chosen locations.
- Orchard 3D models using SLAM (Simultaneous Localization and Mapping).
- Measurement of ham fat thickness at the slaughterhouse.

### 2.3.2. ON PREMISES REAL TIME DATA

Regarding different processing parameters, materials and energy consumption, as well as information coming ERPs, MES and MOM.

- Production schedules and amounts at feed mill.
- Customer orders from farms to feed mill.
- Transport operations data on amounts, schedules and routes along the pork meat value chain, including transport of pig feed, pigs, fresh meat products, hams and shoulders, cured meat products, and slurry.
- Data on capacity and number of available trucks and drivers.

### 2.3.3. PRODUCTS, BIOMASS AND PROPOSED BY-PRODUCTS CHARACTERIZATION DATA

Coming from quality tests and different chemical analysis. It will be also based in and architecture that will allow the deployment of components of the partial developments such as logistics optimization, blockchain, digital twin, ...).

### 2.3.4. GEOGRAPHIC DATA.

Geographical data such as the locations of production facilities, and transport distances and driving times between facilities

### 2.3.5. EXTERNAL USER DATA

The collection, use, and disclosure of data also plays a pivotal role in meeting the objectives set out in WP8 Communication and Dissemination, managed by REVOLVE and WP9 Project Management, managed by CTIC CITA.

The deployment and management of the BBTWINS project website (D8.9) that hosts all public deliverables, ongoing work, developed tools and other digital products belonging to the project is compliant with GDPR and prompts all users to either accept or reject the use of cookies on the website. A link to an in-depth explanation of the types of the data collected, how it is collected, its usage and storage as well as a contact point for questions or actions that concern a visitor's data as set out the BBTWINS Privacy Policy:

BBTWINS Website Privacy Policy: <https://bbtwins.eu/privacy-policy/>

Data Protection Officer Contact: [dpo@revolve.media](mailto:dpo@revolve.media)

The data management policy undergoes regular revisions at Consortium Meetings held every 6 months. This proactive approach ensures that the policy remains up to date and aligned with evolving data management practices and regulatory requirements. Through these scheduled meetings, the consortium members collaboratively assess the effectiveness of the current policy, identify any gaps or areas for improvement, and propose modifications to enhance data security, privacy, and accessibility.

The BBTWINS also includes a subscription option for users to sign up to receive BBTWINS updates through an e-newsletter offered through Mailchimp, an e-marketing service software. This processed data includes the name, email, country, company and stakeholder details of the subscriber, who must consent to the BBTWINS privacy policy. This personal information is managed by REVOLVE's internally and is not disclosed to the public but is solely used for project communications through the Mailchimp platform.

Data collection and visualization will be a key component of WP8 in terms of physical and digital project communications and its derivatives including the website, press releases, newsletters, events, posters, leaflets, videos, and multimedia (sharables, digital journeys, etc.). This information will include the results from the respective case studies and the ongoing work within the work packages at are non-confidential. For this purpose a specific form was signed by each entity (see Figure 1)

Data associated with the signature of a Non-Disclosure Agreement (NDA) with the members of the External Advisory Board is crucial for maintaining the confidentiality and protection of sensitive information. This data includes the personal details of the board members, such as their full names, contact information, and professional affiliations. Additionally, the NDA may contain specific clauses and provisions related to the scope of the agreement, the duration of the confidentiality obligations, and the consequences of any breaches.



## BBTWINS Consent Form

In full knowledge that BBTWINS is a Bio-Based Industries Research and Innovation Action Project, under grant agreement number 101023334, the interviewee recognises that their testimonies will be responses to questions exclusively about the project, their role, and field of expertise.

Title:  Full name:

Organisation:  Role in BBTWINS:

Email address:

Social Media Handles:\* (Linkedin):  (Twitter):


\*To be filled in should you wish to be tagged in posts via the official BBTWINS social media accounts.

The interviewee is fully aware that there are no copyright or moral rights that can be claimed from the BBTWINS interview series, which is meant solely for informing stakeholders about the project. Under no circumstances can these interviews be sold or reused for commercial gains. No advertising can be used either directly in the video/written interview, or in parallel communication to advance the commercial gains of private entities. All interviews will include the relevant EU funding disclaimers.


### Interviewee Approval

- I agree to be featured in the BBTWINS interview series in full knowledge that the video and/or written interview will be posted on the REVOLVE YouTube channel, on [www.bbtwins.eu](http://www.bbtwins.eu) and promoted via social media channels.
- I am aware that my statements, photo, and quotes may be reused in other BBTWINS publications and communications including other external media that express interest in the project.
- I take full responsibility for my statement and cannot claim any breach of personal data after I have approved the video/written interview that REVOLVE will share with me prior to making it public.
- I am aware that this is an EU funded video and cannot claim any indemnity for potential online comments, any electronic rights, or other financial compensation for featuring in the BBTWINS interview series.


Signature:  Date:




**BBTWINS**  
Agri-Food Value Chain  
Digitalisation for  
Resource Efficiency



**BBIIJU**



**Bio-based Industries  
Consortium**



Horizon 2020  
European Union Funding  
for Research & Innovation

Figure 1. BBTWINS Consent Form

## 3. FAIR DATA

### 3.1. Making data findable, including provisions for metadata

To make the data easily findable a MS TEAMS Repository has been created. Each WP Leader is responsible for the contents of corresponding WP folder in the MS TEAMS Repository and to be able to find the data easily each dataset is referred with a unique name.

ProjectName.DatasetName.Version, where

- The ProjectName is BBTWINS, to clearly identify for all datasets the origin.
- The DatasetName represents the full name of the dataset.
- The Version represents the number of modifications that had been done.

Metadata is data about the research data itself. It allows other researchers to find the data and is essential for the reuse of the data. Detailed metadata is useful for other researchers as they can find relevant information for their studies. Metadata (data type, location, etc.) will be loaded in a standardized way. This metadata will be kept separate from the original research data.

### 3.2. Making data openly accessible

Open data has to be stored in an Open Access repository integrated within the OpenAIRE infrastructure (<https://www.openaire.eu/>), such as ZENODO (<https://zenodo.org/>). A community of the project has been created in ZENODO, which is an open repository for research data, software, and other outputs. Several documents have been already uploaded to the community for example all public deliverables already submitted and open access publications. The details of the BBTWINS community on ZENODO are the following:

- Title: BTWINS project - Digital twins for the optimization of agrifood value chain processes and the supply of quality biomass for bio-processing
- Identifier: bbtwins101023334
- Link: <https://zenodo.org/communities/bbtwins101023334/?page=1&size=20>

By establishing a community in ZENODO, we aim to ensure that the data generated by our research project is findable, accessible, interoperable, and reusable (FAIR) by other researchers and interested parties. By depositing our data in ZENODO, we can obtain a Digital Object Identifier (DOI) for our data, making it easy to cite and reference in future publications. Additionally, ZENODO provides a long-term preservation solution, ensuring that our data will remain accessible for future use.

The methodology will be the following one:

1. *The research group publishes the article in the journal, conference or publisher of their choice.*
2. *They add the final peer-reviewed manuscript to an open access repository. There will be different options:*
  - i. *Open Access journal or conference (gold open access)*
  - ii. *Self-archiving (green open access), in case the host institution of the author has an institutional repository for open access publications, integrated with OpenAIRE platform.*
  - iii. *Last archiving resort (Zenodo or equivalent) if the two previous options cannot be used.*
3. *Registration of the publication in OpenAIRE portal linking it with BBTWINS project. Every partner will be responsible of providing an open access option to every scientific document published.*

### 3.3. Making data interoperable

Data interoperability addresses the ability of systems and services that create, exchange and consume data to shared expectations for the contents, context and meaning of that data.

During the project new data will be identified so further information on making data interoperable will be outlined in subsequent versions of the DMP. Specifically, information on data vocabularies or methodology to follow to ease the interoperability.

### 3.4. Increase data re-use

According to the European Commission, open access is the practice of providing online access to scientific information that is free of charge to the user and is reusable. It is now widely recognised that making research results more accessible to all contributes to better and more efficient science, and to innovation in the public and private sectors

By storing the data in an Open access repository, such as ZENODO, BBTWINS will contribute to the reusability of the project data.

## 4. Allocation of resources

The allocation of resources dedicated to data management within the BBTWINS project are foreseen to be in line with the provisions of the Grant Agreement (GA).

CTIC CITA as coordinator of the project will oversee the Data Management and will be responsible of the data repository (Definition, creation, update of repository structure; co-creation with the project partners of the data repository's folders/sub-folders for each user group and document type; ensure appropriate versioning, metadata, access and level of dissemination).

For reasons of convenience and internal audit, the Data Protection Officers will be CTIC CITA (DPO Contact: [ctic-cita@ctic-cita.es](mailto:ctic-cita@ctic-cita.es)) and REVOLVE, the communication and dissemination partner. DPO Contact: [dpo@revolve.media](mailto:dpo@revolve.media)

## 5. Data Security

To assure the security of the data the following aspects will be considered:

- Store data in at least two separate locations to avoid loss of data;
- Encrypt data if it is deemed necessary by the participating researchers

Initially, the project data will be stored in the MS TEAMS repository with limited access to the BBTWINS consortium.

The GDPR requires to implement appropriate technical and organizational measures to ensure a level of data security that is commensurate to the risks faced by the data subjects of unauthorized access to, or disclosure, accidental deletion or destruction of, their data (art.32 GDPR). In BBTWINS project all personal data that will be collected and processed will take into consideration the seven key principles of the GDPR:

- Lawfulness, fairness and transparency
- Purpose limitation
- Data minimization
- Accuracy
- Storage limitation
- Integrity and confidentiality
- Accountability

Data from Portesa and Dimitra is essentially Intellectual Property (IP). Both companies have strictly followed confidentiality protocols and have maintained a cautious approach when sharing any sensitive commercial data.

It has been followed 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.

The quality of the data shared between Portesa and Dimitra is of high standard, despite not directly including sensitive information. Both parties have adhered to established procedures to ensure accuracy, relevance, and reliability of the shared data. This achievement is a result of the mutual trust and professionalism between the organizations, as well as the implementation of appropriate quality controls.

Security measures and confidentiality agreements will continue to be implemented to safeguard the confidentiality of sensitive commercial data throughout the duration of this project.

## 6. Ethical aspects

The following issue arisen from the Ethics Review, and mainly related with the Data Management of the project, was specifically addressed in the deliverable D10.1 submitted on M6:

### 6.1. POPD-Requirement No.1 Protection Of Personal Data

The host institution has appointed a DPO and the contact details have been made available to all data subjects involved in the research.

The beneficiary has explained how all the data they intend to process is relevant and limited to the purposes of the research project (in accordance with the 'data minimization' principle). A description of the technical and organizational measures that will be implemented to safeguard the rights and freedoms of the data subjects/research participants must be submitted as a deliverable.

Detailed information on the informed consent procedures regarding data processing must be submitted as a deliverable.

Templates of the informed consent forms and information sheets (in language and terms intelligible to the participants) must be submitted as a deliverable.

In case the research involves profiling, the beneficiary must provide explanation how the data subjects will be informed of the existence of the profiling, its possible consequences and how their fundamental rights will be safeguarded. This must be submitted as a deliverable.

The beneficiary must evaluate the ethics risks related to the data processing activities of the project. This also includes an opinion if data protection impact assessment should be conducted under art.35 General Data Protection Regulation 2016/679.