



PROMISEANG

Alternative PROteins from Microbial fermentation of non-conventional SEA sources for Next-Generation food, feed and non-food bio-based applications

D1.3

Data Management Plan v1

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2 PROJECT INFORMATION

Project full title: Alternative PROteins from Microbial fermentation of non-conventional SEA sources for Next-Generation food, feed and non-food bio-based applications

Acronym: PROMISEANG

Call: HORIZON-JU-CBE-2022

Topic: HORIZON-JU-CBE-2022-R-04 - Proteins from alternative and unconventional sources

Start date: 1st September 2023

Duration: 48 months

List of participants: UVIGO, IST-ID, MOA, IBPRS, CTA, CENTIV, CSIC, BZN, INL, JEALSA.

Number	Name of beneficiary	Acronym of beneficiary	Country
1	UNIVERSIDAD DE VIGO	UVIGO	ES
2	IST-ID ASSOCIACAO DO INSTITUTO SUPERIOR TECNICO PARA A INVESTIGACAO E O DESENVOLVIMENTO	IST-ID	PT
3	MOA BIOTECH SL	MOA	ES
4	INSTYTUT BIOTECHNOLOGII PRZEMYSŁU ROLNO-SPOŻYWCZEGO IM PROF WACŁAWA DĄBROWSKIEGO - PAŃSTWOWY INSTYTUT BADAWCZY	IBPRS	PL
5	CONTACTICA SL	CTA	ES
6	CENTIV GMBH	CENTIV	DE
7	AGENCIA ESTATAL CONSEJO SUPERIOR DE INVESTIGACIONES CIENTIFICAS	CSIC	ES
8	BIOZON GMBH	BZN	DE
9	LABORATORIO IBERICO INTERNACIONAL DE NANOTECNOLOGIA LIN	INL	PT
10	CONSERVAS RIANXEIRA SA	JEALSA	ES
11	ALLATORVOSTUDOMANYI EGYETEM	UVMB	HU

3 DELIVERABLE DETAILS

Document Number:	D1.3
Document Title:	Data Management Plan v1
Dissemination level	PU – Public SEN - Sensitive
Period:	PR1
WP:	1
Task:	1.2 Data Management
Author:	CSIC Clive A Dove, CSIC Juan Nogales Enrique
Abstract:	The Data Management Plan provides basic guidelines to deal with the different stages of data management, from data collection & identification through to data sharing and archiving. The consortium will update the plan as the work plan unfolds and updated versions are expected at months M24 and M48.

Date	Description	Version of the document
15/02/2024	Draft deliverable	1.0
20/02/2024	Second draft	1.1
	Final deliverable approved for submission	2.0

4 GLOSSARY

DMP	Data Management Plan
EB	Executive Board
EC	European Commission
FAIR	Data which meet standards of Findability, Accessibility, Interoperability, and Reusability
GA	General Assembly
IPR	Intellectual Property Rights
JCP	Job Creation Potential
JIMB	Joint Initiative for Metrology in Biology
LCC	Life Cycle Costing
LCSA	Life Cycle Sustainability Assessment
MIEO	Minimum Information Standard for Engineered Organism Experiments
NCBI	National Center for Biotechnology Information
SBML	Systems Biology Markup Language
SBOL	Synthetic Biology Open Language
SMC	Synthetic Microbial Consortia
SOP	Standard Operating Procedure
SynBio	Synthetic Biology
PROMISEANG-SEEK	PROMISEANG FAIRDOMHub site for research data storage
XML	Extensible Markup Language

5 EXECUTIVE SUMMARY

This deliverable sets out the project's DMP. It provides basic guidelines to deal with the different stages of data management, from data collection & identification through to data sharing and archiving. The consortium will update the DMP as the work plan unfolds and updated versions are expected at months M24 and M48.

PROMISEANG generates datasets as a result of research activity performed in work packages 2-7.

PROMISEANG will share research data with relevant specialists and the wider research community according to the FAIR principles and the provisions of Article 29 of Grant Agreement no.

101112378, Articles 8, 9 and 10 of the PROMISEANG Consortium Agreement and section 6 of the Project Management Guidelines.

The PROMISEANG-SEEK data server <https://sysbiol.cnb.csic.es/PROMISEANGseek> has been set up as the project's one-stop-shop, trusted repository for datasets, SOPs, genome-scale metabolic models, publications, presentations, etc. (see deliverable D1.2 *User friendly computational platform for data storage and consultation*).

For operational reasons, the GA delegates its data management competencies to the EB, which takes responsibility for decisions regarding the deposition and dissemination of information related to third party data and other knowledge assets. The EB is thus responsible for compliance with copyright, the Consortium Agreement and community decisions on data access.

EB meetings will be used to review the project's data management strategy and the immediate implications for this DMP.

6 INTRODUCTION

PROMISEANG is a multidisciplinary project running multiple tasks simultaneously, with success in reaching project goals depending highly on multi-layered optimisation. Obtaining single-cell protein using marine waste streams as feedstock and developing suitable food, feed and non-food applications involves multiple experimental approaches. Therefore, standardisation and reproducibility regarding data collection and agile data sharing within the consortium are critical to the project's success.

Under Horizon Europe regulations it is mandatory to provide open access to research data under the principle "as open as possible, as closed as necessary". This aims to maximise access to and re-use of research data generated by Horizon Europe projects taking into account the need to balance openness and protection of scientific information, commercialisation and IPR, privacy concerns, security and data management & preservation issues.

Horizon Europe projects are expected to i) draw up a DMP and keep it updated throughout the course of the project, ii) deposit data in a trusted, open access repository and iii) provide information (via the repository) about any research output or any other tools and instruments needed to re-use or validate the data. CSIC is responsible for keeping the DMP up to date and delivering an intermediate version at month M24 and a final version at month M48. Moreover, the EB will consider updates to the DMP in case of events such as the inclusion of new datasets, changes in consortium policies, third party requirements, etc.

This document sets out the initial version of the PROMISEANG DMP. The EB will be reviewing it at least once a year at its biannual meetings and giving beneficiaries specific responsibilities in order to deliver the intermediate and final versions.

The DMP describes the procedure to ensure that PROMISEANG complies with Horizon Europe's requirements at all stages of the research data lifecycle, i.e. generation, collection, processing, standardisation, curation, preservation and sharing within the consortium and with the wider scientific community. The DMP will remain applicable beyond the completion of the project.

PROMISEANG deals with multidisciplinary research areas, i.e. analytical chemistry, proteomics, enzymology, microbial physiology systems biology, synthetic biology, food science, ichthyology, LCSA, etc., thus covering upstream and downstream processes to produce fine-tuned end products. Research into each of these areas will deliver the heterogeneous datasets underpinning the development of the envisaged alternative proteins for a next generation of food, feed and non-food bio-based applications.

The work plan is split into work packages addressing i) research, ii) dissemination & exploitation, iii) project management and iv) management of ethical issues. Knowledge management is envisaged within project management actions. This includes curating and sharing research data, as well as defining the principles that guide IPR handling. Research activities will deliver the actual experimental data and suitable tools to have them structured, managed and archived. Project management provides the framework for the implementation of good practices within the project, whereas ethical issues are tackled by setting the ethical boundaries within which research is to be conducted.

Efficient coordination between different areas of research is pivotal to the success of the project.

Partner 1 UVIGO is responsible for delivering the high standard of coordination required and it uses the web-based project management tool Microsoft Teams as a general-purpose repository for work documents, project management guidelines, meeting arrangements, minutes, deliverables, etc.

PROMISEANG research data will be put in the public domain using PROMISEANG-SEEK, a trusted open access repository. However, in some instances it might be advisable for beneficiaries to use additional data repositories (see section 8.2 ACCESSIBLE DATA).

7 PROMISEANG DATA SUMMARY

Research data as it is referred to in this DMP is the underlying data, including its associated metadata, underpinning the results conveyed in scientific publications. Ultimately, it is the data required to validate published research results.

The Horizon 2020 research funding programme defined research data as follows:

[...] information, in particular facts or numbers, collected to be examined and considered and as a basis for reasoning, discussion, or calculation. In a research context, examples of data include statistics, results of experiments, measurements, observations resulting from fieldwork, survey results, interview recordings and images.

In compliance with Articles 13-17 of the Grant Agreement and following Horizon Europe requirements concerning open access to research data, PROMISEANG will abide by the following overarching principles:

- Open access will be provided to research data generated within the project. This implies making datasets as accessible and openly available as possible.
- Open datasets will be deposited in research data repositories and reuse & validation will be encouraged by ensuring that any user can access, mine, exploit, reproduce and disseminate them free of charge.
- Unless the Commission requests or agrees otherwise or unless it is impossible, metadata attached to published research data must carry the EU emblem and the following statement to demonstrate the EU's support of the project:

"This project has received funding from the European Union's Horizon Europe programme (Circular Bio-based Europe Joint Undertaking) under grant agreement no. 101112378".

Partners are generating a wide variety of data relating to different scientific fields, including analytical chemistry, proteomics, enzymology, molecular, systems and synthetic biology, bioprocess development in the shape of microbial fermentations, downstream processing, ichthyology and LCSA (see Annex I DATA CATEGORIES).

Regarding file formats, preference is given to what is set out in Table 1. However, the EB will update the list as the work plan unfolds.

Table 1 PROMISEANG data file formats & compatibility

Data typology	Format	Compatibility
Experimental data	Excel	XML
Biological models	SBML	XML
	PDB	Text
Workflows	CWL	JSON
Documents	PDF	PDF
Bioparts	Fasta	Text
	SBOL	Text/RDF
	GENBANK	Text
	GBOL	Text/RDF

PROMISEANG generates datasets as a result of research activity performed in work packages 2-7. Data categories & subcategories and their links to relevant work packages are identified in Table 2.

Table 2 PROMISEANG data categories

Data categories	Data subcategories	Work Packages
1. Analytical chemistry	Biochemical profiling Contaminants/microbial inhibitors Toxicology assays Non-protein fraction assays ...	2 - 3 -5
2. Proteomics	Protein purification Protein characterisation Functionality ...	3 - 4
3. Enzymology	HTS assays Functionality Hydrolysis of polysaccharides Downstream hydrolysis of SCP ...	2 – 3
4. Microbial physiology	Pre-treatment of feedstocks Environmental conditions for fermentation Media compositions Growth curves Biomass yields ...	3

Data categories	Data subcategories	Work Packages
5. Systems biology	Metabolic modelling Metagenomics ...	3
6. Synthetic biology	Genetic designs Constructions Genome sequences Titres ...	5
7. Food science	Formulation new foods Encapsulation Sensory assays ...	2 - 6
8. Ichthyology	Nutrition Fish physiology ...	6
9. LCSA	LCA fermentation-derived, protein-based products LCC JCP ...	7
10. Other	Cell models Scientific polling ...	4

It is envisaged that data will be of use to secondary users for the purpose of validating research results, replicating experimental methods, designing similar assays, etc.

8 PROMISEANG FAIR DATA

PROMISEANG will share research data with relevant specialists and the wider research community according to the FAIR principles and the provisions of Articles 13-17 of Grant Agreement no. 101112378, Articles 8.4 and 10 of the PROMISEANG Consortium Agreement and section 6 of the Project Management Guidelines.

8.1 FINDABLE DATA

PROMISEANG data will be stored long-term in the PROMISEANG-SEEK project repository <https://sysbiol.cnb.csic.es/PROMISEANGseek>, thus making them easily findable for anyone with an interest in any of the data categories pertaining to the project. Regarding the indexation of datasets and metadata, PROMISEANG-SEEK provides DOI assignment and allows for data to be suitably packaged and deposited in long-term repositories such as openAIRE/Zenodo.

8.1.1 METADATA

Metadata is 'data about data'. In the context of HE, its purpose is to enable data users and search engines to find research data, scientific publications, etc., as well as to acknowledge EU funding -the

latter also serving the purpose of monitoring the overall scientific output of the Horizon Europe programme.

The basic list of metadata fields that should be attached to a PROMISEANG research data for publication in a repository is as follows:

- The terms: “European Union (EU)”, “Horizon Europe Circular Bio-based Europe Joint Undertaking”
- Name of the action (Research and Innovation Action)
- Acronym and grant number (PROMISEANG, 101112378)
- Date of publication
- Length of embargo period if applicable
- Persistent identifier (DOI)

However, PROMISEANG will provide additional fields (repository and subject dependent) whenever they are necessary for secondary data users to validate the results. The following are some of the most commonly required:

- Title of the dataset
- Name(s) of dataset author (s)
- Description of data
- Source of data and relevant protocols
- Date of creation
- Spatial coverage of dataset
- Temporal coverage of dataset
- Format
- Location of data
- Digital object identifier (assigned by the repository)
- Access status and embargo
- Licence
- Funding statement
- Related publications
- Dataset citation
- Relevant protocols for data generation

PROMISEANG data and metadata will be collected in spreadsheets (see Annex II DATA SHEETS). Partners are currently in the process of identifying specific metadata fields required for each of the PROMISEANG data categories (Figure 1). In all instances, the perspective of a secondary data user attempting to make sense of the data is considered when defining necessary metadata. Beneficiaries will be developing data sheets based on the templates provided by Beneficiary 7 -CSIC. Beneficiary 1 - UVIGO will approve final versions and make them available to the consortium on the Microsoft Teams repository.

MICROBIAL PHYSIOLOGY -DATA SHEET					
sheet description	Metadata	Data	Strain list	protocols	additional info

Figure 1 Data fields relevant to PROMISEANG data category no. 4 -Microbial physiology

8.1.2 DATA NAMING

Beneficiaries will use the following naming standard for data files:

PROMISEANG_(free description of data file)_dd.mm.yyyy

8.2 ACCESSIBLE DATA

PROMISEANG data will remain for internal use only until relevant results have been published and suitable measures are in place to protect beneficiaries' IPR. Open access to datasets will then be granted on PROMISEANG-SEEK in compliance with the provisions set out in Articles 13-17 of Grant Agreement no. 101112378, Articles 8.4 & 10 of the PROMISEANG Consortium Agreement and section 6 of the Project Management Guidelines.

PROMISEANG-SEEK is the one-stop-shop for PROMISEANG data management and data sharing. However, for certain data categories it might be advisable for beneficiaries to use PROMISEANG-SEEK and other general or subject-specific, open access repositories to deposit data. The EB will discuss the preliminary list of such repositories compiled in Table 3 and approve their suitability at its meeting in month M8.

Once published, PROMISEANG data will remain permanently accessible on PROMISEANG-SEEK and any other open access repositories. Secondary data users will be expected to open user accounts and agree to the terms and conditions of relevant online repositories before being granted access to PROMISEANG datasets.

Table 3 Data repositories available to PROMISEANG partners

Project Partner	Type of data	Name of Repository	Type of repository (Open/restricted access)	Website
UVIGO	Miscellaneous	Microsoft Teams	Access restricted to beneficiaries	https://www.microsoft.com/es-es/microsoft-teams
	General purpose data & software	ZENODO	Open access	https://zenodo.org/
IST-ID	Articles, proceedings, theses	Scholar Técnico	Open access	https://scholar.tecnico.ulisboa.pt/
	Curated repository of approximately 175.000 regulatory associations between transcription factors (TF) and target genes in <i>Saccharomyces cerevisiae</i>	YEASTRACT+	Open access	https://yeastract.com/
MOA	Microorganisms	ALBATROSS	Restricted access	https://albatross.cloud/sharepoint-hosting/
	Metabolic models			
	Sequences			
	By-products information			
IBPRS	General purpose data & software	ZENODO	Open access	https://zenodo.org/
CTA	Multiple databases that include the physic and chemical properties of organic compounds, allowing the estimation of the energy demand and material balances of a process	Aspen Plus® V14	Restricted access	Aspen Plus Leading Process Simulation Software AspenTech
	Life cycle inventory database that provides information on the environmental impacts of products and services	Ecoinvent v11	Restricted access	ecoinvent v3.11 - ecoinvent
	Database that provides the data and the tools necessary for improved visibility of social hotspots in product supply chains.	Social Hotspot Database	Restricted access	SHDB - Home
	Searchable web-based bibliographic database, which provides access to full texts of scientific publications of	ScienceDirect	Open/restricted access	ScienceDirect.com Science, health and medical journals, full text articles and books.

Project Partner	Type of data	Name of Repository	Type of repository (Open/restricted access)	Website
	Elsevier and other academic publishers			
CENTIV	General purpose data	Internal server	Restricted access	N/A
	Posters, short communications, proceedings, etc.	ZENODO	Open access	https://zenodo.org/
CSIC	Genome-scale models (including community models)	BioModels Database	Open access	http://www.ebi.ac.uk/biomodels-main/
		BiGG		http://bigg.ucsd.edu/
	Systems biology data files, models, SOPs, publications, etc.	FAIRDOMHub	Open/restricted access	https://fairdomhub.org/
	Sequences & Bioparts	DOULIX	Open/restricted access	https://getstarted.doulux.com/
	General purpose data & software	ZENODO	Open access	https://zenodo.org/
	General purpose data publishing	Mendeley Data	Open access	https://data.mendeley.com/
	Genomics and Metagenomic sequences	GenBank at NCBI	Open access	https://www.ncbi.nlm.nih.gov/genbank/
	Gene expression data	Gene Expression Omnibus database at NCBI	Open access	https://www.ncbi.nlm.nih.gov/geo/
	Protocols, bacterial growth analysis, grey literature etc.	Data in Brief journal	Open access	http://www.journals.elsevier.com/data-in-brief
	Publications	DIGITAL.CSIC	Institutional repository – open access	https://digital.csic.es/?locale=en
BZN	Alternative protein characterisation reports	Internal server	Restricted access	N/A
	Alternative protein incorporation reports			
INL	General purpose data & software	ZENODO	Open access	https://zenodo.org/



PROMISEANG



Project Partner	Type of data	Name of Repository	Type of repository (Open/restricted access)	Website
	Publications (information datacenter)	HUB.INL	Institutional repository – open/ restricted access	https://hub.inl.int/Publications/
	General purpose datasets, metadata, and data sharing	PROMISEANG-seek	open/ restricted access	https://lhotse.cnb.csic.es/
	General purpose data sharing	PROMISEANG Sharepoint	open/ restricted access	https://universidadevigo.sharepoint.com/sites/ProjectPROMISEANG
UVMB	Relevant EU regulations for food, feed, and non-food products	EUR-lex	Open access	https://eur-lex.europa.eu/homepage.html

8.3 INTEROPERABLE DATA

PROMISEANG will follow available best-practice recommendations for data generation. In the case of microbial physiology, the recommendations provided by the MIEO initiative set the project's standard. MIEO is a community-based initiative led by Stanford University through JIMB aiming to identify the experimental factors that affect the growth and productivity of engineered organisms in small-scale experiments, i.e. microtiter plates and shake flasks to enable reproducibility of engineered organisms and engineered parts across space, time and conditions of use. MIEO is relevant to PROMISEANG's work packages 3, 4 and 5 and its implementation will contribute to mitigating inconsistent performance within laboratories, accelerating exchange of organisms within and across organisations and, ultimately, securing reproducibility of published results. Standards published by Hecht et al. (2018) include detailed information about 9 categories of factors: Media components, Media properties (osmolality, buffer capacity), Container geometry, Container Shaking, Time, Environment (T, etc.), Inoculum (amount, exponential, etc.), Selective Agents (antibiotics, etc.), and Inducers.

SBML will be used for communicating and storing computational models. It is a free and open XML-based standard with widespread software support and a community of users and developers.

Regarding PHA production, PROMISEANG genetic constructs and biological systems, including parts, operons and pathways will be designed using SBOL, an open standard for the representation of *in silico* biological designs. SBOL allows for easy quality assurance, standardised documentation and exchange of material between partners, which is key for the project's success.

Figure 3 shows envisaged data generation protocols for the PROMISEANG data categories available so far - beneficiaries will complete the list for the remaining data categories and add them to the updated DMP by M24. Individual protocols will be described in detail in data sheets and suitably identified in relevant metadata fields.

MICROBIAL PHYSIOLOGY -PROTOCOLS (MIEO RECOMMENDATIONS)			
Strains	Fermentations (cultures)	Growth curves	Analytical techniques
List of strains TBC	Pre-treatment of feedstocks	OD vs DCW	Spectrophotometry
Genotype monitoring	Culture conditions (T, N, O ₂ , etc.)	Parameters (lag time, max SGR, max OD/DCW)	HPLC
Phenotype monitoring	Media formulations	Statistical analysis	Gas Chromatography-Mass Spectrometry
Storage conditions	Culture vessels		
	Falcon tubes		
	Erlenmeyer flasks		
	Bioreactor		

SYSTEMS BIOLOGY -PROTOCOLS			
GEM	Tools	OMICS	Repository
Reconstruction protocol	RAVEN	Transcriptomics	FAIRDOMHub
SBML	GECKO	Metabolomics	PROMISEANG SEEK
	COBRA	Genomics	
	FLYCOP	Metagenomics (16S)	

Figure 2 Envisaged protocols for each of the PROMISEANG data categories

8.4 REUSABLE DATA

Licensing of open access PROMISEANG datasets will follow the principle of least possible restriction whilst

ensuring that beneficiaries' IPR is sufficiently and adequately protected.

An embargo period will be imposed on any data that remains undisclosed upon project completion until relevant outcomes have been published.

9 ARCHIVING AND PRESERVATION

According to Article 8.4 of the Consortium Agreement, throughout the lifetime of the project and for a period of 1 year after its ending, the dissemination of results by one or several partners including but not restricted to publications and presentations, shall be governed by Article 17.4 of the Grant Agreement and its Annex 5, Section Dissemination. In order to comply with IPR and non-disclosure of information provisions, beneficiaries must give prior notice of any planned publication at least 45 calendar days before the publication (unless agreed otherwise), together with sufficient information about the results about to be disclosed. Any objection to the planned publication shall be made in accordance with the Grant Agreement by written notice to the Coordinator and to the Party or Parties proposing the dissemination within 30 calendar days after receipt of the notice (unless agreed otherwise). If no objection is made within the time limit stated above, the publication is permitted.

9.1 PUBLICATIONS.

Partners are required to publish in journals offering paid open access (Gold) or post-embargo self-archiving (green) access.

Regarding scientific paper publication, partners are expected to use PROMISEANG-SEEK to make them available to the general public. Additionally, either OpenAIRE <http://www.openaire.eu> -the open access repository for EU projects, or discipline-specific open access repositories may be used to widen overall reach (see Table 3). Links to repository-based papers will be published on the project website <http://www.promiseang-project.eu/> and its social media outlets for reference & download.

The possibility of publishing non-peer reviewed manuscripts is also available on platforms such as www.chemrxiv.org, www.biorxiv.org, etc. Publication of preprints to trigger discussion with relevant experts is expected to provide useful feedback before submitting to peer-reviewed journals.

9.2 DELIVERABLES

According to Article 21 of the Grant Agreement, beneficiaries are expected to submit deliverables to the EC on the Funding & Tender Opportunities Portal. The portal is thus the project's official deliverable repository. Beneficiaries will also upload deliverables to the Microsoft Teams repository.

9.3 OTHER PROJECT DATA AND DOCUMENTS

Archiving of other assets pertaining to the project (e.g. raw data, project notes etc.) will be the responsibility of individual beneficiaries and must be done in compliance with the GA, the CA and the Project Management Guidelines. PROMISEANG-SEEK provides suitable management and publishing features for such materials.

10 ALLOCATION OF RESOURCES

The GA is ultimately responsible for data management within the project. However, for operational reasons, the GA delegates its data management competencies to the EB. The EB oversees research activity in all work packages and is therefore perfectly suited to decide when and how data are made publicly available. The EB

also takes responsibility for decisions regarding the deposition and dissemination of information related to third party data and other knowledge assets. The EB is thus responsible for compliance with copyright, the CA, the Project Management Guidelines and any communal decisions on data access.

11 DATA SECURITY

To ensure data integrity, PROMISEANG-SEEK uses a backup system (Figure 3) featuring redundancy strategies such as local network backup (NAS) and remote backup via Nextcloud (Karlitschek, 2018). The EB will decide on a suitable backup frequency at its meeting in month M8. However, built-in flexibility allows for later fine tuning based on real usage requirements.

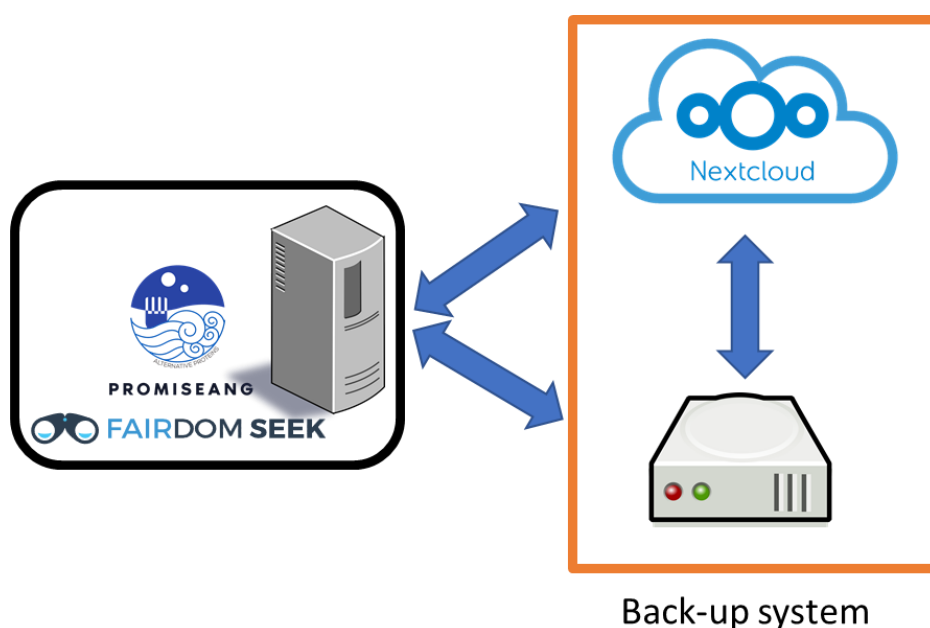


Figure 3 Diagramme of the backup system

Access to the server is limited to registered PROMISEANG members and only published items can be viewed by the general public.

Trusted repositories (see section 8.2 ACCESSIBLE DATA) provide an extra layer of safety for deposited data.

12 ETHICS

To the extent of Beneficiaries' knowledge, there are no ethical or legal liabilities affecting data sharing.

13 CONCLUSION

This DMP ensures efficient data management across the project to make PROMISEANG data FAIR.

GA and EB meetings will be used to review the project's data management strategy and the immediate implications regarding the DMP. However, partners are encouraged to suggest any necessary updates based on their everyday data-handling experience.

An updated version of the DMP is expected at month 24.

14 REFERENCES

Karlitschek, F. (2018). NextCloud. *Nextcloud*. <http://nextcloud.com>.

Hecht, A., Filliben, J., Munro, S.A., Salit, M. (2018). A minimum information standard for reproducing bench-scale bacterial cell growth and productivity. *Commun Biol* 1, 219 DOI: <https://doi.org/10.1038/s42003-018-0220->

15 ANNEX I DATA CATEGORIES

DATA CATEGORY	DATA SOURCE	RELEVANT WPs	LEAD
Analytical chemistry	Biochemical profiling	2	UVIGO
	Contaminants/microbial inhibitors	2	
	Toxicology assays	2	
	Non-protein fraction assays	3, 5	
Proteomics	Protein purification	3	MOA/UVIGO?
	Protein characterisation	4	
	Functionality	4	
Enzymology	HTS assays?	3	UVIGO
	Functionality	3	
	Hydrolysis of polysaccharides	2	
	Downstream hydrolysis of SCP	3	
Microbial physiology	Pre-treatment of feedstocks	3	MOA
	Environmental conditions for fermentation	3	
	Media compositions	3	
	Growth curves	3	
	Biomass yields	3	
Systems biology	Metabolic modelling	3	CSIC
	Metagenomics	3	
Synthetic biology	Genetic designs	5	CSIC
	Constructions	5	
	Genome sequences	5	
	Titres	5	
Food science	Formulation new foods	6	BZN
	Encapsulation	6	
	Sensory assays	2	
Ichthyology	Nutrition	6	JEALSA
	Fish physiology	6	
LCSA	LCA fermentation-derived, protein-based products	7	CTA
	LCC	7	
	JCP	7	
Other	Cell models	4	UVIGO

Figure 4 PROMISEANG data categories

16 ANNEX II DATA SHEETS

Metadata sheet_Microbial physiology_PROMISEANG - Excel

Inicio ses.

Archivo Inicio Insertar Dibujar Diseño de página Fórmulas Datos Revisar Vista Programador Ayuda ¿Qué desea hacer?

Pegar Cortar Copiar Copiar formato Portapapeles Fuente Alineación Número Formato condicional Dar formato como tabla Estilos Celdas Edición

B5 Clive A Dove, Centro Nacional de Biotecnología, Madrid (Spain)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1	Project	Alternative PROteins from Microbial fermentation of non-conventional SEA sources for Next-Generation food, feed and non-food bio-based applications																
2	Acronym	PROMISEANG																
3																		
4	Title	PROMISEANG metadata sheet for microbial physiology																
5	author	Clive A Dove, Centro Nacional de Biotecnología, Madrid (Spain)																
	Description	This metadata form is designed to render standard microbial cultivations as reproducible as possible under the FAIR principles. This form is mainly meant for microbial physiology experiments in shake flasks or similar systems, but it can be adapted to bioreactors.																
6																		
7	Version	1.1 - from January 10th 2019																
8	Disclaimer	I am only the author of the metadata sheet and am in no way responsible for whatever data you may find in this file.																
9	Background	This metadata sheet has been drafted for the PROMISEANG project, funded by the European Union's Horizon Europe programme (Circular Bio-based Europe Joint Undertaking) under grant agreement no. 101112378																
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Sheet ID Metadata Data Strain list protocols additional info

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Figure 5 PROMISEANG Microbial Physiology data sheet